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**A GUIDE TO SHARING ECONOMIC DATA
Prepared by the Task Force on exchange and sharing of economic data**

Summary

This document presents the draft *Guide to Sharing Economic Data* highlighting the changes made based on the electronic consultation of CES members in tracked changes.

The Guide analyses concrete examples of sharing of economic data for statistical purposes, identifies obstacles of data sharing and provides guidance, tools and principles to overcome those barriers. The Guide touches upon the technical tools for data sharing, but the focus is on other aspects, such as, the necessary cultural change, cooperation, communication and legal considerations. These elements are a prerequisite for using the full potential of the technical tools developed to advance the sharing of economic data for statistical purposes. The purpose of increasing data exchange is to improve the quality, coherence and granularity of economic statistics and the ability to better analyse the activities of multinational enterprise groups.

This Guide was prepared by the Task Force on exchange and sharing of economic data, established by the Bureau of the Conference of European Statisticians (CES) in 2017. The following countries and international organizations participated in the Task Force: Canada, Denmark, Finland (chair), Italy, Ireland, Mexico, Poland, Netherlands, United Kingdom, United States, European Central Bank (ECB), Eurostat, the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), UNECE and the United Nations Statistics Division (UNSD). Timo Koskimäki (Finland) chaired the Task Force and Art Ridgeway edited the Guide. We would like to thank the European Free Trade Association (EFTA) for the financial support for finalizing the publication.

The Task Force took as a starting point the in-depth review of the exchange and sharing of economic data that was carried out by the CES Bureau in October 2016. The Guide builds on existing experience, including the results of related initiatives of Eurostat, IMF, OECD, UNECE, UNSD and the World Trade Organization (WTO). The Task Force ensured coordination by consulting regularly with the Group of Experts on National Accounts, CES and its Bureau, OECD Working Parties on National Accounts and Financial Statistics, and the Advisory Expert Group on National Accounts.

In October 2019, the CES Bureau reviewed the draft Guide and requested the UNECE Secretariat to send the document to all CES members for electronic consultation. Based on a positive outcome of the consultation, **CES is invited to endorse the Guide on 22 June 2020.**

LIST OF ABBREVIATIONS AND ACRONYMS

ADIMA	Analytical Database on Individual Multinationals and their Affiliates (OECD)
ADS-B	Automatic Dependent Surveillance - Broadcast
AI	artificial intelligence
AIS	Automatic Identification System
AMIA	Mexican Automotive Industry Association
AMNE	Statistics on Activities of Multinational Enterprises
AnaCredit	loan-by-loan data (analytical credit dataset)
APEC	Asia-Pacific Economic Cooperation
API	application programming interface
Armstat	Statistical Committee of the Republic of Armenia
BCU	Central Bank of Uruguay
BEA	Bureau of Economic Analysis (in the United States)
BEPS	base erosion and profit shifting (OECD)
BIAC	Business at OECD
BIRD	Banks' Integrated Reporting Dictionary
BIS	Bank of International Settlements
BLS	Bureau of Labor Statistics (in the United States)
BOP	balance of payments
BPM	Balance of Payment's Manual
BSI	balance sheet item
CAA	competent authority agreement
CBA	Central Bank of Armenia
CBSA	Canada Border Service Agency
CbC	country-by-country
CbCR	country-by-country report
CCN	Common communication network
CCR	National Central Credit Register
CDIS	coordinated direct investment survey
CES	Conference of European Statisticians
CIPSEA	Confidential Information Protection and Statistical Efficiency Act
CMFB	Committee on Monetary, Financial and Balance of Payments Statistics
CSPA	Common Statistical Production Architecture
DDI	data documentation initiative
DGI	Data Gaps Initiative
Destatis	Federal Statistical Office of Germany
DG Taxud	Directorate General Taxation and Customs Union of the European Commission
DP	differential privacy
EA	environmental accounts
EAAE	Economic Activity Annual Survey (in Uruguay)
EBS	European Business Statistics
EC	European Commission
ECCS	European Statistical System Committee
ECE	Economic Commission for Europe (United Nations)

ECB	European Central Bank
EDAMIS	Electronic Dataflow Administration and Management Information System
EFTA	European Free Trade Association
EGR	EuroGroups Register
EIN	employer identification number
EIOPA	European Insurance and Occupational Pensions Authority
EITI	Extractive Industries Transparency Initiative
EP	European Parliament
ESA	European System of National and Regional Accounts
ESCB	European System of Central Banks
ESCoE	Economic Statistics Centre of Excellence (in United Kingdom)
ESS	European Statistical System
EU	European Union
EUR	euro (currency)
EUROSTAT	Statistical Office of the European Union
EWS	Early Warning System (Eurostat)
FA	financial accounts
FATS	foreign affiliates statistics
FDI	foreign direct investment
FHE	fully homomorphic encryption
FinRep	financial reporting
FRIBS	Framework Regulation on Integrated Business Statistics
FSB	Financial Stability Board
FURS	Financial Administration of the Republic of Slovenia
FVC	financial vehicle corporation
G20	Group of Twenty
GDC	Global Decision Centre
GDELT	Global Database of Events, Language and Tone
GDP	gross domestic product
GEG	global enterprise group
GGR	Global Groups Register
GLEIF	Global Legal Entity Identifier Foundation
GLEIS	Global Legal Entity Identifier System
GNI	gross national income
GSBPM	Generic Statistical Business Process Model
GVC	global value chain
HE	homomorphic encryption
IAG	Inter Agency Group on Economic and Financial Statistics
ICIO	inter-country input-output (OECD)
ICT	information and communication technology
IDC	International Data Cooperation (under IAG)
IFATS	foreign affiliates statistics (inward)
IFC	Irving Fisher Committee on Central Bank Statistics
IGA	integrated global accounts
IMF	International Monetary Fund

INEGI	National Institute of Statistics and Geography (in Mexico)
INEXDA	International Network for Exchanging Experience on Statistical Handling of Granular Data
IPP	intellectual property product
IPT	interactive profiling tool (in European profiling)
ISIC	International Standard Industrial Classification
ISIN	International Securities Identification Number
ISO	International Organization for Standardization
ISO/IEC	International Organization for Standardization / International Electrotechnical Commission
ISO/IEC 27001	an information security standard published by the International Organization for Standardization and by the International Electrotechnical Commission
IT	information technology
ITEGS	international trade and economic globalization statistics
LCU	large cases unit
LEI	legal entity identifier (GLEIS)
LEID	legal entity identifier (EGR)
MAP	mutual agreement procedures (BEPS)
MDE	micro-data exchange
MIP	macroeconomic imbalances procedure
MIR	Interest rate (Statistics)
MNE	multinational enterprise group
MOFCOM	Ministry of Commerce of the People's Republic of China
MOU	Memorandum of Understanding
MPC	secure multiparty computation (also abbreviated as SMC or SMPC)
NCB	national central bank
NSO	national statistical office
NSS	national statistical system
OECD	Organisation for Economic Co-operation and Development
OFATS	foreign affiliates statistics (outward)
OMB	Office of Management and Budget (in United States)
ONS	Office for National Statistics of the United Kingdom
PRODCOM	classification of manufactured goods in the European Community (French acronym)
RA	regional accounts
R&D	research and development
RIAD	register of institutions and affiliates database
SA	statistical authority
SAP	Systems, Applications & Products in Data Processing (a German company)
SBS	structural business statistics
S-CIRCABC	Communication and Information Resource Centre for Administrations, Businesses and Citizens
SDMX	Statistical Data and Metadata eXchange standard
SHS	securities holdings statistics
SIMSTAT	single market statistics

SMC	secure multiparty computation
SNA	System of National Accounts
SSL	secure sockets layer
SSM	single supervisory mechanism
SURS	Statistical Office of the Republic of Slovenia
TEE	trusted execution environment
TiVA	trade in value added
UK	United Kingdom
UN	United Nations
UNECE	United Nations Economic Commission for Europe
UNSD	United Nations Statistics Division
UPE	ultimate parent entity
US	United States
USCB	United States Census Bureau
USD	United States dollar
VAT	value added tax
VTL	validation and transformation language
WTO	World Trade Organization
XBRL	eXtensible Business Reporting Language
XML	Extensible Markup Language

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A GUIDE TO SHARING ECONOMIC DATA

EXECUTIVE SUMMARY

The impact of globalization and the measurement of the activities of multinational [enterprise groups](#)¹ (MNEs) in statistics represents one of the largest “measurement” challenges facing producers of [macroeconomic, trade and business statistics](#)² today. It is indisputable that statisticians need to understand MNEs’ activities better to produce relevant economic statistics. Sharing data on the structures and activities of MNEs nationally and internationally among producers of official statistics has become an imperative to guarantee the high quality of official statistics.

[Data sharing is, of course, not the only instrument to enhance statistical quality. MNEs may significantly differ in nature and complexity and, therefore, cannot be all treated the same way. Further, data sharing can also be relevant to subjects other than MNE.](#)

[With the impact of economic globalization on the measurement of official statistics, there is a growing, and essential, need for more international statistical cooperation in addition to national work. For example, the impact of the shift of activities to Ireland driving the significant revision leading to a 26 per cent annual gross domestic product \(GDP\) growth in 2016 did not result in compensating changes in other countries’ statistics. This example alone provides a strong, powerful and emphatic message that we need to collaborate, discuss, exchange data and reconcile statistics in a new dimension, at a global level.](#)

[This and similar cases provide a strong justification in facilitating secure exchange of confidential data for statistical purposes nationally and internationally, in line with statistical legislation. We need to have a modern global framework allowing official statisticians to share confidential data. In such exchange, data do not leave the statistical system, and the full protection of data privacy and use for statistical purposes only will be ensured. Safeguarding statistical confidentiality is essential to maintaining trust and ensuring the sustainability of official statistics. The key element to building trust among MNEs and other stakeholders of official statistics is operating in line with the statistical legislation and developing it as necessary to regulate data exchange for statistical purposes.](#)

In this Guide data sharing [or data exchange](#)³ refers to sharing of data for statistical purposes among producers of official statistics. The data that are shared can be qualitative, quantitative, confidential, non-confidential, aggregated or disaggregated, collected directly or otherwise obtained by statistical authorities from varying sources, or data that are publicly available. Confidential data can only be shared by using secure technology and among producers of official statistics that have a sufficient legal framework in place to ensure statistical confidentiality.

¹ In this Guide multinational enterprise is understood as a group of (two or more) enterprises producing goods or delivering services in more than one country under a management headquarters in one (or rarely in more than one) country.

² Further in this Guide, the term ‘economic statistics’ refers to macroeconomic, trade and business statistics.

³ In this Guide, the terms ‘data sharing’ and ‘data exchange’ are used as synonyms.

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Statistical confidentiality⁴ has to be ensured in all phases of data sharing and processing, including a full guarantee that the data are only used for statistical production and quality improvement, not for any administrative purposes or decisions about individual units.

Data sharing has been common for a long time at the national level. It is essential that the national statistical office (NSO), the entity producing statistics in the national central bank (NCB) and other producers of official statistics share data and information to ensure the quality of economic statistics and reduce burden on businesses through data reuse. The idea should be that data are collected only once. In addition to data sharing between producers of official statistics, other entities that collect information in the course of their operations - for instance various ministries, health authorities, educational institutions and tax authorities - often provide data for statistical production. However, this is not regarded as data sharing, but as administrative data [obtained on the basis of statistical legislation and](#) going only in one direction: From other government organizations to producers of official statistics, [but](#), due to statistical confidentiality, [never back with any edits by the statistical authority](#).

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The work at the national level provides the foundation for international data sharing since the same prerequisites exist. There is a need for a solid legal base, well-defined processes and trust between those sharing data at both national and international levels. Such trust can only be built on strong and well documented legal structures and agreements assuring the confidentiality of the data and its use for only statistical purposes.

The structures and activities of MNEs develop over time to support business requirements and these may not align with national borders. It may be difficult for MNEs to report their activities by country. While statisticians have developed guidance on how to account for the global production arrangements of MNEs, enterprise structures keep evolving to adjust to new business environments and opportunities. To ensure the correct recording of the largest MNEs in national statistics, it is often necessary to understand their global structures and value chains and, thus, share data with statistical authorities of other countries. However, first there must be a good understanding of national data needs and how data sharing might contribute, if benefits are to be gained from international data sharing. [Pilot studies provide a practical way to seek information and understand better the possible obstacles and benefits of data sharing](#).

Several international initiatives related to data sharing and linking have been undertaken in recent years, and the importance of data sharing has been emphasized at different fora that have considered the challenges caused by globalization. These initial steps towards the "vision for statistical data sharing", [as discussed in the Way Forward \(Chapter VII\)](#), have focused on how to share data for a specific statistical purpose. They have provided valuable information on the importance of data sharing for the quality of certain statistics and illustrated the complexities of global production arrangements. The discussion has focused on legal barriers and technical issues that need to be solved, even though engaging in data sharing requires, more than anything, a profound cultural change in statistical systems. [The significance and impact of cultural aspects is likely to differ notably across countries and will have to be addressed on a case-by-case basis](#).

⁴ Statistical confidentiality and exclusive use for statistical purposes mean that individual data collected or obtained by producers of official statistics that refer to natural or legal persons are to be held strictly confidential and used exclusively for statistical purposes and accessed solely by those authorized to do so under statistical legislation.

For decades, statisticians have engaged internationally to agree on statistical standards to ensure comparability. During the last decade that collaboration has expanded to the development of common statistical production models and sharing of software solutions. But so far, countries have remained highly isolated in statistical production and data collection, with only a few exceptions achieved, for instance, within and between the European Statistical System (ESS) and the European System of Central Banks (ESCB). Even the sharing of [non-confidential](#) aggregated data may be very useful in indicating where problems and bilateral asymmetries lie though is not yet enough for reconciling MNE data globally.

In recent years, several statistical offices have engaged in data sharing with other statistical offices in important trading partner countries. These statistical offices have come to realize the pivotal importance of data sharing to producing relevant and reliable economic statistics. For instance, before data sharing, the bilateral trade asymmetry between Canada and China in 2016 was 21.3 billion USD of which 20.3 billion USD was explained by sharing aggregate level data and metadata on compilation methods. In March 2018, Romania undertook a similar exercise with a number of European Union (EU) countries and significantly reduced asymmetries in both trade flows.

The sharing of data on foreign direct investment (FDI) flows within the EU has led to improvements in the harmonization of statistical methods across EU Member States. The Statistical Office of the EU (Eurostat) has established a unique register, [the EuroGroups Register \(EGR\)](#), containing [information on more than 139,000⁵ MNEs active in Europe, which identifies each enterprise in terms of ownership, activity, number of persons employed, group structure and turnover. It is a powerful tool for statistical production and can be used for example](#) to support the sharing of confidential micro-data on legal units, relationships, enterprises and enterprise groups by 32 EU and European Free Trade Association (EFTA) countries.

[In light of these developments, the](#) Conference of European Statisticians' (CES) established a Task Force on exchange and sharing of economic data which [developed](#) this Guide to advance statistical data sharing. [This Guide offers a significant step forward in recognizing the need for international data sharing and data reconciliation⁶. In doing so, the Guide also identifies the range of obstacles and enablers of data sharing to overcome them as well as the related challenges.](#) The following paragraphs summarize the main recommendations in support of the vision for data sharing for statistics. More detailed and practical recommendations to facilitate statistical data sharing are presented later in the Guide.

The Task Force recommends that national statistical offices (NSOs) and other statistical authorities, as relevant:

- **Review national conditions to assess barriers and enablers of MNE data exchange.** First, clarify how the statistical law treats data sharing for statistical purposes among statistical authorities nationally and internationally. If necessary, draft legal texts allowing data sharing for statistical purposes among producers of official statistics [under strict conditions and provided that they](#) have the legal framework [and common information security standards](#) in place to ensure statistical confidentiality. This requires that producers of official statistics are professionally independent, e.g. from

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⁵ [Reference year 2018.](#)

⁶ [Adjusting data derived from different sources, e.g. as a result of data sharing, to increase consistency in statistics.](#)

their parent organizations, say a ministry. Therefore, it may be necessary to restructure parts of the national statistical system (NSS) to meet the requirements for data sharing before legislative changes are introduced. Revisiting the interpretation of the statistical law may also allow updating the guidance, procedures and rules for data sharing. Assess if and how the institutional set up of the NSS enables data linking. NSOs should also have access to all relevant MNE data sources that are necessary for ensuring the quality of statistics, including [tax authorities' country-by-country reporting data on MNEs](#). [In addition to relying on legislation, it will be important to cooperate with MNEs on data sharing based on voluntary agreements and build and ensure, through good communication, a common trust in sharing and re-using data for statistical purposes. This may include conducting a public consultation to address the public perceptions and the privacy aspects of data sharing in conjunction with any proposed legislative changes;](#)

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- **Prepare the national set-up for MNE data sharing** and allocate adequate resources for statistical data sharing activities. NSOs should assign a responsible unit or staff to oversee and support the sharing of economic data between statistical authorities. Efforts are also needed to develop the statistical data infrastructure and metadata to allow linking of data in a secure environment between statistical domains and statistical authorities. Statistical offices may need to increase their technical and legal knowledge [and capacity](#) of data sharing and micro-data linking taking into account the protection of the confidential data. Develop tools and mechanisms for data sharing, using examples given in this Guide, and prepare guidance for MNE communication. [Necessary administrative, technical and organizational measures should be taken and implemented as a precondition for international MNE data exchange.](#) Identify national priority areas for data exchange and critical MNEs considering the quality of statistics; and
- **Engage in international collaboration** focusing on ways to address national challenges in measuring MNEs through joint work. First, engage in closer collaboration to share experience in international meetings and discuss challenges in collaborating with MNE respondents, collecting and using their data in statistics. Second, start international exchanges with major trade partner countries by reviewing asymmetries and engage in bilateral discussions and data exchange to improve data quality and treatment for critical MNEs. Third, participate in coordinated [and well-established \(including secure IT system, clear confidentiality agreements etc.\)](#) multi-country data sharing exercises, make use of data reconciliation tools and platforms developed by international organizations, provide non-confidential data to the [international databases](#) and contribute by validating data, as possible, to improve data [publicly available on MNEs, for instance, in the OECD's Analytical Database on Individual Multinationals and their Affiliates \(ADIMA\)](#). Finally, [consider how to contribute to the Global Groups Register \(GGR\) to be developed by the United Nations Statistics Division.](#)

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These are the main recommendations to help NSOs enhance data sharing. Especially in the beginning, it will be important to prioritize data sharing projects, select statistical domains that will benefit most from data sharing and focus on the most significant MNEs in the economy. Data sharing starts at the national level with extensive and well-structured collaboration among the

main producers of economic statistics. As MNE activities are not limited by national borders, statisticians need to engage in international collaboration. International data sharing may start with major trade partner countries, but the longer-term goal should be to become part of a global network of experts on MNEs. These actions, the review of the national legal and data framework, setting up the instructions, tools and processes, as well as adequate resourcing, will prepare the NSO for international data sharing.

The Task Force recommends that international statistical organizations:

- **Set up and coordinate an international network of experts on MNEs** and the international exchange of experience and innovations. In June 2018, the CES plenary session decided to create an international network of experts on MNEs and recognized the need for a regular international forum. The joint UNECE, Eurostat and OECD Group of Experts on National Accounts has undertaken to lead this effort. In the first instance, this network should regularly meet, or otherwise communicate, exchange experience and best practices in data sharing, and exchange metadata type information on MNEs (e.g. on their structure or on the statistical methodology applied to them) as well as share latest innovations in data collection and exchange information on tools and techniques. The network should also involve central banks. [The international network of experts should suggest concrete measures for data sharing. The network should also consider the way forward for countries that are not successful either in changing their legislation or in collaboration with MNEs to advance data sharing.](#) A steering group including members from international organizations and leading countries could be established to accelerate progress. [It is important to coordinate such activities with the national large cases units \(LCU\) or networks of LCUs. There are proposals to establish such a network for example within the ESS.](#) Further, to enable international data exchange involving statistical entities of international organizations, the definition of the global statistical system and its role in data exchange should be clarified. Establishing a platform for the sharing of tools and innovations in data sharing would be useful;
- **Create platforms to facilitate the analysis of asymmetries and encourage coordinated multi-country data sharing exercises.** [Having a database](#) with aggregated data and statistics [for the detection of asymmetries](#) would encourage cross-border cooperation among statisticians. [Such examples, hosted by Eurostat, IMF and OECD, already exist in the areas of international trade in goods and services and foreign direct investments.](#) Countries could use the findings from the database to initiate discussions with statistical authorities of other countries so as to address large discrepancies and work [bi- and multilaterally](#) to find solutions to the differences. An extension of the database could collect information about on-going reconciliation projects and their results. Sessions of national accounts and trade statistics expert meetings could be dedicated to the discussion of asymmetries, as topical. The platforms would greatly facilitate launching of coordinated multi-country data sharing exercises;
- **Develop guidance and training to build national capacities to exchange and reconcile MNE data.** International organizations should play a role in developing and providing training modules to build NSOs' capacity to share data, including the skills and tools,

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as well as development of data architecture that supports data sharing. Statistical offices and international organizations should work together to develop a Guide to Data Reconciliation to outline some of the operational approaches and methods countries can use to reconcile bilateral and multilateral trade, investment and production figures. The development would benefit from the sharing and taking stock of experience and lessons learned within the international network of experts on MNEs;

- **Facilitate secure exchange of MNE data building on existing initiatives.** The goal would be to create a single register of the largest MNEs for statistical purposes. Ideally, countries able to do so would supply micro-data into this statistical register. Current initiatives, presented in the Guide, provide useful tools to be further developed, e.g. the EuroGroup Register (EGR), the [European profiling using the Interactive Profiling Tool \(IPT\)](#), the Early Warning System, the FDI Network and the gross national income (GNI)-MNE Pilot approach. The potential to adapt these European practices for international data sharing between agencies of other countries should be explored. The work could start by reviewing possibilities to develop extensions to OECD's ADIMA. As a starting point, NSOs could be involved in validating and complementing the MNE data for their economy by sharing publicly available information on MNEs, e.g. from public business register data. At a later stage, confidential unit-level data on MNEs and data exchanged between statistical authorities could be included in an extension to be used exclusively for authorized statistical purposes. The confidential unit-level data on MNEs supplied by statistical offices would not be made available in the public-use ADIMA. Access by NSOs should be limited to data about MNEs that have active entities in the country of the NSO and that are necessary for statistical production. The aim would also be to create an infrastructure for secure data exchange for statistical offices, as the volume of data exchange starts increasing. This may include exploratory work on processes by which statistical offices apply an 'algorithm' to link micro-data, identify enterprise level asymmetries and feed the results back to [partner](#) countries; and
- **Engage with MNEs, accountants and law makers to improve the basis for future data collection.** Global efforts are needed to address the challenges of measuring MNEs. The international statistical community should plan concrete steps to advance the introduction and use of [internationally accepted](#) unique business identifiers and support their adoption by governments. For example, the EGR Identification Service is an application supporting statistical producers in identifying legal units [on the basis of a unique identifier](#). Another interesting example is the Global Legal Entity Identifier System (GLEIS). These examples provide a good starting point for developing a global unique identifier that could be applied across countries. The network of MNE data experts should reach out to a couple of the largest MNEs to review their data provision processes to different national statistical authorities, and assess possibilities for developing a more coherent and efficient data reporting process serving statistical authorities of several countries (towards the vision of data collected only once for MNEs). Collaboration with business software producers in introducing statistical reporting requirements to business information technology (IT) systems would be a

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potential avenue. Furthermore, doing things in isolation is no longer effective. Reaching out to international communities working on business accounting standards to pursue collaboration with MNEs and further improve quality of data reporting should be investigated. Such collaboration of statisticians and MNE representatives could be pursued at the meetings of the Business at OECD (BIAC) and the UN Standing Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting.

In general, the main responsibility of international statistical organizations should be to develop mechanisms and design the overall setup for international data sharing and facilitate data sharing with the development of technical solutions, tools and guidance. [Furthermore, a monitoring system of common information security standards should be established to review and certify all parties involved in the international MNE data exchange.](#)

[The next review of the Fundamental Principles of Official Statistics should reflect, and promote, the need for data sharing in the global statistical system and collaboration between national statistical systems. The review should include a principle, followed by suite of protocols, to encourage international data sharing, data exchange and data reconciliation between countries' official statistical bodies. This should cover cross-border activities with the objective for statistical purposes \(not for publication of confidential data\) in order to improve the measurement of official statistics on MNEs and related activities as well as addressing asymmetries in terms of consistency, coherency and quality.](#)

Small steps and successful experiences are probably the best way to demonstrate that data sharing among statistical authorities is the way forward in the globalized world. The exchange of individual data cannot happen without [a legal basis, clear mandate](#), sufficient resources for the work and the necessary initial investments in technology, process improvements and methodology.

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I. INTRODUCTION

1.1 Why is the Guide to Sharing Economic Data needed?

1.1. In recent decades, advances in technology and communication, increasing capital movements and dominance of multinationals as well as reductions in shipping costs have redefined global production. With firms re-organizing themselves to maximize efficiency and minimize taxation, globalization has brought more trade, capital flows and movement of people across borders. Globalization has led to tighter integration of economies worldwide. This complicates economic measurement. Why? Largely because the production of our 'bread and butter' statistics is nationally focused and based on residency.

1.2. NSOs increasingly find it difficult to delineate MNEs and their economic activities to identify those that are resident. With economic activity increasingly global, global value chains operate within and across MNEs. MNEs and associated value chains modify their strategies and spatial organization quickly, and without information on the full value chain, it may be difficult to define which parts of their activities belong to which economy. Different treatment of the same MNE's data across countries is a source of important asymmetries.

1.3. Enterprises are digitizing their information management systems. These digitized systems are increasingly standardized, rigid and adapted for international accounting standards. With internal datasets, organized to support global activities, it may be challenging for MNEs to divide their activities to align with national economies as required for official statistics. MNEs will need to provide varying kinds of reports to individual statistical authorities of different countries. MNEs would benefit from better respondent relation management in developing solutions for reporting their data to these various statistical authorities in a consistent way.

1.4. Ultimately, the quality, coherency and consistency of the data representing MNEs on a national basis affect key aggregates like gross value added (GVA), gross national income (GNI), GDP, etc. as well as the balance of payments, trade flows and the sequence of accounts through to the financial accounts.

1.5. Later in this Guide examples will be presented to show how, sharing and reusing data can lead to an improved quality of statistics and develop more efficient ways to produce them. The increasingly globalized world has forced official statisticians to look beyond the national border and consider solutions that include the national and international exchange of economic data.

1.6. New data sharing mechanisms are needed, nationally and internationally, to enhance the quality, coherence and relevance of economic statistics and the efficiency of their production. Without a full picture of the activities of the MNEs, it is a challenge to ensure continued meaningful and correct measurement of global production and trade, and to understand the influence of MNEs on economic statistics. Such a complete view and systematic approach to data reporting by statistical authorities is likely to come with many benefits for the MNEs as well. There is a need to analyse the risks (e.g. by using a risk matrix to consider the likelihood and impact of risks) and obstacles of data sharing and identify enablers that will lead to an increase in the sharing of economic data (including information on business structures) in statistical production.

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1.7. Outside of official statistics, other activities also face the need to exchange data to carry out their tasks in this increasingly global environment. New data exchange initiatives include, for instance, the [OECD's base erosion and profit shifting \(BEPS\) data exchange programme](#) for taxation. [The possibility to use the data from country-by-country reporting of BEPS initiative for production of official statistics is of particular interest to NSOs. Those data provide an overview of the global allocation of income, taxes and other variables useful for the allocation of economic activity. Efforts are being made to automatically exchange tax information on MNEs between EU Member States \(European Council Directive 2016/881\).](#) Such initiatives could provide a useful source of internationally exchanged data for official statisticians and could help improve the quality of statistics further.

1.8. National authorities other than those producing statistics also collect lots of data to carry out their tasks. Often these data can be, and are, used for the compilation of official statistics. In areas where administrative data are useful for official statistics, important reductions in statistical response burden can be achieved by using data collected by other national authorities.

1.9. In some countries, NSOs face the general requirement that the data needed for public administration, including statistics, should only be collected once. Furthermore, statistics need to remain relevant in an increasingly globalized economy and provide more detailed and timely information about changes in the economy. This calls for access to more data on activities beyond the national territory and often outside the reach of the NSO of one country.

1.10. To summarize, there are both external factors that influence data sharing (e.g. digitalization in its different forms) and statistical needs to increase data sharing to ensure the relevance and the overall quality of official statistics. Therefore, NSOs may need to rely more and more on the use of secondary data and, consequently, share and exchange more data with other institutions, both nationally and internationally.

1.11. The challenge globalization presents for economic statistics has been the focus of on-going work for over a decade as illustrated by the following list:

- Economic Globalization: A Challenge for Official Statistics⁷ (Joint EFTA/UNECE/ State Statistics Service of Ukraine seminar, 2008)
- Report: Task Force on the recording of certain activities of multinationals in national accounts⁸(Eurostat, 2009)
- OECD Handbook on Economic Globalisation Indicators⁹ (OECD, 2010)
- Guide on Impact of globalization on national accounts¹⁰ (UNECE/OECD/EUROSTAT, 2012)

⁷ www.unece.org/fileadmin/DAM/stats/publications/Economic%20globalization.pdf

⁸ www.unece.org/fileadmin/DAM/stats/groups/wgna/Report_TF_recording_activities_multinationals_national_accounts.pdf

⁹ www.oecd-ilibrary.org/docserver/9789264108103-en.pdf?expires=1568133912&id=id&accname=ocid195767&checksum=B307D0B36827F3A631F63B2BCA422E90

¹⁰ www.unece.org/fileadmin/DAM/stats/publications/Guide_on_Impact_of_globalization_on_national_accounts_web_.pdf

- Guide to Measuring Global Production (UNECE, 2015) in English¹¹ and in Russian¹²
- Accounting for Global Value Chains (GVC), GVC Satellite Accounts and Integrated Business Statistics¹³ (UNSD, 2019)

1.12. [The above is not an exhaustive list. In addition, various different initiatives have to be pursued to address practical issues such as MNEs, special purposes entities \(SPEs\), asymmetries, etc. via seminars, workshops, bilateral country negotiations, etc.](#)

1.13. This work has led increasingly to the view that the sharing and exchange of data must be an important element in the toolbox of statisticians as they develop approaches to the measurement challenges posed by globalization. [Data sharing is already happening, and this Guide aims at making it more consistent by introducing new tools, such as:](#)

- [Rich examples to share experience from various different types of data sharing cases;](#)
- [An analysis of enablers and obstacles of data exchange with links to resources to overcome barriers;](#)
- [Instructions and experience from LCUs and their role in data sharing;](#)
- [Communication materials for respondent relationship management with MNEs;](#)
- [Legal and procedural recommendations and a template of Memorandum of Understanding \(MOU\) for data sharing;](#)
- [Information on useful IT tools for data sharing;](#)
- [Process guidance for taking steps towards data sharing; and](#)
- [Recommendations on next actions for countries and international organizations.](#)

1.14. The Guide to Measuring Global Production identifies as a priority the need to develop new methods and sources for collecting and compiling statistics on the largest and most complex MNEs in a consistent and effective way. The Guide also notes the limits of national and international data sharing among producers of official statistics due to legal and confidentiality constraints, which in many cases ~~limit~~ the possibility of improving the analysis of the economic impact of MNEs on official statistics.

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1.15. In the 2015 and 2016 meetings of the joint UNECE/Eurostat/OECD Group of Experts on National Accounts, countries emphasized the need for data confrontation and exchange between the producers of economic statistics within a country and between countries to enable proper data validation and improve quality, relevance and consistency of data across domains. Globalization requires statistical agencies to understand the significance of counterparty information and how this can provide insight from the other sides of major transactions. National circumstances, legal and technological challenges will need to be considered as well as possible risks, for example related to production processes of statistics, trust of respondents and the general public, and privacy issues.

¹¹ www.unece.org/fileadmin/DAM/stats/publications/2015/Guide_to_Measuring_Global_Production_2015_.pdf

¹² www.unece.org/fileadmin/DAM/stats/publications/2016/Guide_to_Measuring_Global_Production_-_RU.pdf

¹³ <https://unstats.un.org/unsd/business-stat/gvc.cshml/>

1.2 Work process

1.16. As the Group of Experts on National Accounts discussed data sharing in 2015 and 2016 as part of the follow up to the Guide to Measuring Global Production, they recognized that data sharing is essential when looking for solutions to the challenges related to global production, and asked international organizations to consider ways to facilitate the exchange and sharing of economic data.

1.17. In view of these developments, the CES Bureau decided to undertake an in-depth review of the exchange and sharing of economic data. The review was carried out in October 2016, based on a paper by Statistics Finland with inputs from a number of countries and organizations. The paper¹⁴ identified issues and problems and made recommendations on possible follow-up in areas where progress is achievable, including the need to develop coordination mechanisms, exchange experience, develop general guidance and principles for data exchange and develop technological tools for this purpose.

1.18. As an outcome of the review, the Bureau emphasized that national and international data sharing is a prerequisite for statisticians to be able to depict economic reality, profile MNEs and provide meaningful data on their activities. The Bureau stressed the urgent need to operationalize the exchange of data between NSOs and asked a group of countries and organizations to identify key streams and priorities and develop terms of reference for a task force to undertake work in this area.

1.19. In March 2017, the CES Bureau established a Task Force on exchange and sharing of economic data to advance this challenging area of work. The Task Force consisted of experts of national accounts, balance of payments, business statistics, foreign trade statistics and other economic statistics from the following countries and international organizations: Canada, Denmark, Finland (Chair), Italy, Ireland, Mexico, Poland, the Netherlands, the United Kingdom, the United States, European Central Bank (ECB), Eurostat, the International Monetary Fund (IMF), the Organisation for Economic Co-operation and Development (OECD), UNECE and the United Nations Statistics Division (UNSD). UNECE provided the Secretariat for the Task Force.

1.20. The Guide builds on existing national and international experience, including the results of related initiatives of UNSD, Eurostat, OECD, World Trade Organization (WTO) and IMF. The Task Force ensured coordination by consulting regularly with the Group of Experts on National Accounts, CES Bureau and Conference, OECD Working Parties on National Accounts and Financial Statistics, and the Advisory Expert Group on National Accounts.

1.21. After the first stage of work, the Task Force presented an interim report to the CES plenary session for discussion and comments in June 2018. The interim report suggested practical solutions and tools to be further developed for data sharing. It outlined the Task Force's findings on its first main tasks:

- Review concrete examples of useful data exchange
- Identify enablers and obstacles and propose solutions

¹⁴ www.unece.org/fileadmin/DAM/stats/documents/ece/ces/bur/2016/October/03-in-depth_review_on_data_sharing_final.pdf

- Find ways to identify MNEs crucial for data exchange
- [Consider the need for and the role of LCUs](#) in statistical offices.

1.22. The Task Force continued to the second stage of work, from July 2018 to June 2020, taking into account the feedback received from the CES plenary session and from other consultations carried out in 2018. In the second stage, the Task Force developed guidance, tools and principles for statistical offices to facilitate the exchange of economic data. They also collected examples of innovative ways to exchange economic data to increase the quality and coherence of statistics and the ability to better analyse the activities of MNEs.

1.23. In addition to the regular coordination with several expert groups, the Task Force also provided input to corresponding work undertaken by the Expert Group on International Trade and Economic Globalization Statistics (ITEGS), the G20 Data Gaps Initiative, Eurostat's Integrated Global Accounts (IGA) project, the relevant CES Task Forces and the Data Integration Project under the UNECE High-level Group for the Modernisation of Official Statistics.

1.24. The Task Force submitted the draft Guide to the CES Bureau in October 2019 and consequently to the CES plenary session for endorsement in June 2020.

1.3 Structure of the Guide

1.25. After the executive summary and introduction, Chapter II reviews the status of data exchange in statistics and offers insights into statistical offices' current practices in data exchange. Using a number of sources, the Task Force collected and analysed real examples of regular data exchange and examples of one-off data exchange for statistical purposes. The chapter provides a summary analysis of the data exchange cases studied by the Task Force.

1.26. Chapter III portrays enablers and obstacles of data sharing based on the examples reviewed. It identifies key benefits and challenges of data sharing with links to real examples. The intention of this chapter is to ensure that the guidance is based on a thorough analysis of lessons learned in previous data exchange so as to enable development of realistic and useful recommendations. The chapter considers obstacles to data exchange in order to identify solutions and strengthen enablers of data sharing. The chapter makes reference to several useful resources and tools to help advance data sharing for [statistical purposes](#).

1.27. Chapter IV looks at the prerequisites for better reconciliation of MNEs' data. It considers how to detect the MNEs that are most relevant for data sharing and the most significant changes in their activities. It shares practical experiences in selecting MNEs for special treatment, for instance to be included in the work of experts on MNEs, and makes recommendations based on real examples on the types of data items to be exchanged to ensure the high quality and relevance of economic statistics. The chapter also analyses gaps in data exchange practices that should be addressed. Furthermore, the chapter examines the role of organizational units of statistical offices that work on large and complex enterprises, so called LCUs. Finally, it speaks about setting up and coordinating an international network of experts on MNEs.

1.28. Chapter V highlights one of the key issues in enabling international data sharing - communication and engagement with MNEs. It provides the basic principles for the first contact and for the follow-up meetings. It provides guidance on how to motivate MNEs to engage with the statistical authorities and analyses the benefits of data sharing for MNEs.

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1.29. Chapter VI is devoted to presenting the Task Force's principles and practical guidance for the secure exchange of economic data. It covers issues, such as development of legal frameworks and safeguarding of confidentiality in the exchange of economic data, and the principles of effective and secure data exchange. [Concrete measures for data sharing need be further defined in the international network of MNE experts. Every exchange of confidential data needs a legally binding basis \(agreement, national law, international law\)](#). The chapter also shares some useful, generally applicable tools and concrete solutions to be used in data exchange.

1.30. Chapter VII makes proposals for future scenarios for the collection and exchange of economic data. It highlights some innovative practices in statistical offices and in other industries (e.g. taxation). The chapter concludes with a discussion of a vision on future data exchange for statistical purposes and makes proposals for further work.

II. CURRENT LANDSCAPE - STATUS OF DATA SHARING IN STATISTICS

2.1 Introduction

2.1. In June 2017, the CES plenary session noted that before engaging in international data exchange on a larger scale, the first priority should be to improve national consistency of data on large MNEs across statistical domains. However, in some areas international data exchange is a prerequisite to achieving coherent national data on large MNEs. Having counterpart data helps to solve national consistency problems.

2.2. The CES plenary came to this conclusion after many years of study and documentation of the issues arising from globalization and in particular the complex and ever-changing structures of MNEs. This earlier work resulted in the publication of *The Impact of Globalization on the National Accounts in 2011* and the *Guide to Measuring Global Production in 2015*. Both of these documents make it clear that the structures of MNEs, both within and across countries, can often affect how data are recorded.

2.3. Better profiling¹⁵ of MNEs is needed to improve the quality of economic statistics. Examples analysed by the Task Force show clearly that international profiling has improved the understanding of national and international structures of MNEs. Based on practical experience, it seems that international profiling should cover the largest and most complex MNEs, as a starting point. It requires a level of international data sharing not seen before. This can only be achieved if clear rules and processes are put in place. All practices need to be transparent and well explained to the enterprises whose data are shared for statistical purposes.

2.4. The rules and conditions for national data sharing should be studied when preparing for international data sharing. National rules cannot be introduced as they are, but they may provide useful input for developing the rules and conditions of international data sharing for statistical purposes.

¹⁵ Eurostat's *Business Registers Recommendations Manual (2010)* defines profiling as follows: Profiling is a method of analysing the legal, operational and accounting structure of an enterprise group at national and world level, in order to establish the statistical units within that group, their links and the most efficient structures for the collection of statistical data.

2.5. This chapter reviews the status of data exchange in statistics and offers insights into the current practices in statistical offices in data exchange based on the findings of the in-depth review of the exchange and sharing of economic data. The review was largely based on a survey of country experiences and was carried out in all CES member States in 2016. The 48 respondents included NSOs and entities of NCBs that produce official statistics. The respondents are referred to as "offices" in the following chapter.

2.6. The survey covered the following main areas: the current scope of economic data exchange nationally and internationally; organizational aspects of data sharing; benefits and challenges experienced; international activities that might support national capacity development; and other comments by countries.

2.7. In the survey, all offices indicated carrying out some data exchange at the national level, most commonly receiving or sharing aggregated data with other producers of statistics. This takes place in over 80 per cent of offices that responded to the survey. For micro-data exchange, almost 80 per cent of offices receive data from other producers of statistics and three out of four offices receive micro-data from administrative sources.

2.8. Half of the respondents receive micro-data from commercial sources, over half - not only receive, but also provide micro-data to other producers of statistics and over two thirds provide micro-data for purposes other than statistical, namely for scientific research.

2.9. Over 90 per cent of respondents have engaged in international data exchange, with more than 80 per cent of cases, involving aggregated data. Only one office in three has engaged in international micro-data exchange.

2.10. Usually, international data exchange is related to statistics where cross-border transactions are recorded and the exchange aims at minimizing bilateral asymmetries between the same cross-border flows reported by different countries. The respondents emphasised that international data exchange is facilitated by international organizations and based on bilateral or multilateral agreements between countries.

2.11. The survey revealed the growth in the sharing of micro-data that started 40 years ago when countries first took steps toward the reuse of micro-data at the national level. Before that, all countries were in the lower-left corner of Figure 1, whereas currently only three offices out of 48 respondents remain there.

Figure 1

The exchange and reuse of micro-data

		Reuse of micro-data at national level		
		NO	YES	
Exchange of micro-data at international	YES	0	18	18
	NO			

	NO	3	27	30
		3	45	

2.12. In recent years, the reuse of micro-data has increased at the national level and at international level the exchange of data is now increasing. This was a consequence of the changes in the European statistical law and Eurostat's single market statistics (SIMSTAT) project that enabled international micro-data sharing between statistical offices of the EU Member States in the domain of international trade in goods statistics. Now 18 offices among the respondents are in the upper-right corner of Figure 1, and this may increase further in the near future. [The SIMSTAT project \(completed in 2016\) was a pilot to test micro-data exchange \(MDE\) in foreign trade statistics. MDE will start in 2022 with the implementation of the new Regulation \(EU\) 2019/2152 on European Business Statistics \(EBS\), formerly referred to as Framework Regulation on Integrated Business Statistics or FRIBS in international trade in goods statistics. Therein, all EU Member States are obliged to exchange export data with one another. However, they are not obliged to use these mirror data on the import side.](#)

2.13. However, exchange of data on MNEs is still relatively rare. A quarter of responding offices have examined the activities of MNEs with another countries' statistical authorities and a third of the offices have worked with other producers of official statistics within their own country. Five countries mentioned that they have benefitted from organizing MNE data collection in a LCU.

2.2 Review of national data sharing examples

2.14. This section presents real data exchange cases and the challenges and benefits experienced by participating offices in national data sharing for statistical purposes. The section will start by discussing the collaboration between NSOs and NCBs in the European context, as many country examples are done within this framework. While collecting country case examples, the Task Force also collated examples of agreements and Memoranda of Understanding (MOU) that regulate data exchange. These were used as a basis for developing the tools and principles for data exchange, presented in Chapter VI.

2.15. Data sharing at the national level builds the foundation for international sharing since the same prerequisites apply. There is a need for a solid legal base, well-defined processes and trust between counterparties both at the national and international levels. In many countries, at the national level, a common legal framework already facilitates and encourages data sharing and related activities.

2.16. The data sharing between NSOs and entities of NCBs that produce official statistics is key to properly reconciling national accounts and balance of payments data. For that reason, the Guide first elaborates this activity.

2.2.1 Data sharing between NSOs and NCBs in Europe for statistical purposes

General framework for collaboration and data exchange

2.17. In Europe, NSOs and NCBs both have roles to play in the production and dissemination of official statistics. The relationship is replicated at the European level, where the NSOs are organized in the ESS and the NCB's are organized within the ESCB.

2.18. The archetypal distribution of responsibilities between these two systems is that NSOs are responsible for most non-economic (social) statistics, price statistics, business statistics (including trade), employment and population statistics and the national accounts where it concerns output and value added, while, NCBs generally have responsibilities in the field of financial institutions, financial markets, monetary aggregates, external sector statistics, and the financial accounts. The organizational arrangements, at the national level as well as at the European level are considered largely complimentary. Behind the archetypal distribution of responsibilities lies a broad range of collaborative arrangements.

2.19. There are several areas where there is a large amount of co-dependence of the systems, nationally and at European level, where a deep level of collaboration is required, and a shared responsibility exists to arrive at high-quality statistics. Examples of such areas are:

1. Macroeconomic statistics, notably external sector statistics and national accounts, specifically the non-financial and financial sector accounts, where there is a need for consistency between the financial and the non-financial accounts, as well as consistency between the external sector and the domestic sector accounts. Often large singular transactions or positions are captured differently in the underlying data collections and require a separate reconciliation effort.
2. NCBs typically collect detailed registers on financial institutions, and NSOs on non-financial institutions. In the absence of extensive data sharing arrangements between NCBs and NSOs, a comprehensive national register is not possible. The confidentiality treatment of business register data typically differs between NCBs and NSOs, as NCBs often require reporting on counterparties (reporting by financial institutions on their customers) and therefore, the financial institutions have a need to be able to classify their customers according to statistical criteria. This requires the sharing of the identification and classification of entities with reporting agents.
3. NSOs and NCBs may have shared responsibilities to varying degrees in the area of external statistics. Underlying trade statistics are data collected from the customs department as well as a statistical collection linked to tax data, typically performed by the NSOs. In the field of trade in services statistics, often NCBs perform their own detailed data collection, and NSOs may find it challenging to access underlying micro-data to perform synthetic analyses through micro-data linking, due to the lack of a common set of identifiers, access to registers, or access to micro-data. Also, foreign direct investment (FDI) statistics, underpinning a large part of the financial and income accounts in the balance of payments, are conceptually closely related to foreign affiliate statistics (FATS), structural business statistics (SBS) and national balance sheet data, including the international investment position. Again, the flawless linking of all

these statistics presumes a high level of data sharing between NCB and NSO nationally, as well as the existence of a common register.

2.20. There are rules in place for national data sharing and even for international data sharing in the ESS (see Box 1). Article 21 of the Regulation (EC¹⁶) No 223/2009 of the European Parliament and of the Council of 11 March 2009 on European statistics as well as Council Regulation (EC) No 2533/98 of 23 November 1998 concerning the collection of statistical information by the European Central Bank accommodate the possibility of transmission of confidential data both within the ESS and the ESCB. However, there are no legal frameworks for bilateral or multilateral data exchange between EU statistical producers and those outside the EU. At the same time, MNEs operate well beyond EU and further data exchange for statistical purposes is needed.

¹⁶ European Commission (EC)

Box 1

Legal basis for data sharing within the ESS and ESCB

Regulation (EC) No 223/2009 on European statistics

[Article 21 Transmission of confidential data](#)

“Transmission of confidential data from an ESS authority ... that collected the data to another ESS authority may take place provided that this transmission is necessary for the efficient development, production and dissemination of European statistics or for increasing the quality of European statistics.”

Regulation (EC) No 184/2005 on Community statistics concerning balance of payments, international trade in services and foreign direct investment

[Article 8: Transmission and exchange of confidential data](#)

“The exchange of confidential data ... shall be allowed between Member States where the exchange is necessary to safeguard the quality of balance of payments figures of the European Union.”

Regulation (EU) No 659/2014 amending Regulation (EC) No 638/2004 on Community statistics relating to trading of goods between Member States

[Article 9a Exchange of confidential data](#)

“The exchange of confidential data ... may take place for statistical purposes only, between the national authorities responsible in each Member State, where the exchange serves the efficient development, production and dissemination of European statistics relating to the trading of goods between Member States or improves their quality.”

Regulation (EU) 2019/2152 on European business statistics

[Article 10: Exchange of and access to confidential data for the purpose of the European network of statistical business registers](#)

Confidential data shall be exchanged between Member States as follows: (a) The exchange of confidential data of multinational enterprise groups and of the units belonging to those groups, ... shall take place, exclusively for statistical purposes, between the staff contributing to the production of the EuroGroups Register in the national statistical authorities of different Member States, where the exchange is to ensure the quality of the multinational enterprise groups information in the Union.

[Article 11: Exchange of confidential data](#)

The exchange of confidential data between Member States on intra-Union exports of goods shall take place, exclusively for statistical purposes, between the national statistical authorities contributing to the development, production and dissemination of intra-Union trade in goods statistics.

The national statistical authority of the Member State of export shall provide to the national statistical authority of the Member State of import the statistical information on its intra-Union exports of goods to that Member State as set out in Article 12.

[Article 16 Exchange of confidential data - enabling clause \[for the purpose of European business statistics and national accounts\]](#)

[The exchange of confidential data, which are collected or compiled pursuant to this Regulation, shall be allowed between the NSOs of Member States concerned, their respective national central banks, the ECB and the Commission \(Eurostat\) for statistical purposes only, where the exchange is necessary to safeguard the quality and comparability of European business statistics or national accounts in line with the concepts and methodology of Regulation \(EU\) No 549/2013.](#)

[NSAs, the national central banks, the Commission \(Eurostat\) and the ECB that have obtained confidential data shall treat that information confidentially and shall use it exclusively for statistical purposes in accordance with Articles 20 to 26 of Regulation \(EC\) No 223/2009.](#)

2.21. The institutional co-dependence of NCB's and NSO's becomes even more evident when seen from the European perspective. European national accounts are compiled to show only the relationship of the EU or the euro area with non-residents (i.e. agents outside the EU or euro area). These European aggregates are however compiled by aggregating the relevant parts of the national accounts of the Member States, omitting the external transactions with other Member States. Thus, the quality of the geographical dimension co-determines the quality of the European aggregates. Hence the need exists to quality check the geographical dimension in the external sector accounts against mirror data from partner countries for asymmetries. Often, because trade, income or financing flows are dominated by a few singular transactions, there is a need to investigate in detail individual transactions. Several data sharing arrangements exist between

Member States with regard to external sector statistics. Also, because of far reaching European integration, information relevant to one Member State could be captured by another member state, and the statistical organization of the first state might depend on such data being shared between countries.

- i. One example would be provided by customs data, in cases where the imports or exports of goods involve the customs authorities of more than one EU Member State. In such cases, the new Regulation (EU) 2019/2152 on European Business Statistics obliges EU Member States to exchange the relevant customs micro-data, to make them available to national statistical authorities responsible for compiling trade statistics in other EU Member States.
- ii. Within the ESCB several collaborative products exist, whereby nationally collected information is made available to all compilers in the euro area, such that comprehensive information can be obtained. One such system, securities holdings statistics (SHS), augments data commercially obtained describing securities issues and securities prices, by identifying and classifying the holders of these securities through a data collection from custodians holding these securities on behalf of their owners. Similarly, information is being collected on a loan by loan basis from lenders (AnaCredit) that also identifies the cross-border lending. These collections provide a single euro area wide source of granular lending data that benefits all national compilers.

2.22. Such initiatives still are an exception rather than the rule. In part, this is because European statistical development depends on European legal agreements which formulate output requirements for statistics but leave the implementation to the national institutions following the principle of subsidiarity. Because country statistical organizations are now more acutely aware of the risks of incorrectly capturing the activities and transactions of large MNEs, specific initiatives have been developed that aim at reducing those risks through collaboration and reconciling observed large individual transactions.

2.23. Within the ESS, the initiative of establishing an Early Warning System (EWS) is related to the risk posed by the internal restructuring activities and financing of large multinational corporations. The EWS is a mechanism whereby in an early phase of such a restructuring, it can be identified, and a correct statistical treatment recommended. The EWS has been set up according to the archetypal distribution of responsibilities and focusses on issues related to gross domestic product (GDP) and activity classification, and the treatment of global production. Also, in the context of concerns with regard to GNI, the ESS Expert group on GNI initiated and carried out a pilot study to analyse all relevant statistical information on a limited number of MNEs, so as to assess whether these MNEs had been captured accurately and consistently in the national accounts of the relevant Member States.

2.24. Between the ESS and ESCB, the FDI Network is a long-standing collaboration (since 2009) aimed at the reconciliation of singular large transactions and positions in FDI. This involves mostly NCBs as compilers of FDI (with a few NSOs), and Eurostat providing the infrastructure for a confidential exchange of information between two institutions. This mechanism has recently (2019) been upgraded by a close collaboration between ECB and Eurostat as well as the compiling

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institutions to address the largest asymmetries occurring each quarter and undertakes to address them in the context of the asymmetry resolution meeting.

2.25. These last initiatives mentioned are based on the principle of exchanging not the complete set of information, but only those items that are necessary to address specific quality issues. The initiatives constitute progress; however, they are hampered because of the differences in the statistical legislation governing NSOs and NCBs, creating challenges with regard to efficiency and effectiveness of data sharing.

Challenges experienced

2.26. In general, both ESS and ESCB have legislation that enables the sharing of statistical information for statistical purposes. However, some countries have overriding national legislation, preventing them from sharing such statistical information. This in turn limits the way certain countries can participate in many of the initiatives involving data sharing.

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2.27. Also, the provisions in the ESS and ESCB legislation foresee indirect sharing, but an explicit permission needs to be sought. With ESS initiatives such as the GNI-MNE Pilot exercise, such a pilot study is implemented through NSOs. One of the NSOs would take up the co-ordination of the exercise and would request confidential data from other NSOs. These NSOs would then need to approach their respective NCBs for part of these data. The NCBs would then need to give explicit permission such that the NSO may share the information with the co-ordinating NSO in another country.

2.28. A final set of challenges relates to both timeliness and frequency. According to the archetypal distribution of labour, NSOs reference data tends to be structural, e.g. highly detailed and available with a low frequency. Reference data such as registers and sampling frames are normally updated annually. Reference data in the context of financial markets and financial sector statistics tends to be updated with a higher frequency. Practical issues may therefore emerge when matching shared data coming from the two systems.

2.2.2 Examples of national data exchange

Examples of data exchange between statistical authorities

2.29. We will first discuss a couple of current examples of regular data sharing between statistical authorities, often NSO and NCB.

Data sharing between NSO and NCB in the Republic of Armenia

2.30. The exchange of individual data has been one of the hottest topics discussed between the Central Bank of Armenia (CBA) and the Statistical Committee of the Republic of Armenia (Armstat). Initially, the CBA requested access to business register data to conduct their own surveys. Once the compilation of balance of payments was moved to the CBA, they sought additional individual data to analyse and improve the external accounts. However, there were both legislative restrictions and concerns that data sharing would compromise confidentiality principles and reduce trust towards the statistical system.

2.31. The previous Law on State Statistics stated that the data could be used only for the compilation of official statistics. The situation was a bit ambiguous, as the law did not consider other statistical institutions but Armstat as part of the statistical system. Thus, the CBA was not

considered to be compiling official statistics. On the other hand, data exchange between CBA and Armstat would be for statistical purposes. The fact that the CBA took over the responsibility of compiling the external accounts was the key argument in support of allowing data sharing between institutions.

2.32. At the first stage, the CBA and Armstat signed a data exchange agreement which allowed Armstat to share data with the CBA. It started with joint surveys, and later included also data on foreign investments. Decisions were still made for each case separately.

2.33. In 2017, Armstat initiated the drafting of a new Law on Official Statistics. It was based on the United Nations Generic Law on Official Statistics and was adopted on 21 March 2018. The new law recognizes other agencies, besides Armstat, as producers of official statistics and allows them to receive micro-data from Armstat for compiling official statistics, and vice versa. At the same time, all producers of official statistics were obliged to comply with strict statistical confidentiality.

2.34. Currently, data exchange between the CBA and Armstat is much broader than could have been predicted five years ago. However, the data provision is not automatic. Each data exchange request is discussed between the institutions and separate agreements are signed for each case. The main argument for data sharing is the improvement of the quality of official statistics.

[Data sharing to improve the measurement of manufacturing services for Germany](#)

2.35. To identify possible data gaps in the reporting of manufacturing services in foreign trade statistics and balance of payments, the Federal Statistical Office of Germany (Destatis) and the Deutsche Bundesbank launched a joint project in 2018 to link micro-data to cross-check the reporting population.

2.36. The project was challenged by the fact that the exchange of micro-data between members of the ESS and the ESCB was not symmetrically regulated. In the case of balance of payments, Article 8a of Council Regulation (EC) No 2533/98 concerning the collection of statistical information by the ECB allows the transmission of micro-data to Destatis. In contrast, the transmission of confidential information from Destatis to the Deutsche Bundesbank lacks a corresponding legal basis. Although article 21 of EC Regulation No 223/2009 allows the transmission of confidential data between an ESS authority that collected the data and an ESCB member, it further states that the act on specific statistics should allow data transmission. As the current ESS regulation regarding foreign trade statistics does not foresee such data exchange, the national law which does not allow such an exchange will apply.

2.37. This fact has several implications for the joint project. First, the linking of micro-data to reconcile the reporting population from both statistics could only be conducted within the foreign trade statistics division. Secondly, the project focused on major companies which report manufacturing service fees to Deutsche Bundesbank. Consequently, data gaps or false reporting could only be identified for foreign trade statistics. Thirdly, a secondment from the Deutsche Bundesbank to Destatis was necessary to unite experts in the analysis of balance of payments and foreign trade statistics data. Finally, information on companies that report data to balance of payments statistics but whose reports are incorrect, cannot be retransmitted to balance of payments in order to initiate the necessary corrections.

2.38. The implementation activities comprised two steps: First, the reporting units for each program were matched to find the common units that reported manufacturing services

transactions to both programs. This analysis reduced the sample to 43 companies involved in inward processing and 63 companies involved in outward processing within EU partner countries (declarations to Intrastat). The second step concentrated on finding technical, methodological or qualitative reasons for the differences in reported values. For this purpose, the number of companies was reduced to 20 companies operating in each direction i.e., inward and outward processing.

2.39. Crucial for this project was the feasibility to exchange micro-data on manufacturing services between both institutions. Since the legal situation in Germany only allows the provision of balance of payments data to foreign trade statistics and given the short timeframe for the extensive analysis at the company level, a full-edged analysis of the reporting population was difficult. Still, it was shown that all the top reporters in the balance of payments (inward and outward processing) were included in the foreign trade statistics reporting population. The comparison of both datasets enabled the identification of those companies with which the foreign trade statistics division needed to get in touch in order to understand the deviations occurring in both statistics and provide guidance on proper foreign trade statistics declarations. The quality of foreign trade statistics data, in terms of reported transaction codes, could be enhanced considerably.

2.40. The investigation revealed two major causes for differences in the reporting population and values. First, the reporting population is not identical. While in balance of payments, the resident company providing or contracting the manufacturing service is the reporting agent, in foreign trade statistics it is the non-resident trader who must be registered for value added taxation in the country where the service is provided in cases where the goods are not returning to the country of the principal. Secondly, both resident traders as well as non-resident traders (business registered for value added taxation) used incorrect transaction codes for purchases/sales instead of manufacturing services ([processing](#)). [Incorrect transaction codes will result in a double counting of processing transactions in the balance of payments data. Another important finding was that there are different definitions and different obligations for enterprises to report transactions between the two statistics. Hence, differences between foreign trade data and balance of payments data might be perfectly plausible and correct, depending on the specific processing transaction. The project led to a deeper understanding of processing transactions.](#)

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2.41. Given the encouraging results for foreign trade statistics, it is expected that an exchange of micro-data from foreign trade statistics to balance of payments might exert similar positive effects, since in cases where misreporting in balance of payments was identified, the legal framework prevented the use of these findings at a company level. However, during the analysis there was no evidence, so far, of any under-coverage of the reporting population in balance of payments. [Additionally, systematic data exchange between balance of payments and foreign trade statistics would be very helpful in order to detect data gaps and identify the most important enterprises in the field of processing.](#)

2.42. One of the lessons learned from the joint project was the extension of the Intra-Community trade statistics General Guide 2018¹⁷, which gives detailed instructions to the providers of statistical information on reporting procedures and issues. Since January 2019, a section within the Intra-Community trade statistics General Guide 2018 is dedicated to the

¹⁷ www.idev.destatis.de/idev/doc/intra_en/doc/IntraCommunity.pdf

description of non-resident contracting companies registering for value added tax (VAT) and contracting manufacturing services. It explains the reporting obligations and especially points out the correct codes for the declaration of the nature of transaction.

Bank of Indonesia's experience in data sharing

2.43. Promoting the sharing and accessibility of data, information and statistics produced by the Bank of Indonesia including sharing statistics that are more granular is required by several regulations of the Board Governors of the Bank of Indonesia. Given this background, the Bank of Indonesia has implemented several ways to securely share data to improve efficiencies and the quality of statistics.

2.44. For instance, in order to minimize the burden on financial sector reporters, the Bank of Indonesia, Financial Services Authority, and Deposit Insurance Corporation have set up a MOU allowing banks to report only to one authority. Major bank reports flow to the Bank of Indonesia's information system, and are then shared to other financial authorities according to their mandate and needs. Non-bank financial data are collected by Financial Services Authority and shared with the Bank of Indonesia.

2.45. Another example is the data on exports and imports collected by Custom Offices and saved to a joint portal accessible by the Bank of Indonesia, Custom Offices and Statistics Indonesia. This sharing arrangement is stipulated in a MOU among the three agencies.

2.46. Further, the Bank of Indonesia promotes the use of common statistical identifiers at national and international levels to allow better mapping, linking and management of data. At the international level, the common identifiers, such as, International Securities Identification Number (ISIN)¹⁸, have been implemented by most national entities. In the submission to the international organizations, such as the Bank of International Settlements (BIS), OECD, IMF, World Bank and the Asian Development Bank, an open data policy is also implemented by the Bank of Indonesia as long as the nature of data needs meets the statistical confidentiality requirements.

National Statistical System in Uruguay

2.47. In 1994, the National Statistical System of Uruguay was created by law. The National Institute of Statistics oversees the system but the economic statistics area of the Central Bank of Uruguay (BCU) also belongs to it. This facilitates the cooperation between institutions in data sharing and statistical production.

2.48. For example, in 2012, the economic statistics area of the BCU led a strategic initiative to analyse the success in meeting international statistical standards. As a result, the need to establish the Economic Activity Annual Survey (EAAE) arose. The survey is conducted by the National Institute of Statistics and is a crucial input for the compilation of national accounts in BCU. The BCU has a significant role in the development of the questionnaire and information system to carry out the survey.

2.49. A MOU was signed between the National Institute of Statistics and the BCU to jointly develop and use the information system. The two institutions have been using this system for the

¹⁸ The ISIN Organization provides management services related to International Securities Identification Numbers (ISIN). ISINs uniquely identify a security - its structure is defined in ISO 6166. Securities for which ISINs are issued include bonds, commercial paper, equities and warrants. The ISIN code is a 12-character alpha-numerical code.

EAAE since 2013. In practice, the National Institute of Statistics makes the (validated) micro-data available daily on the BCU's platform.

2.50. This arrangement allows the BCU to use micro-data more efficiently and facilitates the interaction with the INE when this information is used for the compilation of national accounts. This is possible thanks to clearly defined legislation that allows data exchange for statistical purposes in the National Statistical System of Uruguay.

[Interoperability for digital governance framework in Colombia.](#)

[2.51. The interoperability for digital governance framework in Colombia¹⁹ aims to contribute to the quality of digital services by minimizing citizens' steps and burden when visiting different public offices to obtain the necessary information and exercise citizen rights and obligations. Interoperability strengthens the vision of a unified state by providing a greater capacity to communicate and provide public digital services to improve the citizens' quality of life.](#)

[2.52. The development work in Colombia benefitted from the experience gained in the European Interoperability Framework²⁰ and its implementation for instance in Finland and Estonia. In the region, Uruguay provided an example of previous work on the issue.](#)

[2.53. The interoperability for digital governance framework guides the state entities in developing their capacity for information exchange, regardless of their restrictions or size. For this, information is exchanged in four domains. For the better adoption and implementation of this framework, a maturity model was developed, which helps the entities to identify their state of development for each single domain. Finally, guidelines were developed to provide a set of recommendations that will help implement the vision of interoperability. It contains suggested actions and defines enablers to guarantee the effective exchange of information.](#)

Decentralized statistical system of the United States

2.54. The United States has a decentralized statistical system, spanning 125 agencies spread across the government, all of which are engaged, to some degree, in collecting data and producing statistics. A substantial portion of the country's official statistics is produced by 13 principal federal statistical agencies, including the Bureau of Economic Analysis (BEA), the Census Bureau, and the Bureau of Labor Statistics (BLS). While each agency formulates its own budget and initiatives, the Office of Management and Budget (OMB) coordinates statistical agencies activity, approves data collection activities, and makes ultimate decisions about the allocation of resources within and across agencies.

2.55. Federal statistical agencies operate under separate laws and have separate authorities for collecting information and producing statistics. The Confidential Information Protection and Statistical Efficiency Act (CIPSEA) of 2002 establishes uniform confidentiality protections for

¹⁹ Further information in Spanish available at:

http://lenguaje.mintic.gov.co/sites/default/files/archivos/marco_de_interoperabilidad_para_gobierno_digital.pdf

²⁰ The framework gives specific guidance on how to set up interoperable digital public services. It offers public administrations 47 concrete recommendations on how to improve governance of their interoperability activities, establish cross-organizational relationships, streamline processes supporting end-to-end digital services, and ensure that both existing and new legislation do not compromise interoperability efforts. Further information available at: https://ec.europa.eu/isa2/eif_en

information collected for statistical purposes, though tax data collected by the Internal Revenue Service are protected under a separate federal statute.

2.56. Because of the decentralized nature of the statistical system and each agency's legal requirements to protect the confidentiality of respondents' data, data sharing across agencies is limited. Under CIPSEA, some sharing of economic data is permitted between BEA, BLS, and the Census Bureau for statistical purposes. Sharing of data across agencies provides several benefits, including better estimates of aggregated macroeconomic statistics such as gross domestic product, reduced respondent burden by eliminating duplication of data collection across federal government surveys, and improved validation of survey data using administrative data.

2.57. Sharing of data also allows for richer and more valuable datasets by combining data collected by multiple agencies. In order to study the history and effects of globalization, the BEA has linked its data on the activities of US affiliates of foreign MNEs with datasets collected by other US statistical agencies for many years. A link between BEA's enterprise level data and the Census Bureau's establishment level data from the Economic Census has been published since 1987, allowing for much more detail on foreign-owned firms by industry than can be collected on BEA surveys.

2.58. A recent project linked BEA data to two BLS datasets: (1) the Quarterly Census of Employment and Wages, administrative data covering 95 percent of US civilian wage and salary employment, and (2) the Occupational Employment Statistics, a survey-based dataset with detail on employment and wages for approximately 800 occupations. The linked BEA-BLS dataset provides local area detail about foreign-owned firms, their employment and wages, and the occupations of workers in those firms for calendar year 2012. Previously, official US statistics on the activities of these foreign-owned US businesses were only available at the national level, with data items for a few activities available at the state level. This combined BEA-BLS dataset responds to data user interest in local-area statistics on the impacts of FDI for use in economic development, business decisions, and academic research, without increasing burden on respondents.

2.59. These links between BEA, BLS and Census Bureau data require substantial resources of personnel and time due to the difficulty of matching companies between datasets without a common business register. While a common identifier, the Employer Identification Number (EIN), does exist, its primary purpose is administrative and there are challenges with using it to link micro-data. Creating initial detailed concordances that can be updated annually for companies entering and exiting, as well as introducing more common identifiers, may allow for timelier and more efficient, and less costly, production of these detailed linked datasets. Data linking has already produced information that would not otherwise have been available without increasing public burden and could be used to produce other new datasets or to improve early estimates of existing data.

Other examples of national data reuse-use of secondary data sources

2.60. Next, we will discuss a couple of other examples of national data reuse for statistical production.

Reuse of government and private data for official statistics in Statistics Finland

2.61. Approximately 95 per cent of Statistics Finland's data reserves consist of administrative data. The NSO started a centralized collection of administrative data in 2013. Currently, 65 per cent of all administrative data comes via the centralized system. For 2015, around 150 administrative datasets were received, some of them monthly. As a result, the centralized system receives up to 450 batches of data per year. There are 50 main data providers, of which 10 are private data holders. The number of private data providers is growing, and efforts are in place to explore their usefulness for official statistics.

2.62. Good and close cooperation with data holders is paramount for effective use of their data. Statistics Finland has a contact person for each institution and dataset. In addition, meetings with register authorities at the Head of institution level are held annually to discuss key issues and progress of cooperation.

2.63. The cooperation has been beneficial and has facilitated proactive work when changes in administrative data sources are anticipated. Major changes in income tax data took place in 2006 and in timeliness of value added tax data in 2011. In both cases, the statistics production needed to be adjusted. This involved intensive cooperation with the tax administration, which resulted in no breaks in statistical production when these changes took place.

2.64. On the other hand, there are two very recent cases, when statistical production was interrupted. The data on building and dwelling production was interrupted for five months started in January 2015 due to changes in the building register data maintained by the Population Register Centre. In 2019 the production of monthly statistics on wage and salary indices was terminated for four months when the new income register was launched. The income register is one of the key digital society projects with the aim of building a national online database which contains comprehensive information on individuals' wages, pensions and benefits. Active communication was vital to minimize the impact on the users. These cases demonstrate that increased dependency on administrative data comes with challenges too.

2.65. Other challenges relate to the quality of the data used in the statistics production. The quality of secondary datasets is optimized for their primary use and not for statistical purposes. In these cases, editing strategies have to be developed to treat such datasets.

2.66. Another challenge is that the timeliness of these data sources depends on the data providers and not on the NSO. It may not always meet the needs of statistics production. To overcome the timeliness issues, now-casting and imputation methods have to be applied.

2.67. Major benefits or drivers for using secondary datasets in statistics production are the decreased response burden as a result of reusing data already collected, improved efficiency of statistical production, better coverage of the target population and expanding the types of data sources available for statistical production. There is strong political will to increase efficiency in public administration and to decrease the administrative burden on businesses. One solution is expanding the use of secondary data.

2.68. More information can be found in the Handbook on Use of Registers and Administrative Data Sources for Statistical Purposes²¹.

²¹ www.stat.fi/tup/julkaisut/kasikirjoja_45_en.html

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The Mexican Automotive Industry Association case

2.69. The Administrative Record of the Light Vehicle Automotive Industry provides a good example of communication and data sharing among private enterprises and a NSO. The representative of the enterprises, the Mexican Automotive Industry Association (AMIA), approached the National Institute of Statistics and Geography (INEGI) requesting it to collect administrative data from enterprises and maintain and disseminate the resulting aggregate dataset. While these administrative data are not subject to any statistical treatment, the micro data are available for use in compiling national statistics.

2.70. There were certain critical aspects to consider and communicate. The data are very relevant for national accounts as the automotive industry is one of the largest contributors to Mexican GDP. In addition, all the firms involved are part of different MNEs. On the other hand, aspects related to the legal framework needed to be carefully considered.

2.71. A MOU was signed with every enterprise involved covering the handling of secure flows and storing of confidential data. Further, to motivate the timely data provision, the MOU states that if one of the enterprises does not provide information for three consecutive months, the information will not be compiled and published. The MOU also allows including any new enterprise in the automotive industry to be added, permitting comprehensive national coverage.

2.72. INEGI organized training workshops for the data providers, focusing on the data delivery and use, as well as on methodological and technical issues. The aim was to clarify any questions the data providers may have. Good communication was also established directly with each firms' top-management.

2.73. In addition, INEGI developed a high-security information system for capturing and sharing the data in an effective way, a glossary of terms; as well as all the documentation aligning the company data to international standards. It is noteworthy, that settling all the legal issues took more time than resolving technical issues.

2.3 Data sharing at international level

2.74. While national data sharing has evolved during the past decades into a mainstream activity, international exchange of economic data takes place less often. There is a clear need for national statisticians and international organizations to move towards more active and effective exchange of economic data at the international level to improve data quality and to gain in efficiency. Still the sharing of economic data should be considered carefully, and the efforts should have a clear purpose.

Examples of regular data exchange

2.75. Current examples of regular data sharing mainly relate to formal data exchange where data structures and data sharing processes are predefined.

Exchange of import data between Canada and the United States

2.76. Data sharing agreements between organizations are an effective way of reducing respondent burden and increasing efficiency. While the benefits are numerous, challenges in establishing and maintaining these agreements do exist, as the individual organizations are often constrained by their legislative, policy and operational requirements. Since 1990, Statistics

Canada and the United States Census Bureau have shared customs import transactions and used the data to compile official export statistics.

2.77. The exchange of customs import transactions between Canada and the United States is governed by a Memorandum of Understanding between four organizations: Statistics Canada, the Canadian Customs Authority, the United States Census Bureau and the United States Custom Authority.

2.78. The strength of the Memorandum of Understanding on the Exchange of Import Data between Canada and the United States lies in its simplicity. It is five pages in length and contains five articles and two annexes. The MOU includes the following articles: A Preamble; Article 1 - Information Sharing; Article 2 - Problem Resolution and Monitoring; Article 3 - Operational Modifications; Article 4 - Costs; Article 5 - Entry into Force, Modification and Termination.

2.79. The Preamble lays out the necessity for the data exchange and is a key component of the MOU. It clearly outlines the benefits of the data exchange and highlights how the benefits outweigh any of the associated risks.

2.80. Article 1 of the MOU identifies the information that will be exchanged between the parties to the MOU. It contains four sub-sections. The first sub-section deals with the data points to be exchanged, the second sub-section details the use of the data, the third sub-section identifies data development work that is required before the MOU can take effect, and the fourth sub-section outlines the delivery mechanism.

2.81. The second article of the MOU deals with problem resolution and monitoring. Similar to other parts of the agreement, this wording is purposely vague. The MOU calls for the establishment of a committee of four persons who will be responsible for the overall implementation and monitoring of the MOU. This committee is empowered to handle the day-to-day operations and any technical problems that may arise. This section does not outline how unresolved problems are to be dealt with. It is implied that if there are items that cannot be resolved at the committee level they will be brought forward to the signatories for resolution. It is important to note that this committee has been operating since 1990 and has yet to bring an unresolved issue forward to the signatories of the MOU.

2.82. From time to time the production systems, processes and timelines for any one of the participants may change - either on a permanent basis or on a temporary basis. Article 3 ensures that consultation takes place; with changes being implemented only after all parties have had sufficient time to adapt.

2.83. Article 4 is an acknowledgement that there are costs associated with the data exchange and that each party is responsible (and willing) to cover their own costs related to the exchange of information.

2.84. Finally, the fifth article of the MOU lays out the framework for modifying or terminating the agreement. This section notes that any change must be on a consensus basis and that termination is possible, but each party must be given at least one year to adapt their systems and processes to deal with any change.

2.85. The simplicity and the lasting nature of this agreement are clear evidence that when parties are willing, effective international sharing of information can be achieved and operationalized.

Balance of payments reconciliation in Canada

2.86. In principle, the bilateral balance of payments accounts of one country should mirror those of its trading partners. By comparing and validating one another's statistics, balance of payments compilers are in a position to reconcile the two sets of data. The ultimate objective of the reconciliation is to harmonize the official estimates published by two countries.

2.87. Canada and the United States, because of their extensive commercial ties, have been reconciling the Current Account of their balance of payments since 1970. The data on goods trade (import statistics) have been the object of a formal statistical exchange between Canada and the United States since January 1990 with each country using the other's import Customs documents to compile its goods export data. Once exchanged, the data are then adjusted to meet the balance of payments requirements of each country.

2.88. In addition to the formal data exchange, Canada and US balance of payments compilers have a face to face meeting once a year to discuss asymmetries in Canada-US balance of payments Statistics. As a matter of procedural practice, the starting point for reconciliation is the US statement. Northbound refers to Canadian payments/US receipts; Southbound to Canadian receipts/US payments. The balances are shown as net Northbound which are the reverse of the balances published in Canada's balance of payments.

2.89. Most accounts are reconciled at the lowest aggregate level possible. Trade in goods reconciliation is relatively straight forward owing to the data exchange and the fact that both countries' compile trade and goods from customs documentation. For other transactions, reconciliation is less straightforward as there are multiple sources used, such as surveys or banking information. For these accounts, which are largely derived from surveys or regulatory data, exchange of micro (record level) data is precluded for confidentiality reasons. The data are reconciled at an aggregate level and this has proved to be an invaluable means of explaining conceptual differences and identifying data problems and has triggered research and improvement in estimation techniques and data sources.

2.90. While a reconciliation of the data is undertaken, the counterpart information cannot be immediately used in official statistics as it would lead to inconsistencies with other domestic statistics. As such, although statistics are reconciled, the changes are not necessarily reflected immediately in the published data. Generally, the changes are incorporated during an annual or comprehensive revision process.

2.91. An official report is generally issued following the reconciliation exercise. The tables presented in the report normally follow the US format and include figures from previous reconciliations. The main results and benefits of the reconciliation process include an explanation of the differences between the Canadian and US balance of payments Statistics for Canadian and US balance of payments data users. In addition, the identification of problem areas often results in future statistical, methodological or conceptual adjustments and improvements that better align the balance of payments statistics of the two countries.

[Micro data exchange on MNEs using the EuroGroups Register and European IPT in the ESS](#)

2.92. [The EGR is a unique statistical business register, covering at supranational level MNEs in Europe. The EGR²² contains micro-data for more than 139 000 enterprise groups comprising of around 777 000 enterprises and 1 196 000 legal units - and the relationships between them - which are partially or fully active in the EU.](#)

2.93. In the annual EGR production cycle, NSOs [of EU and EFTA countries](#) deliver to EGR micro-data on legal units, relationships, enterprises and enterprise groups. The national data are complemented with commercial data. Based on these data, applying predefined preference rules and priority order, the EGR creates the global structures of the MNEs. The final picture on MNEs is distributed to statistical compilers in all EU Member States and EFTA countries. These coordinated enterprise structures are used as the frame for compiling statistics related to multinational groups at the national level [to increase consistency of ESS globalization statistics](#).

2.94. The EGR ensures that the national statistics compilers have a harmonized picture of the enterprise group structures and characteristics when producing national statistics related to globalization as well as to other national enterprise statistics, involving a consistent delineation of cross-border phenomena. This register stores the unit identifiers, the relationships within the group and some economic characteristics (such as turnover or employment). The EGR is one of the sources for national statistics compilers when producing statistics related to globalization [such as Foreign Affiliates Statistics and Foreign Direct Investment statistics](#). The EGR's coverage and data quality [have significantly improved during the past years](#). EU and EFTA statistical offices and Eurostat are continuously working [to make sure that](#) the EGR [responds to user needs](#).

2.95. [European Profiling is a voluntary collaborative annual activity carried out by teams of profilers working from different EU national statistical offices to improve the consistency and quality of business register information on MNEs, their statistical units and main characteristics across European countries. Starting from the EGR, some MNEs are selected to analyse their legal, operational and accounting structures, both at national and global level, in order to share a common view on their legal structure and economic activities. The process is initiated by the countries where the headquarters of the MNEs are located. European profiling can be done in a light format, just using publicly available information from the annual financial reports, or intensively with a direct meeting with the MNE representatives at the headquarters. After a first delineation of the legal structure of the groups and its global enterprises, based on the operating and geographical segments of activities, the information is shared to the countries where the affiliates are located. They can confirm, modify and validate the legal structure as well as all the economic data of their resident enterprises. The result aims to set out the statistical units best suited for identification and data collection. European profiling is carried out according to an agreed methodology for treating MNEs and their statistical units consistently in the ESS. A European Business Profiling Recommendations Manual²³ has been published in 2020.](#)

2.96. The European Parliament (EP) and the European Council Regulation 177/2008 regulates the data exchange processes and the actual data that [are required to](#) be exchanged between national registers and the EGR. The Commission Regulation 192/2009 and Commission Regulation

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²² EGR reference year 2018

²³ Available at: <https://ec.europa.eu/eurostat/documents/3859598/10479728/KS-GQ-20-002-EN-N.pdf/e13f0907-5e5a-7521-604a-287004d07043>

1097/2010 complement the basic EP/Council Regulation with more detailed provisions. The [EBS regulation \(EU\) 2019/2152](#), further [regulates](#) the data exchange in the area of business statistics and defines the EGR as the authoritative source (sole provider of data records) for the ESS as a register population for business statistics requiring the coordination of cross-border information related to MNEs and national business registers as the authoritative source for national statistical business register populations.

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ESS and ESCB foreign direct investment network

2.97. In 2009, Eurostat and ECB established the 'FDI Network' to address the problem of asymmetries in the area of FDI statistics. The FDI Network is a platform aimed at facilitating the secured exchange of data on individual (enterprise level) FDI transactions and positions (above a pre-defined threshold) between the national compilers of the EU Member States involved. The number and total value of transactions and positions exchanged via the FDI Network 2013-2018 are presented in Table 1. The activity of the network has been on a steady level except 2014, when many countries were introducing updated international manuals on balance of payments and national accounts.

Table 1

Transactions and positions exchanged in the FDI Network 2013-2018

	2013	2014	2015	2016	2017	2018
Transactions, N° of cases	143	81	83	157	122	166
Transactions Amounts, (EUR Billion)	478	336	808	1448	1078	1302
Positions, N° of cases	195	67	292	393	253	256
Positions, Amounts (EUR Billion)	1462	822	2490	2787	1565	1343

2.98. Eurostat provides the technical infrastructure and resources to facilitate the data exchange and reconciliation. In the FDI Network system, the initiator EU Member State sends via Eurostat's secure data transmission channel a reconciliation request to the counterpart Member State. The request is detailed with several transaction or position specific data fields, including the names of the enterprises involved and the euro amounts in question.

2.99. The FDI transactions are exchanged on an on-going basis as soon as they become available to the FDI compilers. The exchange of FDI positions takes place annually during a window between May-June with no limit on reference period. All EU Member States are currently part of the FDI Network. However, it is a voluntary action, not regulated by EU legislation.

2.100. Recently there have been some discussions on the possibility of expanding the network to countries outside the EU, which according to Eurostat is not possible in the near future due to resource constraints. Nevertheless, Eurostat is prepared to share the expertise gained in running the FDI Network for the possible setup of a similar network for non-EU countries.

2.101. Table 2 indicates how the data sharing within the FDI Network is helping developing methodology for statistics.

Table 2

Reasons expressed to justify a failure in 2017 reconciliation process on FDI positions

Reason	No of cases	Amounts (EUR Billion)
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Different valuation method	33	266
Entity not covered	18	92
Corresponding positions not found	6	29
Not classified as FDI	3	11
Other reasons	56	373
Total	116	771

Source: FDI Network activity report and results of reconciliation (2018)

Early Warning System

2.102. The EWS provides a platform for occasional data sharing among statistical authorities as needed. It aims to identify possible restructuring cases for important MNEs and to agree on a common recording, preferably before the changes materialize or need to be incorporated into business statistics, balance of payments or national accounts. The purpose is to ensure consistency of applied methods, statistical treatment and communication of statistics involving MNEs across EU Member States. The EWS provides a light procedure for voluntary cooperation between national statistical authorities and Eurostat, and between business statisticians and national accounts.

Single market statistics (SIMSTAT)

2.103. During the period April-September 2015 a broad exchange of micro-data on intra-EU trade in goods took place in the EU. Twenty Member States exchanged micro-data on their exports (at trader and product level) with the respective partner countries for the reference period January 2013 - August 2015. Special IT systems together with secure communication network were put in place for this pilot exercise. The purpose was to investigate the statistical re-usability and quality of the exchanged data as well as the technical feasibility of exchanging large volume datasets in a secure and timely manner on a monthly basis. The use of mirror data for compiling intra-EU import statistics could thus reduce the administrative burden on reporters on the intra-EU imports side.

2.104. The expected main benefits of a wide-scale exchange of micro-data on intra-EU [exports of goods within the MDE system, which becomes fully operational as of 2022](#), are the reduction of reporting burden on business, [a reduction of asymmetries and thus](#), an improvement of data quality. The main challenges, on the other hand, are dependence on data from other countries, timeliness and calendar of data exchange and ensuring data confidentiality and data security for the data coming from other countries. The ESS Committee recommended making the exchange of micro-data on intra-EU exports compulsory between EU Member States. The [new EBS regulation \(EU\) 2019/2152 introduces the](#) mandatory exchange of micro-data on intra-EU trade in goods among EU Member States. [However, the usage of mirror data is not mandatory for Member States. This may hinder the reduction of asymmetries and improvement of quality.](#)

Regular exchange of EU national accounts and balance of payments and international investment position data

2.105. In accordance with a MOU between Eurostat and the ECB, these institutions regularly exchange aggregated data in the area of national accounts, balance of payments and international investment position. The key variables of data exchange include the main EU aggregates, sectoral

Deleted: trade

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accounts and financial accounts, monthly and quarterly balance of payments data and international investment positions. The main benefit is to ensure consistency of data between quarterly and annual aggregates. It is of utmost importance that both Eurostat and the ECB publish consistent financial accounts and balance of payments data.

ESS and ESCB macroeconomic imbalances procedure

2.106. On the basis of another MOU between Eurostat and ECB on the quality assurance of statistics underlying the macroeconomic imbalances procedure (MIP), the Directorate General Statistics of the ECB provides Eurostat with quality assured datasets, at an aggregate level, accompanied by a brief metadata report explaining major events and revisions of the datasets. The data are compiled by different institutions in different countries (NSOs or NCBs). The exchange of data between Eurostat and the ECB helps to ensure the consistency and thereby improves the quality of quarterly and annual aggregates. The biggest challenge in this respect is the timeliness, as the time between the receipt of data and the validation is usually very short.

The Nordic circle of trust in statistics

2.107. The 2014 OECD Report on Micro-data Access²⁴ (Chapter 7. Case study: A circle of trust in Nordic countries) provides an interesting case where micro-data access has been provided for statistical purposes in the Scandinavian countries. The NSOs of Denmark, Norway and Sweden exchange identifiable personal data to facilitate the identification of commuters across borders for the joint production of regional workforce flows across the national borders. The chapter also describes legal considerations at the EU and national levels.

2.108. Another recent example of a positive experience related to the Nordic micro-data exchange was gained in 2018 as a part of the Nordic Mobility project. Nordic countries exchanged person-level data from national education registers. Statistics Finland got new information on around 31 000 post-comprehensive school educational qualifications and degrees, which were not included in the statistics, on the educational structure of the population in 2016. Around half of these educational qualifications and degrees consisted of the highest-level education for a person.

Exchange of information among EU national central credit registers

2.109. The MOU on the exchange of information among national central credit registers²⁵ (CCR) for the purpose of passing it on to reporting institutions may provide some useful ideas. The purpose of this MOU is to provide a framework that will allow reporting institutions to obtain a more complete overview of the indebtedness of a borrower by allowing information available in national CCRs to be supplemented with information from other CCRs operating in the EU. The data sharing on CCRs does not directly serve statistical purposes, but CCRs are also used for statistics. Also, the planned data exchange within AnaCredit system²⁶ could be studied. The examples do not only deal with MNEs, but they are very encouraging. The AnaCredit system and another example of the sharing of confidential information within the ESCB and beyond, the register of institutions and affiliates database (RIAD), are discussed in more detail in Annex 3.

²⁴ www.oecd.org/sdd/microdata-access-final-report-OECD-2014.pdf

²⁵ www.ecb.europa.eu/press/pr/date/2003/html/pr030310_2.en.html

²⁶ www.ecb.europa.eu/stats/money_credit_banking/anacredit/html/index.en.html

Central banks' access to and use of derivatives transaction data

2.110. In 2018, the Irving Fisher Committee on Central Bank Statistics (IFC) conducted a survey on central banks' access to and use of derivatives transaction data being reported to trade repositories. The survey was completed by 50 IFC member central banks.

2.111. One important consequence for financial statistics of the reforms undertaken after the financial crisis of 2007-2009 has been the collection of a very large amount of trade repository data shedding light on the global derivatives market. Yet a key issue for public authorities is to ensure that these data are effectively used, not least to guide policy actions. In this context, the objective of this IFC survey was to take stock of five key aspects of trade repository data:

- their policy interest
- their availability and accessibility for central banks
- remaining information gaps and quality issues
- their actual use
- policy initiatives for improvement

2.112. The results of the survey underscore the strong interest in trade repository data among the central bank community and the significant progress observed in recent years as regards its availability, accessibility and quality. Yet challenges remain, especially for smaller jurisdictions where data are scarcer and access for central banks is more difficult. Looking ahead, the survey emphasized the need for greater coordination at both domestic and international levels, particularly in order to enhance the quality of trade repository data and foster their use for policymaking.

Mandatory automatic exchange of information in the field of taxation

2.113. There are various draft regulations that the European Commission has submitted to the Council and Parliament as a response to the BEPS initiative, calling for transparency in MNEs' tax declarations in the EU Member States. One of these regulations is Directive 2016/881 of 25/5/2016 (to amend Directive 2011/16/EU), which foresees the 'mandatory automatic exchange of information in the field of taxation' regarding MNE's. See boxes 2 and 3 below.

[2.114. Access to country-by-country reporting data for statistical purposes would provide an important source of information for validating MNE data across countries. Some countries, for instance Canada²⁷ and Spain, have already managed to get access to those data. In addition, several countries are currently working on getting such access. An example of the work going on in Slovenia is presented in the next subsection.](#)

²⁷ An example of analysis based on indicators of profit shifting by MNEs operating in Canada available at: <https://www150.statcan.gc.ca/n1/pub/11-621-m/11-621-m2019002-eng.htm>

Box 2

BEPS Action 13 on country-by-country reporting

BEPS Action 13

Under BEPS Action 13 on country-by-country reporting, jurisdictions committed to request the largest MNEs (i.e. MNEs with more than EUR 750 million in consolidated revenues in the immediately preceding fiscal period) to provide the global allocation of their income, taxes and other indicators of the location of economic activity. Specifically, information to be compiled by MNEs includes: the amount of revenue reported, profit before income tax, income tax paid and accrued, the stated capital, accumulated earnings, number of employees and tangible assets, broken down by jurisdiction.

BEPS minimum standards and Action 13

The country-by-country reporting requirements form one of the four BEPS minimum standards.

- Action 5 - Countering harmful tax practices
- Action 6 - Preventing treaty abuse
- Action 13 - Transfer pricing documentation and country-by-country reporting
- Action 14 - Mutual agreement procedures and enhancing dispute resolution

Each of these minimum standards is subject to peer review in order to ensure timely and accurate implementation. All members of the Inclusive Framework on BEPS commit to implementing the Action 13 minimum standard on CbC reporting, and to participating in the peer review.

Action 13 requires tax administrations to collect the requested information from all large MNEs having their ultimate parent entity (UPE) resident in their country, and to share it with tax authorities in other jurisdictions where the relevant group has either resident entities or permanent establishments. Country-by-country reporting applies to fiscal years of MNEs commencing on or after 1 January 2016, and the first automatic exchanges of country-by-country reports took place in June 2018.

Peer reviews of Action 13 and update on implementation

Three annual reviews of Action 13 (starting in 2017, 2018 and 2019) are planned, according to a phased approach which gradually monitors i) the domestic legal and administrative framework, ii) the exchange of information framework, and iii) the confidentiality and appropriate use conditions.

The first annual peer review of Action 13 focused mainly on the domestic legal and administrative framework and reflects implementation as of January 2018. In general, jurisdictions that are members of the OECD Inclusive Framework on BEPS have made significant progress to ensure that: i) MNEs within the scope of Action 13 are required to file country-by-country reports; ii) a framework is in place for the automatic exchange of country-by-country reports; and iii) local filing is required only where permitted under Action 13. The review findings highlighted the following:

- a Over 60 jurisdictions that are members of the Inclusive Framework have introduced a country-by-country reporting obligation for MNEs for reporting fiscal years commencing in 2016, thus covering almost all MNEs expected to be in scope.
- b In total, around 75 Inclusive Framework jurisdictions have introduced, or taken steps to begin introduction of, a country-by-country reporting obligation, including those with a later commencement date.
- c Where legislation is in place, the implementation of CbC reporting has been found largely consistent with Action 13 provisions. Some jurisdictions received recommendations for improvement on certain specific aspects of their legislation.

Also, information updated in January 2019 indicates that more than 2000 relationships for the exchange of country-by-country reports have been activated. These include relationships:

- between the [76 jurisdictions that are signatories](#) to the CbC multilateral competent authority agreement (as of 24 January)
- between the 28 EU Member States under European Council Directive 2016/881/EU
- between jurisdictions that have bilateral qualifying competent agreements in effect (including bilateral arrangements between the US and over 35 jurisdictions).

See the [status of the implementation of CbC reporting by jurisdictions](#) as of 10 January 2019.

For an example of jurisdiction presenting information on CbC reporting, see: www.irs.gov/businesses/country-by-country-reporting-jurisdiction-status-table.

Box 3

BEPS Action 13 tools

Action 13 tools

The [BEPS Action 13 report](#) provides a template for the country-by-country report by MNEs.

The [Convention on Mutual Administrative Assistance in Tax Matters](#), by virtue of its Article 6, requires the Competent Authorities of the Parties to the Convention to mutually agree on the scope of the automatic exchange of information and the procedure to be complied with.

Based on the Convention, the [Multilateral Competent Authority Agreement on the Exchange of CbC reports](#) has been developed under BEPS. The purpose of this agreement is to propose rules and procedures as may be necessary for Competent Authorities of jurisdictions implementing BEPS Action 13 to automatically exchange CbC reports prepared by the Reporting Entity of a MNE. In addition, two further model competent authority agreements have been developed for exchanges of CbC reports, one for exchanges under Double Tax Conventions and one for exchanges under Tax Information Exchange Agreements.

In September 2017, the OECD updated its [standardized electronic format](#) for the exchange of CbC reports between jurisdictions - the CbC report (CbCR) XML Schema - as well as the related User Guide. The updated CbC XML Schema and User Guide allows MNEs to indicate cases of stateless entities and stateless income, as well as to specify the commercial name of the MNE. Furthermore, certain clarifications have been made, in particular with respect to the correction mechanisms.

A dedicated XML Schema and User Guide have also been developed to provide structured feedback on received CbC information. The [CbCR Status Message XML Schema](#) allows tax administrations to provide structured feedback to the sender on frequent errors encountered, with a view to improving overall data quality and receiving corrected information, where necessary

CbC reporting - Handbook on Effective Implementation : <http://www.oecd.org/ctp/beps/country-by-country-reporting-handbook-on-effective-implementation.pdf>

[Getting access to country-by-country reporting data – Slovenia’s experience](#)

[2.115. The Statistical Office of the Republic of Slovenia \(SURS\) has the right to collect data from all existing sources for statistical purposes. For many years, SURS has been receiving various types of tax information \(e.g. on value added tax, personal income tax, corporate income tax\) from the Financial Administration of the Republic of Slovenia \(FURS\). The legal basis for obtaining the data is provided by the National Statistics Act. In addition, there is an agreement between SURS and FURS, including technical protocols specifying details on data transmission.](#)

[2.116. In view of the increasing importance of statistical measurement of the activities of MNEs, in 2019, SURS contacted FURS with the requirement for data from the notice on reporting obligations in the country-by-country reporting. The notice contains limited number of non-monetary information on Slovene enterprises which are part of MNEs. It is expected to receive the data for the first time in the second half of 2020 covering year 2019. After the data are received, their usefulness for business statistics and national accounts statistics compilation will be evaluated.](#)

[2.117. In addition to the notice, there is also the country-by-country report with which MNEs submit to FURS data on revenues, taxes paid, capital, profit, employment, etc. The number of Slovene MNEs submitting the report is small \(less than 10\). SURS intends to obtain data from the report for statistical purposes, but negotiations are still in a very early stage.](#)

Data Gaps Initiative

2.118. International cooperation on macroeconomic statistics under the umbrella of the Inter-Agency Group on Macroeconomic Statistics (IAG) and the Data Gaps Initiative (DGI) has recently taken a further step in making selected macroeconomic indicators more coherent. One of the main features of the cooperation is the establishment of a clear distribution of responsibilities between international organizations. GDP, its main components and sectoral accounts data are transmitted by national data providers to international organizations. These data are subsequently shared among the international organizations concerned through common Statistical Data and Metadata eXchange (SDMX) protocols. Following national compilation, validation and transmission, data are further validated by an international organization chosen as primary validator. Data are then shared and finally published through the existing dissemination systems of all international organizations involved.

[International network for exchanging experience on statistical handling of granular data](#)

[2.119. The second phase of the G20 Data Gaps Initiative contains a new recommendation \(II.20\) promoting the exchange of \(granular\) data as well as metadata. To facilitate the implementation of the recommendation, a group of central banks established a network to help meet data users' and data compilers' demand for \(granular\) data sharing within the legal framework of the individual jurisdictions. The resulting International Network for Exchanging Experience on Statistical Handling of Granular Data²⁸ \(INEXDA\) is an international cooperative project of central banks, ECB, Eurostat and other international organizations and national statistical institutes, with the great support of the BIS, and with the overall aim to exchange experiences on the statistical handling of granular data for research purposes.](#)

North American regional supply and use tables

2.120. Canada, Mexico and the United States have exchanged data aggregates for building the (North American) regional supply and use tables and are planning to share more granular data for the extended regional supply and use tables.

2.121. The main benefits of this data exchange are the increased institutional capacity to deal with trade asymmetries and the ability to produce balanced trade statistics under a regional framework of Supply and Use Tables. In addition, the MOU lays the foundation for future work to develop indicators of Trade in Value Added and Regional Value Chains for the region. Finally, the output of this initiative will be used in other similar projects, like Asia-Pacific Economic Cooperation (APEC) Trade in Value Added (TiVA) database and OECD Inter-Country Input-Output (ICIO) database.

Examples of one-off data exchange

2.122. There are also examples of ad-hoc data exchanges between countries, where the level of data confidentiality varies (data sourced from public sources, semi-confidential data including data from the national statistical system and confidential data referring to data held by the national statistical system). For example, OECD and Eurostat have organized workshops for members to discuss bilateral asymmetries related to foreign trade statistics. Chapter VI presents guidance for this kind of small-scale data exchange by generalizing the internal guidance of

²⁸ <https://www.inexda.org/>

Statistics Finland on this type of data sharing, prepared in collaboration with their legal unit. Eurostat's Early Warning System (EWS) is also related to this type of data exchange - but without confidential data.

GNI-MNE Pilot exercise

2.123. Eurostat's GNI-MNE Pilot exercise was launched in February 2018 by the European Statistical System Committee (ESSC), including all Heads of NSOs of the EU Member States. The objective of this exercise was to achieve by the end of the GNI verification cycle, in December 2019, a reasonable understanding of the reliability of the recording of globalization issues in GNI data. Eurostat in close co-operation with NSOs and NCBs successfully carried out the exercise, and it was finalized as planned in December 2019. The conclusions, findings and actions for the future work are presented in the report on GNI-MNE Pilot exercise.

2.124. As part of this initiative, the ESSC agreed to share micro-data for this Pilot exercise on a trust-based approach based on Regulation 223/2009. Micro-data were only shared between EU Member States working on the same MNE Pilot in relation to the statistical validation process and therefore were not available to the public or to other international organizations. The Pilot exercise, as one important conclusion, recommended to develop a long-term solution for micro-data sharing in the future.

Exchange of micro-level FATS data in Nordic countries

2.125. Improving the quality of FATS (Foreign affiliate statistics) by the exchange of micro-data between Nordic countries is an interesting case of one-off data exchange. The NSOs of Norway and Finland negotiated a confidentiality agreement on the use of micro-level FATS data. Micro-data sharing turned out to be useful for improving the quality of national statistics. This exercise revealed both methodological differences to be discussed and practical problems related to data coverage in different countries. As a result of this project, a lot of new affiliates were identified which proves that by working together and sharing data the quality of statistics can be notably improved.

2.126. Table 3 indicates how the data sharing could help in maintaining up-to-date structures of MNEs. From the table it can be seen that both NSOs had better information on foreign owned domestic enterprises than foreign affiliates of domestic enterprises. Keeping up-to-date structures of MNEs is challenging and this exercise also revealed large cross-border asymmetries since only just over half of the units are identified by both NSOs.

- Deleted:** Gross National Income (
- Deleted:**)-
- Deleted:** aims at achieving,
- Deleted:** This will help identify the globalization measures necessary after the end of
- Deleted:** cycle. In addition, the two globalization recommendations by the European Court of Auditors need to be satisfied²⁹
- Deleted:** European Statistical System Committee (Heads of NSOs of the EU member states)
- Deleted:** A longer-term solution should be developed for the future. ...

Table 3

Overall results of Nordic comparisons on foreign affiliates statistics

What do published statistics tell us?	Affiliates in Finland	Affiliates in Norway
Outward foreign affiliates statistics (OFATS)	100	160
Inward foreign affiliates statistics (IFATS)	130	210
What do we know after comparing exchanged data?		
Enterprises in both OFATS and IFATS	60	130
Enterprises in OFATS only	40	30
Enterprises in IFATS only	70	80

Source: Improving the quality of Foreign Affiliates Statistics (FATS) by exchange of micro-data between Nordic countries (2013)

World Trade Organization's project to analyse bilateral trade asymmetries

2.127. The WTO carried out a project to analyse bilateral trade asymmetries between Costa Rica and its main trading partners. The project led to the development of methodology to reduce asymmetries observed between Costa Rica's reported merchandise trade statistics and the values reported by its trading partners, using mirror data. The project resulted in somewhat reduced asymmetries.

2.128. The highest overall annual asymmetry reduction on the export side was 12.5 per cent and on the import side 29.6 per cent. This exercise took place within the OECD project to develop symmetrical trade matrices for the construction of the global Input-Output tables underlying the OECD-WTO TIVA database.

Testing European Profiling in the United Kingdom

2.129. The testing of European Profiling demonstrated a number of potential improvements to the economic data collected at the national level in the United Kingdom (UK). For example, analysing data at a global level using annual accounts and data shared by other NSOs resulted in the identification of significant missing UK turnover. Of the 26 cases that the Office for National Statistics of the UK (ONS) profiled during this testing period, 19 were successful in terms of gaining agreement from all parties involved, i.e. the Global Enterprise Group (GEG)³⁰, national statistical users and partnering NSOs. For the majority of these, employment, turnover and the International Standard Industrial Classification (ISIC) variables were collected at the new enterprise level.

2.130. The UK's experience was that, once cooperation was established with the GEG, most had no issues regarding sharing the data securely with other NSOs in Europe. For some cases, the majority of this information was available in published accounts and therefore there were no resulting issues with the sensitivity of data. However, concerns about data sharing were raised in a few cases, especially in the Oil Industry, and whenever additional detailed data were requested from respondents compared to what had already been published by NSOs. The result of not

³⁰ Global Enterprise Group (GEG) is used instead of MNE in the Guidelines for Manual European Profiling: ec.europa.eu/eurostat/cros/system/files/essnet-esbrs1_del-wp3-a1.22a_guidelines-profiling.pdf

getting to an agreement with the groups and not having a legal framework in place was that some of the key European groups could not be profiled during this testing period.

2.131. Some GEGs which had agreed to co-operate, subsequently informed NSOs that data sharing was not a possibility. This is a concern if profiling is to be successful for the largest and most important GEGs. Although ONS has been visiting [enterprise](#) groups for many years, more intensive profiling highlighted the many benefits of meeting senior group accountants on a face to face basis to strengthen relationships. Through visiting the GEGs, ONS profilers learned a great deal about why they set up specific organizational structures. Some similarities have been identified in the way groups operating in specific industries are organized, i.e. the Oil and Gas and Chemical sectors. Positive feedback from the GEGs was received, acknowledging the potential benefits that European profiling could bring to them.

2.132. For some GEGs, there would be a decrease in burden, as the proposed structure aligns with their own financial accounts. This means faster survey completion times and fewer survey questionnaires to complete. Some GEGs welcomed the idea of a central contact point within the NSO and some liked the possibility of reporting all data to just one NSO. A few even invited ONS to tap into their own internal accounting systems to pick the required data directly (e.g. via an XBRL³¹ taxonomy).

2.133. The important question is what the reaction of large MNEs to the exchange of their data among the producers of official statistics will be. The results of the ESSnet on International Profiling provided some light to this question. Practical experience shows that obtaining the required information from MNEs is difficult in some countries due to the sensitivity of information. In some cases, the majority of information is available in published accounts and, therefore, there were no issues with sensitivity.

2.134. Challenges may appear if additional variables or data for different statistical units would be needed. Sometimes data for statistics are also needed before they are made publicly available. However, the ESSnet profiling example illustrates that businesses demonstrate a cooperative attitude once they are convinced that the statistical office is applying strict rules on confidentiality through signed agreements, and that data will be used for statistical purposes only.

2.135. In Mexico, for instance, the statistical office is required by law to inform the respondents about how their information will be secured. When it becomes necessary to extend this requirement to also cover international data sharing, it will also become necessary to have common rules for the global statistical system guaranteeing the confidentiality in production of official statistics.

[Comparing Canada's and China's bilateral trade data](#)

2.136. In 2016, Statistics Canada, Global Affairs Canada, the Ministry of Commerce of the People's Republic of China (MOFCOM) and later the General Administration of Customs of China agreed to form a joint working group on Trade Statistics Reconciliation. The objective of the working group was to explain and quantify the differences in the statistical trade data of the two countries and to carry out an in-depth analysis of the origins of these differences.

³¹ eXtensible Business Reporting Language (XBRL)

2.137. Statistics Canada and MOFCOM exchanged and compared data on bilateral trade in goods and services for reference years 2014 to 2016. The two organizations identified and discussed the various reasons for the asymmetries in their goods and services trade data.

2.138. Based on comparisons, the main difference or asymmetry in bilateral trade in goods between Canada and China comes from the eastbound trade - Canada's imports from China and China's exports to Canada. Statistics Canada reported that Canada imported USD 48.6 billion in Chinese goods in 2016, while MOFCOM reported USD 27.3 billion in exports to Canada. Thus, the asymmetry in the published data was USD 21.3 billion. There are many reasons for this difference, but the main contributor was indirect trade. In 2016, Canada imported USD 16.7 billion in Chinese goods from the United States, another USD 2.6 billion from Hong Kong, and the remaining USD 1.4 billion from all other countries. An additional USD 0.2 billion in goods shipments should be attributed to the reference year 2016 in Canada's data; this is the value of trade affected by shipment time lag. Of China's exports to Canada, USD 0.2 billion were re-exports of foreign-origin goods. After considering these measurable differences, the eastbound trade asymmetry that remains is reduced from USD 21.3 billion to USD 1.0 billion.

Table 4

Results of Trade Statistics Reconciliation

Canada imports from China	48.6
China exports to Canada	27.3
Published asymmetry	21.3
Canada imports of Chinese goods from US	-16.7
Canada imports of Chinese goods from Hong Kong	-2.6
Canada imports of Chinese goods from other countries	-1.4
Time lag	0.2
China re-exports of foreign goods	0.2
Reduced asymmetry	1.0

2.139. Measuring international trade in services is more difficult than trade in goods, as data sources, classifications, and methodologies used by countries to produce estimates often differ. For example, national authorities control goods that enter or leave the domestic economy, but this is generally not the case for services. In this context, Canada and China have undertaken discussions to compare their bilateral trade in services data with the objective of identifying the size and possible causes of differences between their published statistics.

2.140. In contrast to the trade in goods data comparison, the asymmetry in westbound services trade is much more significant than in eastbound trade. For westbound trade, China's imports from Canada were USD 25.9 billion in 2016, while Canada's exports to China were only USD 2.4 billion. While some differences were observed in transport services, the main source of discrepancy was travel services. China recorded imports of travel services from Canada of USD 23.7 billion in 2016. China's payments to Canada are approximately 15 times larger than Canada's corresponding receipts from China. The possible causes of the large asymmetry related to westbound travel services are difficult to identify. Both countries are using completely different sources and [compilation](#) methods to generate their travel estimates. China primarily uses International Transactions Reporting System, where data are generated from bank declarations. Canada uses survey data and also applies average spending to the number of foreign students in

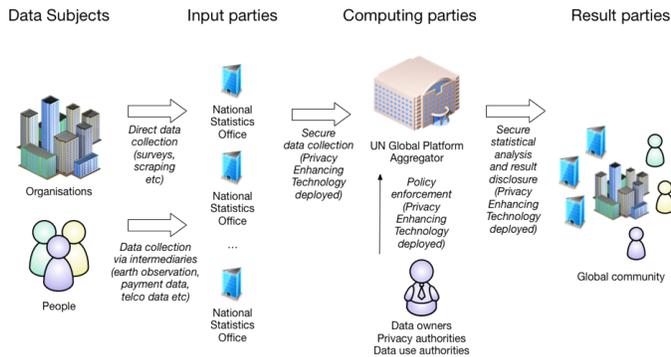
the case of education travel. Statistics Canada is in the process of revising its estimates of travel services, which should reduce some of the gap identified as part of this exercise. However, further work and research is required to more precisely identify causes of differences in this area of the trade in services reconciliation between Canada and China.

2.4 Shared computation pilots - UN Global Platform

2.141. There are also recent innovations that are moving towards shared computation and the sharing of results of computations instead of data sharing. This helps to preserve privacy and protect sensitive data while they are being processed, shared and exchanged. [The use of new data exchange technologies can be one of the elements that ease the resistance towards data sharing.](#) UN Global Platform provides a digital platform enabling international collaboration in shared computation. [All statistical institutes under the UN Statistical Commission are core members of the UN Global Platform. Institutes from other stakeholder communities can make use of the platform through association with core members.](#) To illustrate the use of privacy-preserving computation in the context of statistics, consider a setting where confidential data are used as shown in the Figure 2. Multiple NSOs collaborate under the coordination of the United Nations. Individuals and organizations that provide raw data are considered Data Subjects, because the data of interest in this setting describes them. After collecting data and conducting statistical analysis locally, NSOs from individual countries act as Input Parties in this setting to share their results and methods with each other on the UN Global Platform. Thus, in this setting, the Global Platform takes on the role of the Computing Party. Also, in this setting, the Result Parties may be very diverse: people, organizations, and governments across the world may receive and benefit from reports produced by the Global Platform.

Figure 2

Privacy-preserving statistics workflow for the UN Global Platform



2.142. Methods that enable the protection of the privacy of sensitive data while they are being processed are needed to allay the concerns of the providers of these data. In the literature, privacy enhancing techniques include:

- Secure multiparty computation (MPC but also abbreviated as SMC)
- (Fully) homomorphic encryption (HE or FHE)
- Trusted execution environments (TEE)
- Differential privacy (DP)

2.143. Secure Multiparty Computation (also known as secure computation, multiparty computation, or privacy-preserving computation), as described above, is a subfield of cryptography. MPC deals with the problem of jointly computing an agreed-upon function among a set of (possibly mutually distrusting) parties, while preventing any participant from learning anything about the inputs provided by other parties; and while (to the extent possible) guaranteeing that the correct output is achieved.

2.144. Homomorphic encryption refers to a family of encryption schemes with a special algebraic structure that allows computations to be performed directly on encrypted data without requiring a decryption key. Encryption schemes that support one single type of arithmetic operation (addition or multiplication) have been known since the 1970's and are often said to be singly or partially homomorphic.

2.145. Trusted execution environments provide secure computation capability through a combination of special-purpose hardware in modern processors and software built to use those hardware features. In general, the special-purpose hardware provides a mechanism by which a process can run on a processor without its memory or execution state being visible to any other process on the processor, even the operating system or other privileged code. Thus, the TEE approach provides Input Privacy, which basically means that the Computing Party cannot access or derive any input value provided by Input Parties, nor access intermediate values or statistical results from the information available to that stakeholder during processing (unless the value has been specifically selected for disclosure).

2.146. Differential privacy provides a statistical notion of output privacy. Its goal is to quantify and limit the amount of information about individual records in a database that is disclosed by releasing the result of an aggregate computation on that database. DP was first proposed in 2006 by Dwork et al³². Historically, DP is related to the privacy models classically studied in the literature on statistical disclosure control and statistical databases. DP provides a more general notion of privacy than other specialized definitions like k-anonymity in the context of anonymization.

2.147. Other techniques that have been introduced by researchers include the design and implementation of a protocol suite for conducting statistical studies in the privacy-preserving setting using the secure multiparty computation platform SHAREMIND as the underlying framework. SHAREMIND is a generalized platform which does not need too much time to be spent on designing a very problem-specific programme.

2.148. The UN Global Platform currently contains several alpha services such as access to Alibaba Cloud, Amazon Web Services, Google Cloud Platform and Microsoft's Azure cloud, combined with

³² Dwork, Cynthia, Frank McSherry, Kobbi Nissim, and Adam Smith. Calibrating noise to sensitivity in private data analysis. In Theory of cryptography conference , pp. 265-284. Springer, Berlin, Heidelberg, 2006.

a number of other services for code collaboration, methods publishing and Earth observation and location data analysis. Users of the UN Global Platform can search, build, deploy and consume algorithms and statistical methods and can further develop methods using the main programming languages used by the community (R, Python, Java and Scala). The UN Global Platform can also host machine learning models and publish application programming interface (API) endpoints to these. Partners on the UN Global Platform from around the world can make use of the algorithms from their own environments by calling the APIs. They will also have access to several global datasets, such as the Automatic Dependent Surveillance - Broadcast (ADS-B) flight data dating back to July 2016, Automatic Identification System (AIS) shipping data and high-resolution commercial satellite imagery.

2.5 Summary analysis of studied data exchange cases

2.149. Table 5 summarizes [some of](#) the data exchange cases [presented above](#) with respect to two essential aspects: data sensitivity (aggregate level data or confidential micro-data) and purpose of use (for one-off study or for regular compilation of statistics).

Table 5

Summary of different types of data sharing examples

	One-off data exchange	Regular data exchange
Aggregate level data	<ul style="list-style-type: none"> - WTO trade asymmetries (case Costa Rica) - IMF workshops on FDI asymmetries 	<ul style="list-style-type: none"> - Eurostat and ECB data exchange on national accounts, balance of payments and MIP data - Inter-Agency Group on Macroeconomic Statistics - EWS (occasional)
Confidential micro-data	<ul style="list-style-type: none"> - Pilot exchange of micro-data on intra-EU trade (SIMSTAT) - Nordic FATS statistics - Testing of European Profiling (UK) - Micro-data linking (e.g. linking data on foreign-owned US companies to domestic employment data) - EU GNI-MNE Pilot exercice 	<ul style="list-style-type: none"> - Exchange of Import Data between Canada and the United States - EGR - FDI Network - Intra-EU trade in goods statistics (MDE) from 2022 - National central credit registers - OECD report on micro-data access - BEPS CbC-reporting (tax authorities)

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2.150. Table 6 summarizes the key conditions which enabled data exchange for different cases. One-off aggregate level data exchange seems quite easy to organize if there is a common interest between the parties. Regular data exchange of confidential micro-data in turn requires legislation and/or substantive administrative and technical work and trust between the parties.

Table 6

Key prerequisites for successful data exchange

Type of data exchange	Key prerequisites for successful data exchange
One-off aggregate level data exchange	<ul style="list-style-type: none"> - Understanding the importance of making mirror comparisons to improve quality of national/international statistics - Availability of comparable data and metadata - Resources dedicated for this type of work
Regular aggregate level data exchange	<p>a) ...prerequisites listed above and</p> <ul style="list-style-type: none"> - Identified need for regular data exchange - Review and possible adjustment of the production timetable to be able to analyse and use the obtained data - Willingness to compromises and to absorb costs - Mutual agreement between participants - Pre-specified data structure - Automatic processes to manage mirror data
One-off Confidential micro-data exchange	<p>b) ... prerequisites listed above and</p> <ul style="list-style-type: none"> - Trust between participants - Statistical law allowing sharing micro-data for statistical purposes - Agreement on use and storage of micro-data - Secured process for exchange
Regular confidential micro-data exchange	<p>c) ... prerequisites listed above and</p> <ul style="list-style-type: none"> - Change of culture on how to produce statistics - Common or comparable legislation and risk management - Secured and standardized process for data exchange - Standardized process for disclosure control on the dissemination level

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III. OVERCOMING OBSTACLES TO ENABLE INCREASED DATA SHARING

3.1 Introduction

3.1. Statistical offices are professional organizations that rely in their operations on internationally agreed statistical standards and recommendations, in particular the United Nations Fundamental Principles of Official Statistics and the related European statistics Code of Practice [and the Recommendation of the OECD Council on Good Statistical Practice](#), as relevant. When considering data sharing, the most important of these Fundamental Principles are the following:

- **Principle 2.** To retain trust in official statistics, the statistical agencies need to decide according to strictly professional considerations, including scientific principles and professional ethics, on the methods and procedures for the collection, processing, storage and presentation of statistical data;
- **Principle 5.** Data for statistical purposes may be drawn from all types of sources, be they statistical surveys or administrative records. Statistical agencies are to choose the source with regard to quality, timeliness, costs and the burden on respondents;
- **Principle 6.** Individual data collected by statistical agencies for statistical compilation, whether they refer to natural or legal persons, are to be strictly confidential and used exclusively for statistical purposes; and
- **Principle 10.** Bilateral and multilateral cooperation in statistics contributes to the improvement of systems of official statistics in all countries.

3.2. Principles 5 and 10 can be considered enablers of data exchange. Principle 5 gives NSOs a general mandate to use data collected by other organizations. Principle 10, in turn, urges NSOs to collaborate with each other to improve statistics globally.

3.3. Principles 2 and 6, however, pose some challenges to be considered carefully in the context of data exchange between statistical organizations. The reasons are the following:

- When using secondary data, NSOs do not have control of the methods and procedures, when collecting and processing of data is carried out by another organization. However, the NSO shall remain professionally independent in selecting the data sources to be used (principle 5). This also applies to the choice between using administrative data or collecting data directly;
- Currently methodologies for the use of secondary data are far less developed than the methods for compiling statistics based on direct data collection;
- Confidentiality is a key concern when engaging in data exchange. While data collected for statistical purposes are to be strictly confidential and to be used exclusively for statistical purposes, some statistical laws allow the use of statistical data for scientific research when authorized by the NSO. In the EU, the European Statistical Law enables the exchange of individual data among NSOs and Central Banks in the EU, while some EU countries do not allow it in their national legislation;

- Statistical legislation also typically treats data acquired by statistical offices from administrative data sources as confidential when acquired for statistical purposes. The same administrative data may not be confidential in the legal settings governing the activities of the public organization that collects them; and
- Confidentiality of business information is a great concern to respondents. Good communication and close collaboration with respondents when sharing data for statistical purposes is, therefore, crucial.

3.2 Benefits and challenges of data sharing

3.4. According to the 2016 survey of statistical practices in CES member states, national legislation that regulates data sharing exists in 90 per cent of responding countries and a common business identifier is used in more than three out of four countries. However, this does not mean that data sharing for statistical purposes is necessarily well-regulated or enabled. In some countries, data flows from government agencies to statistical authorities or among statistical authorities is authorized and defined in statistical work programmes. Data sharing agreements between administrative data providers and producers of official statistics are also very common.

3.5. Almost 90 per cent of surveyed countries reported that improved consistency is the main benefit of data sharing and over 80 per cent reported better data quality as a result of data sharing, including accuracy, relevance and timeliness. Efficiency gains and reduced response burden were pointed out by two thirds. Data sharing may also increase the coverage of the target population and enable a more detailed analysis and understanding of business activities. The increased collaboration and reuse of data helps to promote common standards and classifications.

3.6. The main difficulties linked to data sharing include the heavy procedures to ensure confidentiality in the face of increased risks of disclosing confidential data (mentioned by two thirds of respondents), limiting legal frameworks (mentioned by 60 per cent) and insufficient technological readiness (in almost half of the offices). The possible decrease in respondent trust is considered a key risk by 15 per cent of offices. Other major issues mentioned included:

- Increased dependency on other NSOs or administrative data providers
- Problems with data linking in international data sharing
- Lack of resources dedicated to data sharing
- When using administrative data, the legal unit is not always the same as the statistical unit for compiling statistics
- Quality issues especially coverage
- Timeliness of external data sources
- High investment costs

3.7. According to the respondents, no serious risks have materialized due to data flows from government agencies to statistical authorities or in data sharing among statistical authorities. Eleven offices reported that data exchange increased criticism about the quality of data and ten offices reported that data were misinterpreted. Very critical risks relating to the reputation of the

statistical office or respondent trust were less frequent (two observations on each). An adequate communication on the scope of data sharing could help avoid this.

3.8. The respondents assessed the capacity of their office to carry out data exchange very positively. Only a few critical views were expressed. The ability of staff to analyse data received the highest ranking as 85 per cent of offices assessed the capacity as medium or high. The skills of staff needed for data mining and linking were not so highly ranked, as 75 per cent of responding offices assessed these skills as being at the medium or high level. The offices noted that further training will be needed to develop the skill set needed for data sharing, linking and analysis.

3.9. International organizations play a key role in facilitating the sharing of best practices and provision of fora for discussions. Their contribution is important for the development of guidance and further standardization of statistical definitions, data formats and technologies. According to country responses, international activities that would facilitate data sharing include developing methodologies to ensure confidentiality (65 per cent), sharing technological solutions and tools for data exchange (63 per cent) and developing general guidance for data sharing (56 per cent).

3.3 Main aspects of data sharing and the related obstacles and enablers

3.10. The following tables address the key obstacles and enablers of the exchange and sharing of economic data in more detail. They present the key obstacles and enablers of data sharing, suggest some resources and tools and consider the expected benefits of data sharing. The resources and tools provide solutions for dealing with the obstacles of data sharing to enable national and international data sharing.

3.11. The main aspects to be considered when engaging in data sharing are:

- Legal infrastructure
- Resources
- Knowledge, skills and methods
- Economic globalization and MNEs
- Data linking
- New processes
- Technical issues
- Cultural issues

3.12. Each of the main aspects are discussed in more detail below.

3.3.1 Legal infrastructure

3.13. [Safeguarding statistical confidentiality is essential to maintaining trust and ensuring the sustainability of official statistics. Appropriately applied statistical confidentiality does not build an obstacle for data sharing but is rather an enabler ensuring respondents that their data are safe, and they can provide information for official statistics without any fear. The key element to building trust among MNEs and other stakeholders of official statistics is alignment with statistical legislation and keeping that legislation up-to-date. Such legislation should allow the sharing of](#)

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[data for statistical purposes among producers of official statistics under strict conditions and provided that they have the legal framework and common information security standards in place to ensure statistical confidentiality. Data sharing is important for maintaining the quality and relevance of economic statistics.](#)

In most countries, the legislation governing statistical activities enables statistical authorities to collect a wide range of information from businesses, households and the government. At the same time, the legislation ensures confidentiality by prohibiting the statistical authorities from releasing information in such a way that information for individual persons, businesses, or government entities can be identified, and the legal setting places penalties on whoever breaches statistical confidentiality.

3.14. For example, the legal restrictions placed on Statistics Canada under their Statistics Act state that:

“no person who has been sworn under section 6 shall disclose or knowingly cause to be disclosed, by any means, any information obtained under this Act in such a manner that it is possible from the disclosure to relate the particulars obtained from any individual return to any identifiable individual person, business or organization.”

3.15. While the law is clear that ‘micro-data’ cannot be shared outside the employees sworn or working under the legislation, it often also includes provisions for the sharing of information among statistical authorities under certain circumstances. For the most part, this sharing is permitted when it helps to reduce the burden placed on respondents or when it significantly enhances the use of the data.

3.16. Given that most laws governing NSOs were developed and adopted a number of years ago - often before globalization and digitalization - the laws are typically silent on the sharing of data across national borders. Consequently, the necessary infrastructure (agreements, business processes etc.) to engage in international micro-level data sharing or the exchange of sensitive information among statistical authorities has not been developed, except with a few important exceptions.

3.17. In some countries, statistical authorities cannot exchange individual data. Strict confidentiality conditions oblige every organization to collect data or access the existing data source directly. In some countries, however, the NSO can access data collected by other producers of official statistics, but not the other way around.

3.18. It is still the case in a number of countries, that producers of official statistics cannot access data held by other government authorities, or that the other government authorities do not provide sufficiently detailed data for statistical production. It is very rare for the statistical authorities to have a legal mandate to access data held by private bodies that relate to other respondents than the data holder itself.

3.19. Table 7 analyses obstacles and enablers of data sharing related to the legal infrastructure, provides information on resources and tools to overcome the obstacles and strengthen the enablers and it highlights the materialized and potential benefits.

Table 7

Obstacles and enablers of data sharing related to legal infrastructure

OBSTACLES	ENABLERS	RESOURCES/TOOLS	BENEFITS
Legal framework does not allow sharing of confidential data for statistical purposes (nationally and internationally)	Updated infrastructure to exchange information: up-to-date legislation, clearly defining producers of official statistics and requirements for data sharing agreements (nationally and internationally)	UNECE guidance on modernizing statistical legislation UNSD handbook of statistical organization	Better policy and business decisions as governments, businesses and citizens will have access to improved statistics
Too narrow interpretation of current legislation	Good understanding and correct interpretation of the law that enables data sharing for statistical purposes		Availability of key economic aggregates that are more consistent internationally
No access to data held by other authorities or private parties	Strong mandate to access any data needed for statistical purposes, including administrative and private data existing in society		Reduced burden on respondents
Confidentiality rules that go beyond the legal requirements	Up-to-date confidentiality rules, instructions and practices	Guide to building confidentiality and data suppression rules (to be developed drawing on and updating existing guidelines)	Greater reuse of existing information for statistical purposes
Data sharing for statistics is a new practice for which there is no established procedure	Clarify interpretation of current legislation and update as needed Establish agreed procedures for data exchange	<u>For instance:</u> Establishing a working group or a contact group for MNE data exchange among relevant statistical authorities nationally Defining rules and procedures for data exchange among statistical authorities nationally Guidance for international data exchange (Chapter VI of this Guide) Platform for international agreements on data sharing for statistical purposes (to be established by an international organization)	Up-to-date legal frameworks and procedures to ensure statistical confidentiality on national and international level More uniform principles, processes and tools for statistical disclosure control and data exchange internationally
Concerns exist about the use of exchanged data, and the confidentiality protections for such data	Signed MOU between agencies allowing use of data exclusively for statistical purposes High professional independence of entities belonging to the national statistical system Procedures/rules/agreements in case of a breach of confidentiality by parties	Generic MOU (Chapter VI of this Guide) UNSD handbook on statistical organization006E	

3.20. Data users are increasingly demanding access to very detailed economic and social statistics, whether by industry, geographic area or other classification - sometimes down to the micro-level ([e.g. unit record](#)). At times, countries need to suppress information in order to protect the confidentiality of respondents. In an age of globalization and digitalization where goods and service transactions and related activities cross borders, suppression in one country limits the possibility of getting a full picture of the global chain. Countries need to find ways to reduce the amount of suppression in official statistics while maintaining confidentiality of sensitive data. Part of the role of NSOs is to determine ways to maximize the release of its information holdings while respecting the confidentiality of statistical data. [It should be kept in mind that, in foreign trade in goods statistics, the principle of “passive confidentiality” applies. This means that when publishing the statistical results from which a statistical unit might be identified, data are suppressed or amended only at the justified request of importers or exporters who feel that their interests would be harmed.](#)

3.21. For many statistical agencies, the rules around confidentiality and data suppression were developed some 30 or 40 years ago. These approaches, methods and the associated risk tolerance needs to be reviewed. However, when making changes to confidentiality rules statistical authorities will have to ensure full privacy for individuals and households and ensure the strict confidentiality of sensitive business information. In some case, it may be sufficient to make it clear when data are confidential and when they are not confidential. For instance, in cases where the same data are already publicly available under other legislation or regulation, they could be considered non-confidential.

3.22. While confidentiality rules may have been systematized and embedded in methods, at their core they reflect the agency’s judgement and risk tolerance at the time when the methods were developed. Risk tolerance can change over time. For example, many statistical authorities have dominance rules in place that state if a firm contributes more than X per cent to an aggregate measure, the information should be suppressed. The ‘X per cent’ in this equation is subjective and reflects the risk tolerance of the agency. Statistical processes have become increasingly complex and individual and business notions of privacy and confidentiality have also changed.

3.23. A strong statistical infrastructure (legal acts, strong and independent institutions, human and financial resources, expertise in statistical methodology, etc.) is a pre-condition for collecting and disseminating high-quality statistics. Only then will sharing statistical data with other countries be possible and worthwhile.

3.24. As noted earlier, most statistical laws permit some form of data sharing. Traditionally, NSOs have not taken full advantage of these possibilities in their [practices](#). As such, the infrastructure for data exchange has not been developed in [all](#) countries. The current legal arrangements, information technology and governance procedures [may be](#) of limited use for data sharing or non-existent. As a way to move forward NSOs should dedicate resources to:

- Developing the legal agreements that permit data sharing for statistical purposes among statistical authorities;
- In special cases, agreeing with individual firms about sharing their data for statistical purposes only;

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- Establishing secure transfer and processing networks that enable the exchange of data and information; and
- Establishing governance mechanisms to oversee data sharing and adapt as necessary.

3.25. Given the wide range of data that are now freely available on the Internet, within company reports, or for sale - NSOs should consider collecting more information from those sources. If purchasing data, it should be done in such a way that the agreements permit the exchange of information for statistical or quality control purposes among producers of official statistics. However, modern statistical laws should support NSOs' cooperation with private data holders and (free or cost price) access to their data, when required for statistical purposes. This would be important in reducing response burden and making the reuse of existing data more efficient. We are not far from a world where the accounting information for a significant number of global firms can be obtained on the Internet with statisticians adding value by standardizing the information, aggregating and mapping it to international classification systems.

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3.3.2 Resources

3.26. Statistical offices face time and budget constraints, and data sharing initiatives can further strain available resources. When these initiatives are first put in place, there usually is no existing infrastructure in terms of workflow and systems for data exchange. Therefore, engaging in data sharing requires substantial investments of resources at the start. Table 8 highlights the main obstacles and enablers related to resources and refers to available tools and resources.

3.27. Statistical offices are typically tuned for regular production of statistics according to a set of standard processes. Often, they do not have resources earmarked for data exchange. It requires time to find out what data are potentially available for exchange, who has the data, what part of the data is useful, and in what format the data are and when they are available. The next step is to figure out whether the data could be accessed for statistical purposes and under what conditions. What kind of agreements are needed and how the data flow can be organized in a secure and efficient way? How compatible are the datasets? Many questions need answering which requires time and skill.

3.28. Even after the infrastructure for data exchange is in place, substantial resources may be needed for validating the resulting linked data. Once data are exchanged, they need to be analysed to make them useful. The setup and maintenance of the data sharing infrastructure, and data validation of the results, can be very resource intensive. It is also necessary to clearly establish what resources each of the parties involved is expected to contribute. Due to initial investment, setting up costs and time needed to start data sharing, especially smaller countries may find data sharing more challenging.

Table 8

Obstacles and enablers of data sharing related to resources

OBSTACLES	ENABLERS	RESOURCES/TOOLS	BENEFITS
Initial investment costs and time needed to start data sharing (setting up)	Dedicated resources for building up data exchange, analysis and reconciliation	Financial support to countries for establishing the necessary infrastructure (e.g. Eurostat's LCU grant)	Better policy and business decisions as governments, businesses and citizens will have access to improved statistics
Coordination and carrying out regular data sharing require continuous resourcing	Dedicated resources for continuous data exchange, analysis and reconciliation Investment will be returned in improved quality of statistics, more efficient data collection and reduced response burden	Chapter IV of this Guidance on Large Case Units and data steward functions (data governance processes) within the organization	Greater efficiency and cost savings in data collection through more efficient data processing in the production system Higher efficiency in data editing and quality assurance given greater access to a more diverse set of information
Additional burden in the beginning also for respondents as MNE structures and activities are studied	Good regular respondent communications including face-to-face visits explaining the benefits and developing trust and confidence	Chapter V of this Guide on communication with MNEs	Creation of a more agile and responsive statistical system through closer international contacts and greater analysis
Lack of tools for data exchange, analysis and reconciliation (need for technical investment)	Shared solutions, tools and good practices as well as improved international cooperation that helps to guide data exchange	International cooperation in developing the infrastructure for statistical data sharing Exchange of best practices - a global network of experts on MNEs	Possible benefits (such as reduced response burden) for respondents, especially MNEs (cannot be promised in advance) Sharing costs between the different departments at the office (scaling) as data are reused in an already reconciled form
Lack of adequate human resources	Training initiatives focused on developing staff resources for data exchange, analysis and reconciliation Secured human resources for data sharing Good work contracts that enable the recruitment of the right people Reorganization of work to accommodate for data sharing	UNECE High-Level Group for the Modernisation of Official Statistics' work on capabilities International capacity building on the organization of data exchange (to be discussed)	

3.29. Once the groundwork has been laid, subsequent data sharing projects have lower start-up costs. Particularly within the same data sharing project, once the initial data linking work has been completed, the costs of continuing the project can be substantially lower. For instance, once

two datasets containing information on the same entities have been linked for a “base year”, linking for subsequent years can be less resource intensive if most of the entities remain in both datasets.

3.30. Furthermore, on-going data sharing has the potential to free up resources by reducing the affected parties’ data collection and/or validation costs, and by bringing efficiencies in the form of faster correction of errors and discrepancies thanks to access to additional data sources including possibly mirror data.

3.31. Different offices are likely to encounter somewhat similar challenges when engaging in data exchange. Therefore, sharing standard tools and lessons learned across countries would be beneficial. The sharing of solutions that have proven useful in data exchange, would increase the efficiency and lower the costs of setting up data sharing mechanisms. Pilot data sharing projects could be used as a platform to test and develop tools for data exchange. Similarly, a clear division of work in data sharing between parties makes the work more efficient and enables anticipating how much each party is expected to contribute. Examples of the roles of different parties involved in data exchange could be defined. The needs to modernize the process and tools of data sharing could be discussed internationally, e.g. by the UNECE High-Level Group for the Modernisation of Official Statistics.

3.32. To succeed, data sharing needs dedicated resources, and persons assigned the responsibility to develop and carry out data sharing and analysis. The organizational units dealing with large and complex enterprises or other units dealing with data collection, could be assigned the responsibility over data sharing. Substantive domains could then work together with the LCU or another unit or person in charge to launch data sharing, if and as the need arises. How this would be organized in practice would depend on the way statistical work is organized in the country. Centralized data collection for the units involved in data sharing could be useful.

3.3.3 Knowledge, skills and methods

3.33. The knowledge covering data exchange and analysis may be limited in NSOs due to lack of practical experience. Table 9 highlights the key obstacles and enablers that have to do with knowledge, skills and methods and refers to useful resources for overcoming these obstacles. Data sharing requires specialist knowledge about data formats, technologies, linking, coding, data mining and different concepts and classifications. Staff need to develop their ability to understand data, concepts and classifications used across various statistical domains to analyse MNEs’ data. Such work would require a good understanding of business accounting.

3.34. One such area of limited skill is data mining. Increasingly there are examples where many sources of data with varying formats may be used in the compilation of one statistic. [One statistic may, for instance, rely on a mixture of sample survey, several administrative datasets and even big data \(e.g. mobile phone data or web-scraping\)](#). Not surprisingly, statistical offices reported in the UNECE survey the need to improve data mining skills. This would also include improving the knowledge of datasets and sources available in society.

3.35. In some countries, having a centralized data analysis function has been helpful in improving knowledge about ways to resolve discrepancies and reconcile data. It also helps statisticians spot errors and inconsistencies before statistics are published. Unfortunately, some

statistical offices, where programmes work more independently, do not have a strong tradition of combining and reconciling data across subject matter areas.

Table 9

Obstacles and enablers of data sharing related to knowledge, skills and methods

OBSTACLES	ENABLERS	RESOURCES/TOOLS	BENEFITS
Lack of necessary methodological knowledge	New methodologies and guidance for data linking, confrontation and reconciliation Training initiatives focused on developing staff resources for data exchange, analysis and reconciliation	Training courses and study visits Participation in the UNECE/OECD/Eurostat and other international meetings on related methodological aspects Share relevant information/knowledge from these meetings among staff	Better policy and business decisions as governments, businesses and citizens will have access to improved statistics Better understanding of businesses and their activities Better skills and competencies to analyse and use data to produce high-quality statistics
Limited data mining and scraping skills (data science)	Good data mining skills acquired through training and sharing of good practices Additional skills and knowledge acquired from private sector operators or data science	Redefine the profile of statisticians as discussed in the 2017 CES seminar on the next generation of statisticians Share best practice in the recruitment and human resource policies of NSOs	Efficiencies through making use of shared best practices, methods and tools for data sharing and reconciliation Up-to-date knowledge and skills to use new technologies for data exchange
Lack of knowledge about resolving discrepancies	Training on practical data reconciliation and resolution through courses, utilizing knowledge and experience of staff involved in balancing and developing real-life example case studies of successful data reconciliation	Asymmetry workshops organized by international organizations Learn from colleagues in the global network of experts on MNEs	Enhanced and more attractive work profile for statisticians The possibility to ask the best experts for advice internationally

3.36. The necessary knowledge for data sharing could be improved in all the above areas by:

1. Setting up a LCU - the process will itself start to develop the necessary knowledge, e.g. on profiling, data sharing, agreements, company structures, business accounts, etc.
2. Study visits to countries with established LCUs would be helpful. Establish on-going dialogue and an exchange of skills and knowledge with experts internationally.
3. Set up an international information sharing forum. These could work through reviewing case studies and, thus, linking theory and practice.
4. Engage data science experts to develop data mining skills in statistical offices.
5. Organize training for the employees of statistical offices where LCU staff (or other internal experts) explain the MNE reality.

6. Develop training sessions and programmes for the employees involved in data sharing.

3.37. Well-developed methodologies for data linking and good data mining skills can enable the exchange of individual data. Practical examples of successful data exchange and reconciliation can provide useful models for developing regular practices in statistical offices.

3.3.4 Economic globalization and MNEs

3.38. Exchange of data between countries would require prior collection of good quality data by the national statistical offices. Difficulties with expertise on globalization, surveying of MNEs, decreasing response rates and the legal and administrative capacity of the statistical office may hamper data exchange, as described in Table 10.

3.39. The increasing share of international transactions undertaken by MNEs is an important feature of globalization, and the economic decisions made by MNEs across countries have sizeable effects on national statistics. Furthermore, statistical measurement is based on national concepts, and it is, therefore, increasingly difficult for statistical authorities to collect data from MNEs at a national level as more and more enterprise groups no longer account their financial data by physical establishment or production unit, as required by national statistics. MNEs often report performance by geographical regions or activity-based segments.

3.40. In recent years, the understanding of critical variables needed to treat global activities of enterprises correctly in statistics has increased notably, not least due to the Guide on the Impact of Globalization on National Accounts (2011) and the Guide to Measuring Global Production (2015), developed by UNECE, Eurostat and OECD with their members. However, the lack of full understanding of data needed to capture global activities of enterprises remains an issue in many countries. In order to make exchanged data useful for the countries participating in the exchange, national data for both participants should include the necessary data elements on the international engagement of enterprises. Globalization is a complex and evolving phenomenon that requires analysis of various data items, and different datasets for each statistic. Regular mechanisms to enable learning and monitoring of MNEs' activities are not yet commonly in place. Even if the infrastructure for data exchange would exist, the key data items to be exchanged might need further research and continue to evolve.

3.41. Breaking down the activities and structures of enterprises involved in a global production chain, either globally or for an individual country is a challenging undertaking. It might even be easier to describe all structures of a MNE globally first without focusing on country borders, potentially in a joint effort by several statistical authorities. A number of decisions need to be made when delineating a MNE's activities for a single country that could make international data comparison more difficult afterwards. In practice, the practices of MNE profiling for statistics also differ in each country based on the methodological choices, data availability, etc.

Table 10

Obstacles and enablers of data sharing related to economic globalization and MNEs

OBSTACLES	ENABLERS	RESOURCES/TOOLS	BENEFITS
Difficulties in collecting national data in the context of globalization	Improved access to data through an international network Collective decisions on which MNE's activities are measured where	Regular UNECE/OECD/Eurostat meetings on national accounts and global production Discussion of difficult cases in the network of experts on MNEs or LCUs of other countries Strong cooperation between NSOs to persuade MNEs' headquarters to instruct subsidiaries to share data with local NSOs	Better policy and business decisions as governments, businesses and citizens will have access to improved statistics Increased coverage of target population Ability for a more detailed analysis with better data Better understanding of business activities and changes in them
Poor understanding of the data needed to capture global activities of MNEs	Good understanding of critical data items to be exchanged (according to the hierarchical list presented in Chapter VI of this Guide) Company activities linked to statistical recording needs through profiling	Chapter IV of this Guidance on critical data items Better guidelines on recording ownership of intellectual property products (IPP) Closer international cooperation	Decreased asymmetries of cross-border statistics Proper capturing of the impact of globalization in macroeconomic statistics Better statistical data for analysing globalization and evolving global production arrangements
Difficulties in capturing MNEs' activities correctly	Better understanding of MNEs through profiling and thereafter international data exchange, analysis and reconciliation MNE databases, such as the EGR and ADIMA, as well as the forthcoming GGR	Global enterprise perspective (UNSD Handbook on Accounting for Global Value Chains) Business model perspective - example, BEPS project (Tax Challenges Arising from Digitalisation - Interim Report 2018) The EU's 5th Anti-Money Laundering Directive establishes a centralized and public register of companies and their owners	

3.42. The increasing interest and relevance of world level data in addition to national data should not be underestimated. The fact could be used to increase the efficiency and quality of MNE profiling and, thus, improve the quality of data to be exchanged. International organizations could develop platforms aimed for the review of the largest and most critical MNEs in joint

ventures with statistical experts from countries concerned in each case. This will require legislation or specific agreements enabling the exchange of data on individual MNEs.

3.43. The critical data items that should be shared internationally and nationally to better measure the economy given globalization are discussed in Chapter IV. In addition, metadata containing information concerning the reporting units, coverage of surveys, response rates, important non-responses, estimates, etc. should accompany the dataset as they are necessary in order to make use of the received data. In any data exchange, the experts involved as a receiving or providing party should discuss the qualities of the data and the related limitations.

3.44. A better understanding of the structure of MNEs, and how they change over time, will improve the quality of statistics that include MNE data. One of the tools to deal with these issues is international profiling. The goal of international profiling is to analyse MNEs across borders, and data sharing between statistical offices is a vital ingredient in this process.

3.3.5 Data linking

3.45. Data linking, while it is part of the core process of statistical production, is not always straightforward, as described by the obstacles presented in Table 11. Lack of common and global identifiers affects the possibility of easily [linking](#) data on MNEs. This greatly hampers the sharing of data on MNEs. Legal units (entities belonging to a MNE), enterprises and enterprise groups should have common identifiers within and across countries to enable data linking.

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3.46. Using different data collection units, concepts and classifications causes problems for data linking. The MNE accounting and information systems and reporting are primarily intended to share information with stakeholders and are generally not in line with statistical concepts. Units of administrative datasets do not always coincide with units needed for the compilation of statistics. Furthermore, enterprises use different methodologies to derive information on parts of their enterprise group structure for statistics. These practices may differ from one respondent to another, which may affect comparability.

3.47. Scattered and inconsistently documented sources of data may hamper the exchange of data sufficiently to make it not worthwhile. Currently, it is not possible to offer a global and common view on MNEs and it is even not possible to sum up data available from different datasets of different agencies, countries and domains. A lack of structured and organized metadata also makes it more challenging to resolve differences among data sources and to fill data gaps.

Table 11

Obstacles and enablers of data sharing related to data linking

OBSTACLES	ENABLERS	RESOURCES/TOOLS	BENEFITS
Lack of common identifiers nationally or internationally	Wide use of common and unique identifiers nationally and internationally Use of new technologies, such as artificial intelligence (AI) to undertake data linkage without having countries share micro-data (an algorithm that links the data, identifies asymmetries and feeds non-confidential information back to countries)	Database: Global Groups Register (in the long run), EGR, the OECD ADIMA Common identifier: EGR Identification Service and GLEIS examples (see also paragraphs 3.48 and 3.59) Experience from MNE profiling Register of institutions and affiliates database (RIAD) of central banks would be useful for NSOs as well (see also Annex 3 of this Guide) Create a new network “data science for official statistics” to develop the use of AI in official statistics	Better policy and business decisions as governments, businesses and citizens will have access to improved statistics Improved consistency of statistics nationally and internationally Better coverage through wider use of datasets Wider linking of data leading to new and better-quality information Improved accuracy in recording businesses structures and activities Fewer missing activities or double counting
Different data collection units, concepts and classifications	Development and application of harmonized units, concepts and classifications for data collection	Common descriptor “language” for data exchange and changes in corporate structures Common reporting conventions for MNEs on (cross-border) intra-MNE operations and positions	Possibilities to provide more detailed statistical data through increased coverage Improved ability to monitor interconnectedness across sectors (e.g. financial and non-financial)
Scattered and unidentified sources of data	Mapped and linked datasets (focusing on a list of defined target MNEs)	Eurostat GNI project (partially)	Richer analytical possibilities and research datasets
Insufficient data quality and reconciliation	New methodologies for the use and linking of unstructured and scattered data Data reconciliation procedures in case of doubts/errors included in data exchange process	Development of adequate metadata that enables data linking Experimental work to develop new methods, such as AI for statistics	

3.48. There are some encouraging experiences in developing international systems with common and unique identifiers for legal units, enterprises and enterprise groups. For example, the EGR Identification Service is an application supporting statistical producers in identifying legal units. The legal entity identifier (LEID) is the unique identification number assigned by the EGR

Identification Service. Another interesting example is the Global Legal Entity Identifier System (GLEIS), an initiative launched in 2011 by the Financial Stability Board (FSB) (see also the section on the process aspect, paragraph 3.59).

3.49. The system of international statistical classifications is probably the best example of the efforts made during the last decades to develop a worldwide coherent framework for measuring activities, products, occupations etc. For statistical units, the current situation presents some perplexity but probably the main problems are related to the failure to apply some definitions and the absence of a common anchor to the same theoretical framework. Using more harmonized enterprise and institutional unit concepts worldwide, and collecting and compiling statistics accordingly, would enable easier data linking. For practical reasons e.g. in using administrative data, the collection units often differ from the statistical units. When collecting data directly from the biggest MNEs, this should be avoided as far as possible to facilitate data sharing. It would also be necessary to apply the same language when sharing data on changes in corporate structures. Common reporting conventions for MNE's on (cross-border) intra-MNE operations and positions could improve data sharing.

3.50. Furthermore, organizations other than statistical entities increasingly collect and classify data for their own purposes and not necessarily following the concept of statistical unit. These organizations could benefit from the expertise and common definitions and tools to classify data. In the longer run, data linking could profit from statistical authorities promoting their concepts and classifications for wider use.

3.51. Developing a system of mapped, and potentially also linked datasets, is the main prerequisite for effective data management. A mapping in terms of statistical units and variables could help understand what data are available and where. An effort made to create common identifiers for common units, would pay off more if datasets were mapped so as to see more easily the possibilities for linking. Mapping should include the storage of metadata: origin of the data; original sources used; frequency; versions etc. Having mapped and linked datasets, would enable richer analysis and support learning more about the economy without increasing the burden on respondents.

3.3.6 New processes

3.52. Country statistical authorities produce the vast majority of statistics. Traditionally, statistics are based on surveying, but nowadays more and more they rely upon the use of multiple data sources. However, statistical processes very rarely cut across countries, unlike the activities of MNEs. Table 12 lists some of the main obstacles and enablers that relate to processes. The cooperation on a global register of enterprise groups and on international profiling would provide more and better information on the non-resident parts of MNEs and would allow better understanding of globalization. This work is linked with developing common and unique identifiers.

3.53. National statistical production has been optimized at the institutional level. However, statistical production is not synchronized among organizations at national and international levels. The production of high-quality statistics may also call for regular data sharing among certain producers of statistics, or the provision of data from administrative data providers to the

Moved up [1]: <#>The EGR is a unique statistical business register, covering at supranational level MNEs in Europe.

Deleted: <#>The EGR contains micro-data for more than 60 000 enterprise groups and around 800 000 legal units which are partially or fully active in the EU.¶

statistical office. The latter cases are already well-managed in many countries, but it is less common to extend the regular data collection process to authorities in other countries.

Table 12

Obstacles and enablers of data sharing related to processes

OBSTACLES	ENABLERS	RESOURCES/TOOLS	BENEFITS
No mechanism in place to address MNE data issues	LCU or another mechanism addressing data on MNEs to ensure correct structures and coverage, reduce response burden, improve data consistency across domains, and engage internationally in data sharing and reconciliation	International profiling GNI-MNE Pilot exercise Regular multi-country MNE data reconciliation exercises	Better policy and business decisions as governments, businesses and citizens will have access to improved statistics Better ability to engage in and benefit from data exchange as part of the statistical production process
Global Groups Register yet to be developed (UNSD)	Establish a Global Groups Register based on the EGR model Advance the development and use of unique legal identifiers globally	EGR and ADIMA examples	Improved consistency, coverage and coherency of MNEs' data feeding into key economic statistics Better consistency of MNEs' data across countries
Production processes are not synchronized (regular data exchange for a certain purpose)	Defined and agreed data exchange process timed with the needs of statistical production	MOUs	
Unwillingness to increase dependency from external data	Agile strategies for using multiple data sources Sharing experiences in using multiple data sources (e.g. the use of big data³³)	Described secondary production process	Better data quality such as accuracy, relevance and timeliness Efficiencies from applying and adjusting other countries' good practices in data exchange into national production processes
Poor timeliness of data exchange	Regular and timely data exchange schedule covering critical domains	Establish release calendars and production processes that allow data exchange, analysis and reconciliation, where possible	
Lack of risk management tools	Application of risk management tools Enhanced communication with users to manage stakeholders' expectations	Identify risks related to data exchange Explore possible risk management tools and learn from other countries' practices List of accredited organizations with sufficient legal framework in place for the full protection of confidential data (to be done by an international organization)	Common understanding of the risks of data sharing Benefits from data exchange while strengthening risk management

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³³ An inventory of country practices available at: <https://unstats.un.org/bigdata/>

3.54. There may be operational risks related to the increasing use of external data sources provided by other organizations, and even more so if from organizations in other countries. While this reduces costs and response burden and increases efficiency of statistical production, using external data sources also increases dependency. At least in the beginning, data sharing with statistical authorities in other countries does not have to be a substitute for national data collection or sources.

3.55. The risk is more pronounced when sourcing data from other than statistical organizations. The provider of data could change its data collection in a way that could significantly hamper statistical production, the frequency of data collection could be changed or stopped altogether. Especially when using private data sources or Internet as a source of data, the availability, formats and content of data may be frequently changing. This places new requirements on the agility of the statistical production process.

3.56. When the processes of different data providers and statistical authorities are not linked, data may not be available with the desired or required timeliness. Data sharing also consumes time, and by the time new data become available through exchange, the statistic, [albeit based on different data](#), may have been released already. The many examples analysed by the Task Force highlight how difficult it is for statistical authorities to align their processes with those of other organizations.

3.57. The Global Groups Register (GGR), [still in development](#), could build on the existing content and processes of the EGR. The information for the global register should be complemented by better information on groups, collected through international profiling. Extending the scope of the register from EU to a global register will not be a simple task. [Many legal, confidentiality, security and technical issues are likely to arise. The United Nations Statistical Commission recognized the need for such a register at the global level and in 2015, at its 46th session, endorsed the promotion and advancement of the creation of a global enterprise group register "building on and taking into account lessons learned from the on-going EGR project". GGR would significantly help in showing the structures and links among enterprises in different countries and would indicate how control is exercised throughout the global value chain. UNSD is developing a GGR from publicly available information and exploring possibilities to create an automated mechanism to update the GGR directly with NSOs.](#)

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3.58. The GLEIS initiative could be used as a tool to establish unique identifiers for the GGR. GLEIS goes beyond the simple identification of entities. The GLEIS will be expanded to cover data on direct and ultimate parents of legal entities. Once these data become available, its possible use for a future GGR will have to be investigated. GLEIS should be tested first in Europe with EGR to find a way forward on the construction of the GGR with a unique identifier system.

3.59. Moving towards a defined and agreed data exchange process and a more regularized data exchange system in key statistics requires establishing a well-planned and organized process together with the data sharing counterparts. Developing a description of the main steps of the data exchange process might be useful.

3.60. The differences in timeliness of statistical production across countries should be reviewed and resolved, where possible. However, as statistics are now mainly produced without having access to the additional international data, even if those data arrive after the first release of a

statistic, they are still likely to help NSOs revise their figures sooner than they are currently able to do.

3.61. NSOs will need new tools, such as agreements with administrative data providers or regulation whereby they should consult NSOs, if changes in data collection schedules are planned where it may influence statistics. This implies continuous relationship building and networking with data providers to anticipate the changes that are taking place in the source data. Good coordination will be helpful, especially in cases where upcoming changes will require updates in the information systems or are likely to cause issues with data consistency, errors, delays or confidentiality concerns.

3.62. NSOs should build trust and enhance cooperation with other statistical authorities and organizations that regularly provide data for statistical production. This should be done both nationally when using secondary data in statistical compilation or exchanging data for statistical purposes among statistical authorities and internationally when using data collected by NSOs or other statistical authorities of another country.

3.63. The practical measures to increase control over the process for data provided by other authorities may include:

- Establishing a system of frequent contacts with organizations providing data (national or from other countries) and ensuring that networks and contact points exist at different levels of the organizations, such as the managerial, strategic and operational levels;
- Establishing formal contracts and MOUs between the organizations;
- Ensuring that all parties involved understand the status of data that are being exchanged, particularly confidentiality constraints;
- Ensuring that statistical compilation systems and processes are capable of handling missing data should the secondary data sources not be available; and
- Legislation may include provisions to require that all data providers consult the statistical authority in advance of any changes to their data collection to coordinate it with statistical production.

3.3.7 Technical issues

3.64. Table 13 summarizes the main obstacles and enablers related to technical issues of data sharing. The technical aspects relate to the very nature of the data we want to exchange encompassing:

- Ad-hoc data requests based on cases being detected rather than regular data exchange or reporting;
- Specific cases will have varying counterpart economies (somewhere contacts are as yet unknown): the data should be sent to as few stakeholders as possible and to as many as required ("need to know" principle); and
- Data coming from various sources, in some cases sources might change on a case by case basis: it would usually be related to official statistics (e.g. GDP levels) but might

need to be linked with sources such as company data or estimates from other public stakeholders such as ministries.

3.65. In the current work of NSOs, international data exchange is not yet a regular part of statistical production. Thus, there is some lack of experience with data exchange procedures, especially among statistical authorities. Most NSOs are familiar with procedures for receiving data from other government organizations.

3.66. International data sharing is a relatively new activity. Staff in statistical offices may have limited knowledge of the options for data exchange. This may include for instance, how exactly it works, what resources are involved and what types of agreements exist between the participating organizations.

3.67. Both the NSO's and the other party's IT systems need to be able to ensure data security, as well as a secure transfer between the two systems, for data exchange to take place.

3.68. Organizations may have varying capacities for data management. Some organizations have not been able to invest in up-to-date technology and formats. These differences may cause practical problems in data linking and transfer.

3.69. Some statistical authorities may not have the computing capacity needed to exchange large datasets. Especially the regular exchange of individual data, for instance national exchange of data for large business populations will require a solid IT capacity and environment. Difficulties may be experienced especially if the data held by statistical authorities of several countries need to be combined.

Table 13

Obstacles and enablers of data sharing related to technical issues

OBSTACLES	ENABLERS	RESOURCES/TOOLS	BENEFITS
Technical environment not yet designed for data sharing	Secure technology for data exchange	Technical infrastructure developed for the FDI Network of Eurostat ESS S-CIRCABC ³⁴ for EWS and Eurostat GNI-MNE Pilot exercise EDAMIS secure data transmission (exchange) for EGR production Tax authorities' automatic data sharing on MNEs via a common communication network (CCN)	Better policy and business decisions as governments, businesses and citizens will have access to improved statistics Readiness to exchange confidential data securely and efficiently Agile reactions to ad-hoc data exchange needs when technological solutions are in place
Varying data storage and exchange formats across agencies and countries	Common data storage and exchange formats	Investment in IT security	

³⁴ Secure Communication and Information Resource Centre for Administrations, Businesses and Citizens (S-CIRCABC)

3.70. Technological tools for data exchange should be shared and, where need be, developed jointly among statistical offices. The following modes of data exchange exist:

- Mesh: This mode of data exchange implies bilateral data exchanges among all participants (e.g. NSOs). Each participant sends data and receives data directly to and from other participants. The data sender has the full control of the data being sent at any time. It offers senders secured web services to access datasets. Receivers can only access data they are authorized to use. However, with increasing numbers of participants, the system becomes complicated;
- Hub: This is a centralized system where the participants share the data to be exchanged with a central access point (hub), which manages the distribution of data to the receivers. That means, unlike the mesh method, the senders open their web service only to one node (the hub). Likewise, receivers also contact only the hub for requesting data. Requests are sent to the hub and then distributed automatically to all applicable senders. The hub itself does not store data; it acts as an intermediary in receiving and distributing data as authorized; and
- Centralized: The centralized system is similar to the hub system described above, with the difference that the central point stores all data received from the participants and gives access to data receivers as authorized.

3.71. The counterparts of data exchange should work together to create standardized data structures and use common definitions, units and classifications. Such collaboration needs to be continuous if data need to be exchanged regularly.

3.72. It is useful to apply well-established standards such as:

- SDMX for describing the target data structures; and
- Common Statistical Production Architecture (CSPA) for describing statistical data architecture.

3.73. While individual statistical authorities may have a limited computing capacity, different service providers may prove helpful. In case high computing power is needed, a centralized, trusted agency with a secure high performing data center can be chosen. In cases where data exchange is ad-hoc and limited to a small list of participants, the mesh might be a useful solution.

3.74. The development of international platforms for sharing experience in data exchange, including discussions on concrete country practices, would contribute to raising statistical authorities' awareness and knowledge of data exchange. Moreover, the creation of platforms for the actual exchange of data, such as the FDI Network of Eurostat, have proven successful in facilitating, via a technical infrastructure, secure data exchange.

3.3.8 Cultural issues

3.75. Cultural issues, habits and attitudes may act as obstacles or enablers of data sharing for statistical purposes (see Table 14). It may be, for instance, that senior management does not feel ready to engage in data sharing due to the possible risks related to potential confidentiality breaches or damage to the image of official statistics. Senior management may be reluctant to undertake data exchange due to several reasons. Usually, this means that the significance of data

sharing is not explained well enough, or the risks of not engaging in data sharing to the quality and accuracy of key economic statistics is understated. Regular data exchange may also raise resource issues which pose challenges for senior management.

3.76. Lack of trust between counterparts of data exchange may prevent data sharing. A statistical agency that exchanges data with a statistical authority of another country still bears responsibility over data security. If a breach occurs, it may damage the trust of respondents and the image of the statistical agency that engaged in data sharing, even when the breach happened in another country.

Table 14

Obstacles and enablers of data sharing related to cultural issues

OBSTACLES	ENABLERS	RESOURCES/TOOLS	BENEFITS
No buy-in from management of the statistical office and resistance among staff	International co-operation in identifying the costs and benefits of doing and not doing data sharing Demonstrating the costs and consequences of not sharing data Examples of quality improvements resulting from data exchange Well-planned transition process to change attitudes and assumptions of managers and staff	Communication with Heads of NSOs at the CES plenary sessions about the benefits, confidentiality safeguards and need for resources Review of concrete examples of useful data exchange (Chapter II of this Guide) Communication, workshops, presentations, sharing information between players	Better policy and business decisions as governments, businesses and citizens will have access to improved statistics Increased collaboration and re-use of data that helps to promote common standards and classifications Cultural change thanks to the better understanding of data exchange Creation of a more agile and responsive statistical system
Lack of acceptance among respondents (influenced by the general cultural environment in which statistics are produced)	Good regular communications with MNEs about benefits for them Face-to-face visits that develop trust and confidence among respondents Sharing evidence of reductions in response burden	Information campaign among data providers Chapter V of this Guide on communication with MNEs Sharing of good practices in respondent relationship management at expert meetings and the network of experts on MNEs	
Lack of trust between counterparties in data exchange (caused by unfamiliarity and misunderstandings)	Close collaboration with counterparties in data exchange Clear agreements with detailed clauses, explicit obligations and rights Regular reviews on the use and concrete benefits from data exchange	Case study: A circle of trust in Nordic countries List of accredited organizations with sufficient legal frameworks and secure IT systems in place for the full protection of confidential data (to be	

	Knowledge about statistical legislation and statistical frameworks of counterpart countries	done by an international organization)	
Uncertainty about impacts on the quality of statistics and other benefits	Reduce the uncertainty by examining international examples and studying potential national benefits and costs	Recorded changes and improvements made to statistics due to data exchange, analysis and reconciliation Shared information on the impact on the quality of statistics Efficiency gains achieved through MNE data sharing for statistics, analysis and reconciliations instead of problem solving in individual statistics Reporting on quality improvements and other benefits Sharing of the results of data exchange, analysis and reconciliation at international for a	
Lack of information about data sharing options	International platforms for collaboration and sharing of experiences provide rich information Tools and solutions adopted from other countries already engaged in data exchange	Inventories of best practices and benefits from data exchange Exchange of best practices at international fora Learning from the global network of experts on MNEs	
Risks to the image of official statistics	Continuous review of risks and risk management Application of risk management tools Enhanced communication with users to manage stakeholders' expectations	List of accredited organizations with sufficient legal frameworks in place for the full protection of confidential data (to be done by an international organization) Chapter V of this Guide on communication with MNEs Good communication on the benefits of data exchange and on the secure and controlled	

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		technical environment for doing so	
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3.77. Statistical offices are concerned about respondent trust and willingness to report sensitive data correctly for statistics. If data are not in the full control of the statistical authority, [for example if shared internationally](#), respondents may be reluctant to provide their data, and could fear that their data will be used for other than statistical purposes. Some respondents might not even wish their data to be exchanged among statistical authorities nationally even though it will reduce their own response burden. [As noted earlier, for foreign trade in goods statistics, EU Member States apply the principle of “passive confidentiality”](#). This principle might be applicable in other statistical domains too. [Applying “passive confidentiality”, inevitably, constitutes a new aspect to respondent relations](#).

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3.78. Statistical authorities are also conscious of any possible risks to respondent relations when engaging in the sharing of individual data, even when it is done in a secure environment among statistical authorities only. The risk of confidentiality breaches needs to be minimized in every possible way. According to the survey of NSOs, confidentiality breaches have been realized extremely rarely. But the impact could be damaging on the image of NSOs that rely on their reputation as reliable, objective and trustworthy organizations. This in turn could influence the behaviour of respondents and, thus, the quality of data collected for statistics.

3.79. The perceived risks of data sharing relate to the public image of NSOs in society, beyond enterprise respondents. People might feel that their privacy is at stake, if any breaches occur in data sharing. In such a case, the NSOs’ image as a transparent and impartial organization that guarantees the quality of statistics and confidentiality of personal data may also suffer.

3.80. Statistical offices may not be fully aware of the potential benefits of data exchange. This may make it difficult to weight the benefits against the risks. International sharing of experiences from different types of data sharing would be helpful in demonstrating why data sharing is beneficial.

3.81. Lack of information is likely to discourage initiatives of data exchange, especially as it generates uncertainty concerning the possible impact on the quality of the statistics. This Guide provides some examples of data exchange in order to share experiences and information on the impacts, including the quality of statistics.

3.82. The choice to engage in data sharing for statistical purposes is in the hands of the management of the statistical organization. However, that decision will be influenced by the overall pressure to reduce response burden, reuse and manage existing data better and retain the high quality of statistics in the face of the data challenges posed by globalization. [In addition, micro-data exchange may require the introduction of additional variables \(e.g. for the identification of the partner operator in the importing country i.e. in the country receiving the micro-data\) and this might be perceived as an additional reporting burden](#). Engaging in data sharing for statistical purposes is likely to require a review [of statistical legislation and data sharing agreements to ensure full adherence with statistical confidentiality](#), possibly a new data sharing policy, the necessary systems enabling secure data sharing and new governance procedures. Each of these activities requires a substantial amount of effort and the consideration of risks.

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3.83. Small steps and successful experiences are probably the best way to demonstrate to senior management that data sharing among statistical authorities is the way forward in the globalized world. The exchange of individual data cannot happen without the approval of the Head of NSO or another authorized statistical authority. Furthermore, management needs to ensure sufficient resources for the work and support the necessary initial investments in technology, process improvements and methodology.

3.84. International data exchange will only happen if the senior management of NSOs is open and willing to:

- Amend legislation if needed.
- Harmonize practices [of statistical production](#) with other producers [of official statistics across the world](#).
- Coordinate data analysis and exchange across statistical domains.
- Adapt technical solutions with counterparts in data exchange.
- Consult with respondents and other stakeholders.
- Implement quality control measures and [describe relevant quality observations with the metadata](#).
- Incur costs, especially when launching or extending data sharing for statistical purposes.

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3.85. Lack of trust could be overcome by closer collaboration between key stakeholders involved in data exchange. This is already true in many countries that have a well-established collaboration with administrative bodies providing individual data for statistical purposes, some of which are very sensitive in nature and may be treated as confidential in the respective legislation. International organizations are key players in promoting cultural change and providing discussion fora to share country experiences. These fora should bring together various statistical authorities in addition to NSOs, such as statistical units of Central Banks, Ministries of Finance and Customs, to discuss the practical needs for data sharing and inform participants of successes and lessons learned.

3.86. The results of data sharing should be measured in quantitative terms to show how the statistical asymmetries were decreased and the quality of statistics improved as a consequence of data sharing among statistical authorities. Respondents' trust would be easier to achieve if statistical authorities could show a measured decrease in response burden as a result of sharing data between NSOs.

3.87. NSOs should build trust and enhance cooperation between NSOs and MNEs that provide them with data that are crucial for the quality of key economic statistics across countries. [The success of data sharing significantly depends on MNEs' willingness to cooperate. In this respect, NSOs need to take all possible actions to ensure that data sharing does not discourage businesses from responding.](#)

3.88. The practical measures to establish such cooperation to enhance trust may include:

- Establishing a system of regular contacts with the data providing enterprises or their representatives and ensuring that contact points exist at different levels of the

organizations. One way of doing this, would be to establish a separate unit, a LCU, or function within the NSO that would have as its specific task the management of relations and data provision with large and complex enterprises;

- Reassuring respondents that data are shared exclusively with recognized statistical authorities that have a strict legal framework in place to ensure statistical confidentiality, also when sharing data with other countries' NSOs;
- Establishing formal contracts and MOUs with the enterprises or their representatives and ensure that the contracts also cover the issue of data reuse by other NSOs exclusively for statistical purposes;
- Ensuring and demonstrating that the confidentiality rules [and disclosure control](#) will apply even when data are shared among statistical authorities and that data collected or acquired for statistics will not leave the statistical system. One way of demonstrating that data security principles are adequate is that the NSO certifies its production processes by a recognized standard such as the ISO/IEC 27001³⁵; and
- Ensuring that respondents are informed of the use of their data, for instance exclusively for statistical purposes by statistical authorities in the country and with statistical authorities of other countries, if required for statistical purposes. In case there would be a breach of confidentiality or any data security issue, the statistical office that exchanged the data should take all measures to minimize the damage and inform the respondent concerned of the issue and the consequences of the breach.

3.89. It would be important to have a communication plan and a set of risk management tools available to ensure that the general public is well-informed of the activities of the NSO in terms of data exchange and measures to safeguard privacy. Statisticians should work internationally to develop common tools for communication and risk management in the area of data sharing among statistical authorities.

3.90. This Guide provides examples of data exchange to quantify some of the impact on statistics. These cases include the exchange of cross-border transactions data, in particular the bilateral exchange of import data between Statistics Canada and the United States Census Bureau s; and multilateral exchange of export data by EU Member States in the SIMSTAT project among others (see Chapter II).

3.91. As noted in Chapter II, the analysis of data exchange initiatives shows that data sharing helps to reduce asymmetries and improve the quality of statistics. The cases on import data and SIMSTAT show the notable quality improvements on trade data. Similar mirror exercises have been done with migration data that have proven most useful for addressing asymmetries of migration flows regionally and internationally. This type of information and examples can help overcome cultural resistance to increased data sharing. [However, further evidence needs to be collected to make a firm assessment of improved data quality.](#)

³⁵ An information security standard published by the International Organization for Standardization (ISO) and by the International Electrotechnical Commission (IEC).

IV. PREREQUISITES FOR BETTER DATA RECONCILIATION

4.1 Introduction

4.1. The challenges of measuring the activities of MNEs within the economy are a function of complexity: by their very nature, MNEs are large, with a multitude of activities across a number of jurisdictions. Further complications are due to the absence of uniform data across and within MNEs, as these firms tend to report certain characteristics and changes distinctively and sometimes arbitrarily through a variety of sources. Consequently, pattern identification, classification and impact assessments are especially challenging and sometimes elusive in the case of MNEs.

4.2. Another factor that complicates the measurement of MNEs, is the limited possibility for NSOs to obtain a holistic view of MNEs' activities. National legislation may restrict data collection to activities within the economy and only rarely to the global activities of firms headquartered in the economy; even in these cases, it is not clear that the coverage of MNEs' activities is exhaustive.

4.3. The sharing of data across countries could provide an opportunity to achieve a holistic view but legal constraints aimed at preserving confidentiality and the privacy of respondents within national borders in most countries mean that this is not, at least for now, possible. It is critical for the quality of economic statistics that data on MNEs are reconciled properly, not only at the national level but also globally. Accurate national figures can only be derived when statisticians better understand how the global value chains of businesses influence the national economy. The only way to gain this understanding is by sharing information and data concerning MNEs.

4.4. This chapter focuses first on how to select MNEs for data sharing and how to identify crucial changes in their structures and the ways they organize their production. Based on this, we will discuss critical data items to be exchanged. The experience from Eurostat's data sharing initiatives, the GNI-MNE Pilot exercise and the EWS, will be first reviewed. Further, a few examples of country practices in selecting certain large enterprises for specific treatment will be reviewed. In many cases, a proper data reconciliation for those MNEs would require international data exchange.

4.5. Second, this chapter will address how to organize data sharing and reconciliation work. It presents the rationale for the recommendation that NSOs establish a team of experts to deal with all statistical aspects of MNE data in economies where such MNEs are significant. The establishment of such a team dedicated to data reconciliation and relationship management with MNEs goes a long way in addressing these challenges. This part of the chapter is based on the paper "Measuring activities of multinational enterprise groups via large case units"³⁶.

4.6. Finally, this chapter discusses the need for the international cooperation of experts on MNEs. It can start with bilateral work with important trade partner countries, and regional work,

³⁶ Hussain, Mahajan, Peltola (2019)

for instance in the EU, but there is also a need for a platform and infrastructure to discuss data sharing and reconciliation more broadly.

4.2 Selecting MNEs for data sharing among statistical authorities

4.7. Based on an analysis of current practice in countries, for instance when selecting MNE populations to be handled by LCUs, the focus of data exchange should be on firms with:

- Complex ownership structures, especially including special purpose entities
- Large volumes of activity (employment, sales/turnover, etc.)
- Rearrangements and relocations of MNE units
- Global production arrangements
- Ownership of intellectual property products (IPPs)
- Large mergers and acquisitions
- [Large](#) legal fines and penalties
- Unusual transactions

4.8. Firms with these characteristics are difficult to measure, causing revisions to economic statistics and bilateral discrepancies to statistics across countries. They may also have important effects on employment, productivity, taxation, etc. domestically that would be important to study and understand. Of course, firms may fall into several of these categories, and that would further highlight the need to exchange data on the firm among statistical authorities.

4.9. Once the critical MNEs for data exchange have been identified, the data items that would be most useful to share should be determined. Cases will vary depending on the needs of the statistical authorities sharing data. Data sharing arrangements will also be needed for: 1) domestic micro-data exchange among different statistical authorities (responsible for different statistical domains); 2) international micro-data exchange among NSOs of different countries; and 3) (if legal background exists) among NSOs and statistical departments of international organizations. The focus or needs of the statistical authorities could include some of the following categories:

- Register-type information, including identifiers
- Structures of MNEs
- Key globalization variables (e.g. foreign investments, imports and exports of goods and services)
- MNE data most prone to revision (e.g. monetary flows between countries in case of restructurings or relocations)
- Financial or operations data, such as sales, turnover, employment, income
- Accounting standards information

4.10. To analyse the selection of MNEs and the key data items for data sharing, we provide some examples of the selection criteria applied by Eurostat and individual countries in the cases below.

4.2.1 Selecting MNEs for statistical data sharing - examples from the European Union

Eurostat's GNI-MNE Pilot exercise

4.11. The GNI MNE pilot exercise was initiated in 2018 as a response to the measurement challenges posed by MNEs to National Statistical Authorities regarding the provision of good quality and comparable GNI data. The objective of the project was to achieve by the end of the GNI verification cycle in December 2019 a reasonable understanding of the reliability of the recording of globalization issues in GNI data. The pilot exercise contributed to the aforementioned reasonable understanding by assessing the value added for 25 important EU MNEs chosen for the exercise and the plausibility of its distribution within the Lead Country and Partner Countries of each MNE. It also analyses the research and development performed, location of intellectual property products, intra- and extra-group trade flows and methodological consistency of statistical recording across statistical domains and across Member States.

4.12. In October 2016, Eurostat sent a questionnaire to all EU Member States focusing on: 1) enterprises with IPP assets with a value of over EUR 100 million; 2) enterprises with contract manufacturing and 3) enterprise relocating with IPP assets. The goal was to have at short notice an overview of the situation regarding MNEs with huge amounts of IPPs on their balance sheets.

4.13. In June 2017, Eurostat sent a follow-up questionnaire covering a broader range of activities and with a different set of selection criteria, listed below. The purpose of this second questionnaire was to gain an initial understanding of the types of arrangements MNEs have within the European context and to allow Eurostat to gauge the scale of the issue and to prioritize the work on the cross-country comparison within the current GNI verification cycle.

4.14. The first part of this second follow-up questionnaire covered a list of companies with IPP assets and companies with contract manufacturing by resident units, while the second part covered the list of companies active in other areas of interest for globalization. The questionnaire gave the following guidance for enterprise selection:

- a) Enterprises with an impact on GNI above the threshold of 0.1 per cent of a country's GNI;
- b) Enterprises with activities in at least one other EU country; and
- c) Enterprises which Member States feel would be suitable for a case study to examine globalization issues should also be included (in addition to those which fall into categories a. and b. above).

4.15. The EU Member States were asked to answer the following questions for a maximum of 15 companies for each question. For most of the questions, responses were provided within a size range and not specific values:

1. List of companies with large amounts of IPPs
 - a. Value of IPPs
 - b. Number of employees
2. Contract manufacturing by resident units
 - a. Number of employees

- b. Contract manufacturing for mother/head office abroad or unaffiliated company abroad
- 3. Global or European head offices (but do not hold IPP assets of more than EUR 100 million)
 - a. Number of employees
 - b. Known EU Country(ies) of related company(ies)
- 4. Resident holding companies of multinational enterprises
 - a. Known EU Country(ies) of related company(ies)
- 5. Royalty and licencing companies
 - a. Value of Annual Turnover
 - b. Known EU Country(ies) of related company(ies)
- 6. Ship and Aircraft leasing companies (retaining economic ownership of the asset)
 - a. Value of ship or aircraft assets
 - b. Known EU Country(ies) of related company(ies)
- 7. Resident merchanting companies (buying and selling of goods without the goods entering the economic territory where the company is resident)
 - a. Value of Annual Turnover
 - b. Known EU Country(ies) of related company(ies)
- 8. Resident companies with economic ownership of the production of output outside the geographical territory where it is resident
 - a. Number of employees in the domestic economy
 - b. Known EU Country(ies) of related company(ies)

4.16. The GNI-MNE Pilot exercise was based on the companies identified in the above-mentioned follow-up questionnaire concerning globalization. The questionnaire provided a list of 558 companies, which has been consolidated to 517 companies. From this population, a sample of 25 MNEs was selected for the GNI-MNE Pilot exercise so that they include enterprise groups operating in a variety of areas affected by globalization, cover all EU Member States with the workload evenly distributed among the EU Member States. This exercise provided an example of how NSOs can work internationally to prioritize MNEs for a data sharing exercise that can ultimately provide benefits to all participants.

Early Warning System (EWS)

4.17. The EWS provides another example of criteria for determining which MNEs should be the focus of an information sharing exercise. The purpose of the EWS is to facilitate early awareness of the restructuring of MNEs across EU Member States that are directly affected. The aim is to achieve an agreed methodological treatment of the restructured MNEs among the involved national statistical authorities. The system should also lead to improving the consistency of European statistics with regard to such globalization events, ensuring a coordinated timing in the

publication of first results and revisions, and enabling a timely, harmonized and interlinked communication towards the users of national and European statistics.

4.18. The EU Member States should trigger the EWS in the following cases:

- The restructuring of one or more MNEs affects not only one country, but two or more;
- The restructuring has sizeable effects on national and European statistics;
- Since the countries concerned might be very different in economic size and structure, a single quantitative threshold for triggering the EWS is not set. When dealing with MNE restructuring, medium-sized and large countries should also consider the effects on smaller countries that they know are affected;
- The impact on the published statistics should also be considered in the light of the size of normal revisions to the statistics in question;
- The granularity of the statistics published as part of European statistics should be taken into account (e.g. the International Standard Industrial Classification breakdown of the data published); and
- The EWS may also be consulted when national statistical authorities are in doubt about the correct treatment of a specific MNE restructuring case.

Country-by-country reporting

4.19. Another example of data sharing within the European Union is the Council Directive 2016/881 of 25 May 2016 regarding mandatory automatic exchange of information in the field of taxation. This directive is a response to the OECD's BEPS initiative and requires MNEs located in the EU with total consolidated revenue equal to or higher than EUR 750 million, to file a country-by-country report in the EU Member State in which the ultimate parent entity or any other reporting entity of the MNE is resident for tax purposes.

4.20. In the country-by-country report, MNEs are required to provide annually for each tax jurisdiction in which they do business: the amount of revenue, profit before income tax and income tax paid and accrued. MNEs also report the number of their employees, stated capital, accumulated earnings and tangible assets in each tax jurisdiction in which the MNE operates. Finally, MNEs will identify each constituent entity within the group doing business in a particular tax jurisdiction and provide an indication of the business activities in which each entity engages. This could provide an important source of information for validating MNE data within and across EU countries.

4.2.2 Criteria for selecting MNEs for consistency measures in countries

4.21. Reviewing examples of how countries select large enterprises to be reviewed centrally, for instance by the LCU may suggest criteria for MNEs that would require international data exchange to be properly reconciled. The next sections present examples of such criteria applied by Canada, Finland, Italy and Ireland.

Deleted: <#>Based on the experience from the start-up phase of the EWS, more precise criteria for the selection of MNEs will be defined. This can be achieved by studying the cases that were most useful for sharing or which were missed by the EWS and could have been helpful for ensuring more consistent statistics internationally. The characteristics of these cases can be used to fine tune the EWS criteria. ¶

Enterprise portfolio management in Canada

4.22. A key activity of the work with the largest companies in Canada is to ensure there is no duplication in their reporting for statistics. The selection and updating of firms in focus is done every two years. Although complex enterprises represent just 1 per cent of all businesses in Canada, they account for about 52 per cent of total business income. The enterprise portfolio management programme works with about 270 of the largest and most complex enterprises in Canada, representing a significant share in GDP.

4.23. The enterprise selection criteria in Canada is based on a complexity metric. The metric covers four different factors: industrial complexity, geographic complexity, relative size and expert judgement.

4.24. Industrial complexity refers to the number of different industries in which the enterprise operates and geographic complexity the number of regions where it has operations. This factor is limited to the regions of Canada as the focus has traditionally been on national consistency, but for international data sharing it will be important to consider the complexity of an MNE's global presence.

4.25. The relative size of the enterprise is calculated based on the revenue and employment and indicates the relative importance of the enterprise to the industries and regions. In addition to the three above mentioned arithmetic factors, the fourth one, expert judgement, is more subjective, but often useful. It is based on the feedback from programme staff who may identify specific complex enterprises that are creating measurement issues.

4.26. To use this model to select key MNEs where international data sharing could facilitate better reconciliation, as mentioned, businesses' global activities should be added as a factor in addition to size and complexity.

Criteria for selecting enterprises for the LCU in Finland

4.27. The LCU in Finland focuses on 20 enterprise groups. These enterprise groups represent 50 enterprises, 228 legal units and 1803 local kind of activity units. One of the main tasks of the Finnish LCU is to engage in cooperation with the selected enterprise groups.

4.28. Ranking of enterprise groups is done based on three factors:

- Value added, personnel and turnover
- Dominance in a certain industry and complexity
- Number of statistical data collections directed to the enterprise group

4.29. Similar to the Canadian case, the main factors for Finland's criteria are size and complexity. Response burden is included as an additional factor. If the enterprise has an obligation to report in many different statistical surveys, this will make the communication aspect even more important. It is key to provide good service to the large respondent MNEs to help them report good quality data in all statistical surveys. This factor is also quite relevant when it comes to data sharing. When a MNE has to report to many statistical surveys by different statistical authorities, and from different countries, international data sharing would be beneficial.

4.30. The LCU composes a list of potential enterprises based on the above-mentioned factors. The next step is to make a ranking by main domains and then meet with the national accounts team and other internal stakeholders to finalize the selection of MNEs.

Selection of MNEs to be managed by the LCU in Ireland

4.31. In Ireland, the LCU manages about 40 foreign-owned MNEs, or approximately 60 enterprises. The LCU is responsible for data collection, data editing and consistency analysis and manages the relationship with the MNE. The portfolio of MNEs managed by the LCU is reviewed annually, with enterprises approaching LCU thresholds identified and monitored for potential inclusion.

4.32. The level of activity of the MNE is a key factor in deciding whether an MNE might potentially fall under the management of the LCU. Turnover, global production arrangements, and the size of the balance sheet are taken into account. In all cases, the MNEs are foreign-owned. This is likely to be quite different than in other NSOs, which may focus on MNEs that are based in the domestic economy.

4.33. The Irish selection criteria clearly shows that global aspects have importance when selecting MNEs for special attention. The above listed variables also coincide well with the criteria for selecting MNEs for data sharing presented in the introduction of this chapter.

The process of selecting enterprises to be managed by the LCU in Italy

4.34. In Italy, the LCU cooperates with the national accounts team to agree upon a common and coherent treatment of large and complex enterprises as well as to measure globalization consistently. Promoting good cooperation with MNEs is the main task of the LCU, carried out in collaboration with the Directorate for Data Collection.

4.35. One of the main tasks of the LCU is also to keep the relevant staff informed of the main MNE restructuring events. This is done by strengthening cooperation across statistical domains; sharing information about MNE restructuring cases; creating specific data reporting tools for selected MNEs; and developing methods to identify consistency problems quickly. The LCU also contributes to the EWS. The selection of the LCU target MNEs is done based on the statistical business register and the enterprise groups register. The selection is done as follows:

1. Sorting MNEs by turnover.
2. Sorting MNEs by the number of employees.
3. Selecting the MNEs belonging to the top 200 ranking both for turnover and the number of employees.
4. Arrive at the final list of 130 MNEs, the agreed size of the LCU target population, based on the order by turnover.

4.36. The selected MNEs are compared annually with those included in the target population of the previous year to consider the most significant differences.

4.37. Recently, the target population was extended to cover MNEs operating in e-commerce and the sharing economy. Therefore, the extended population now includes 140 MNEs.

4.38. Profiling activities are also carried out by another team within the Directorate for Economic Statistics that annually reviews intensively about 30 MNEs of which 5 are profiled also for international aspects.

4.3 How to organize MNE data collection?

4.3.1 Set-up based on the need and resources

4.39. Every country with a “significant” number of MNEs should consider establishing a specialized unit responsible for MNEs. Such specialized units are often called large cases units (LCUs) as they deal with large and complex cases trading across borders or just within the national boundary. At the beginning of 2019, the NSOs of Canada, Denmark, Finland, France, Hungary, Ireland, Italy, Luxembourg, the Netherlands and Sweden had established LCUs, while the United Kingdom (has a Pilot Exercise to develop an International Business Unit), Belgium (the NCB) and Norway were considering creating permanent LCUs. Other countries have dedicated programmes to perform similar activities as LCUs (for example, profiling). However, LCUs are still quite rare and mostly concentrated in the EU countries.

4.40. By having an effective, efficient and appropriately resourced LCU, the quality of the economic statistics, and key aggregates, will be improved. Furthermore, with such LCUs operating via an “international network” supported by the international organizations, this would further enhance these benefits as well as improve international comparability and reduce trade asymmetries. For these reasons this Guide also includes a discussion of certain aspects related to LCUs.

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4.41. Establishing a LCU requires, and brings, a cultural and organizational change to the traditional way of organizing statistical production. The common question is what the NSO and/or NCB wants to achieve by establishing a LCU. Consequently, the way LCUs are organized, and located, in practice can differ from country to country depending upon the organizational structure of the NSO and/or NCB, available resources, etc. One of the key roles of the LCU will be to facilitate the necessary cultural change within the organization and/or across organizations. In this document, different approaches and common characteristics are described. It is also worth noting that, unlike the sequential system described in the Generic Statistical Business Process Model (GSBPM), the LCU brings together various functions from different parts of the GSBPM (UNECE, 2013).

4.42. Having a team that focuses on the data of MNEs and manages the respondent relationships with them is an important strategic step for international data sharing and appropriate data reconciliation. The way to organize this work may vary from cooperation between experts across statistical domains to a fully organized and resourced LCU. The decision depends on the need and resources available in each NSO. Very often countries have started with a lighter setup and moved towards the LCU as they gain experience.

4.43. Based on the current experience, usually one expert can handle about five MNEs depending on other responsibilities and the complexity of each MNE. Thus, in a country where only a few large MNEs are present, only one expert designated to this work may be enough. However, this person should have a close working relationship with a network of persons in the statistical domains where MNEs have a significant effect. This only applies to the consistency

work. When data sharing, especially internationally, is added to the responsibilities, more resources need to be allocated to this work.

4.44. The need for resources also depends on the tools and procedures available. International organizations could take a role in developing the infrastructure for secure data sharing. Eurostat has done a lot in this area, and this could be taken as a starting point for extending the work. Eurostat has also started a training programme and launched capacity building projects to help countries establish LCUs. This experience should be shared and used globally.

4.45. However, [independent of how](#) the MNE data work is organized [in practice](#), it will be useful to adopt an account management approach with the MNEs and engage in data sharing and reconciliation with other statistical authorities, first nationally and then internationally as needed. This will help enable statistical authorities to collectively address the ever-growing impacts of globalization, and the many related challenges, including the increasing role of IPPs. These work arrangements will influence the quality of data used in statistical production, and feed directly into the quality of important statistical outputs like the national accounts and balance of payments, as well as may other statistics on productivity and analyses of the economic environment.

4.46. The LCU team should also focus on the communication and relationships with the largest MNEs, as well as data processing and quality assurance. The main purpose of such a team is to improve the quality, consistency and coherence of data but there may also be other beneficial impacts such as better use of resources and reduced response burden on MNEs.

4.3.2 Stakeholders of a LCU

4.47. Three important stakeholders of LCUs, namely the statistical domains in the NSO, MNEs and NCBs were mentioned in the background to this paper. In addition to these stakeholders, LCUs will need to liaise, cooperate and communicate with many other stakeholders.

4.48. At the NSO, one important stakeholder is the senior management of the NSO. They need to understand the important role and impact of the LCU, provide their full support with readiness to engage in meetings with the senior management of the MNEs where necessary, and provide adequate resources for the work to be undertaken by the LCU. To establish a separate, autonomous LCU, some organizational restructuring and shifting of resources is likely to be required. Strong senior management leadership is essential to the creation of the LCU and its success in delivering benefits for the NSO.

4.49. Often a successful first contact with the MNE will require involvement of senior management from both organizations and then periodic contact should be maintained.

4.50. The work of the LCU will also rely on it establishing dynamic and close cooperation with statistical domains and the statistical business register as important partners in improving the consistency of the data.

4.51. It is especially important to ensure data consistency with other producers of official statistics such as the NCB (as a producer of balance of payments in many countries) and Customs (as a data collector of foreign trade in goods). The LCU should establish regular communication with these organizations, good working relations and data exchange (as appropriate) to ensure consistent and high-quality MNE data across the various parts of the national accounting

framework. Where the statistical system is de-centralized, the LCU may need to be established as a centralized organization providing the link across all the producers of statistics - here the role of the LCU is even more critical.

4.52. LCUs may need to establish direct contacts with a number of key administrative data providers, as full access to their data is important for proper consistency analysis. If allowed by the statistical law, the access to the data of private data holders has similar importance. In particular, LCUs may want to review the availability of private data sources with relevant data on MNEs³⁷.

4.53. The counterpart may be either the national unit of a MNE or the headquarters of a MNE situated in the compiling country (possibly also a large national enterprise). Typically, the headquarters have a more complete picture of the operations of the enterprise but may at the same time have more difficulty in reporting country-by-country data. The residency will need to be considered when defining the strategy for data collection, which may be different for the non-resident parts of the MNE.

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4.54. Cooperation with LCUs (or other units) in NSOs of other countries will need to be developed. In the first place, this should include sharing of best practices in LCU work. In the future, the LCUs should be the contact point for more regular information exchange, data exchange and data reconciliation for MNEs supported by a secure framework for the international network of LCUs.

4.55. Eurostat has recently launched a grant for establishing LCUs and one of the goals is to set up a dedicated discussion forum of LCU related topics for countries in the ESS. It is important to follow-up how this forum develops and consider the possibility of extending this forum to include additional countries. A network of LCUs is also being developed within the ESS to facilitate exchanging of information and best practices as well as to help coordinate MNE related activities.

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4.56. The international organizations have developed, and are developing, several other crucial links to LCU work, for example:

- Eurostat has several initiatives such as the EGR, international profiling, EWS, etc. (see Chapter II for more detail);
- OECD undertakes a range of work in this area (for example, ADIMA, BEPS, reconciliation of asymmetries, etc.);
- UNSD is working towards a Global Groups Register; and
- UNECE plans to establish a LCU network to facilitate the work, for example, a framework for data sharing.

4.57. The exchange of information, experience and good practice at international fora is crucial.

4.58. Users of statistics receive benefits from the work of LCUs and are also important stakeholders. They benefit from the provision of more consistent and coherent statistics, and

³⁷ For example, by means of targeted web searches of companies, web scraping tools, analytics database like OECD ADIMA, and private databases on mergers and acquisitions.

through a better understanding and analyses of how MNEs' activity affects the measures of economic activity.

4.59. The language used to communicate with all stakeholders is extremely important. LCUs need to be ready to take on the role of interpreter between different players in the supply, production and use of official statistics when it comes to data consistency, especially when communicating with MNEs and how their activities affect other stakeholders.

4.3.3 Benefits of a LCU

4.60. The major benefit of a LCU is that a multi-skilled account management team would collect timely and accurate data for MNEs at the very beginning of the production process of economic statistics, enabling a prompt reaction to data changes and the resolution of anomalies before they are processed by any of the statistical domains. Data consistency should be ensured by analysing the data received from different surveys and addressing potential issues at the first receipt of data.

4.61. Depending upon the role and responsibilities of the LCU, the response burden on the MNE could be somewhat reduced - this forms a major selling point to gain the cooperation of the MNE. The LCU could collect the data, maybe using data readily available from the MNE and/or bespoke questionnaires designed to suit the MNE. The LCU could ensure the data are only collected once rather than collecting some of the data multiple times through different questionnaires.

4.62. A multi-disciplinary team would have the skills and capability of understanding these complex global MNEs, their accounts, and the underlying global issues such as:

- Factoryless goods production
- Goods sent abroad for processing
- Merchanting of goods and services
- Contract manufacturing
- Toll processing
- Transfer pricing
- Stocks and flows of IPPs
- Special purpose entity activity
- Internet related activity
- FDI and related income flows

4.63. The measurement and consistency challenges posed by the above issues are not new but have grown significantly in the past two decades and are the main problem areas that need to be addressed. A LCU would be well placed to ensure that these issues are addressed in relation to key MNEs.

4.3.4 Main objective of a LCU

4.64. The main objective of a LCU is to provide all relevant statistical domains with consistent data originating from the biggest MNEs for compiling their statistics. In practice, inconsistent data

are often discovered at different stages of the statistical value chain. Ultimately, many statistical differences and measurement issues can be identified when balancing Supply and Use Tables, where the supply and use of goods and services in an economy do not equate. Similarly, differences or imbalances can be identified when compiling the institutional sector accounts. However, this is often too late to avoid publishing inaccurate primary statistics. Analysing these situations, in many cases, it has been found that the source data for MNEs is inconsistent, for instance between foreign trade statistics and structural business statistics. A LCU could identify and resolve these inconsistencies at an early stage before dissemination of the initial business statistics. This objective, in general, may lead to the following activities³⁸:

- Define the population of MNEs that should be managed by the LCU;
- Develop and maintain regular communication and good working relationships with the selected MNEs and form a contract manager type role, for example, acting as a single contact point between them and the NSO;
- Coordinate data collection for various statistical domains (e.g. short-term statistics, SBS, FDI, outward FATS) by designing common or bespoke questionnaires (monthly, quarterly and annual) and carrying out centralized data collection from the selected MNEs. This eliminates duplication of questions and cuts the statistical reporting burden on the MNEs by substantially reducing the number of questionnaires sent to them;
- Other data collection strategies can be developed such as collecting all the data that the MNE can provide in the form convenient for them such as the management accounts. However, in this scenario, the burden switches to the NSO to process the data as required as well as implementing more effective and efficient strategies such as collecting the data electronically. On the other hand, spending time with the MNE mapping their datasets to those required by the NSO and generating bespoke forms to be submitted electronically would benefit both parties;
- Analyse all aspects of the data submitted to the NSO by the selected MNEs operating in the country. This includes the delineation and classification of statistical units of the [MNEs](#);
- Exchange and reconciliation of mirror data with partner LCUs, for example trade asymmetries or property income flows;
- Carry out consistency checks of the various statistical and administrative returns, within and between the statistical domains (i.e. to check if data from separate statistical domains are consistent with each other); and
- Eventually, provide all relevant statistical domains (business statistics as well as national accounts and balance of payments) with consistent data for compiling their statistics.

4.65. Depending on the specific tasks of the LCU concerned, the LCU could thereby take over the responsibility for consistency and provide a complete and coherent picture of the MNE and

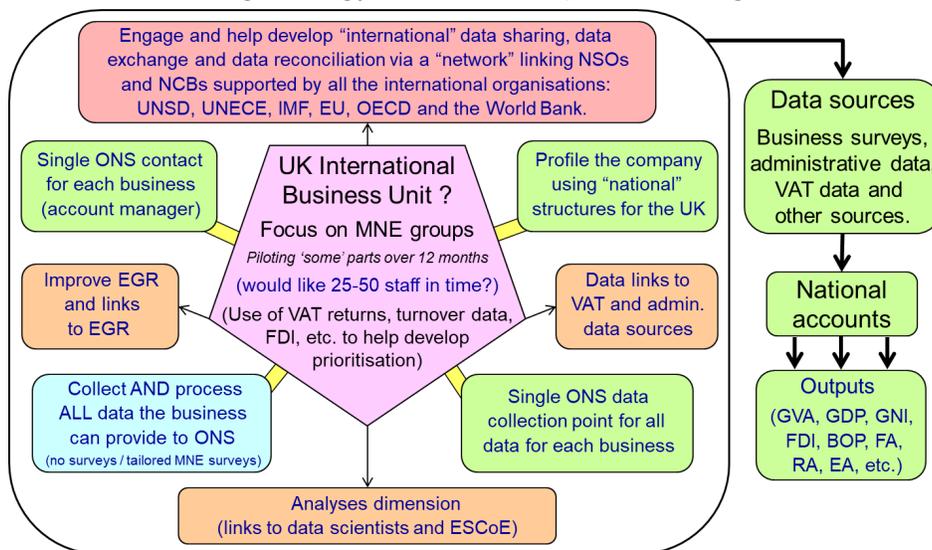
³⁸ It should be noted that not all existing LCUs are involved in all the mentioned activities.

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its contribution to each statistical domain. In some cases, the unit is not called 'Large Case Unit' as the functions covered are more like functions of a 'Consistency Unit' that goes far beyond the traditional profiling related functions. For example, in the UK, a Pilot Exercise is underway to deal with MNEs, if successful, then over the longer-term the aim would be to develop an "International Business Unit" as shown in Figure 3.

Figure 3
Pilot exercise - Developing an International Business Unit in the United Kingdom³⁹⁴⁰

Vision - Evolving strategy for MNE Group data management



4.3.5 Positioning of a LCU in the organization of a NSO

4.66. Those NSOs which already have an established LCU in place often differ in terms of positioning of the LCU in their organizational structure. For example:

- In Statistics Finland, the LCU is situated in the Data Collection Department, as part of the Business Register Unit. As all the data are collected centrally by another unit in the Data Collection Department, the LCU is not involved in data collection from the MNEs;
- In Statistics Netherlands, the LCU is situated in the Business Statistics Department, between data collection and data analysis. Here again, as all data are collected

³⁹ The Economic Statistics Centre of Excellence (ESCoE) based in the UK provides the UK Office for National Statistics with research that addresses the challenges of measuring the modern economy, as recommended by Professor Sir Charles Bean in his Independent Review of UK Economics Statistics.

⁴⁰ Figure is compiled by Sanjiv Mahajan.

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centrally, the LCU receives the relevant data from the data collection unit and carries out consistency tasks, before providing the data to other statistical domains; and

- In Central Statistics Office of Ireland, on the contrary, the LCU is part of the National Accounts Department. However, in this case the LCU itself collects the data, carries out consistency checks and provides all relevant domains with the final data.

4.67. In the above mentioned three cases, three different approaches have been taken. However, the common feature in all these cases is the fact that the LCU is organizationally close to where the data are collected or is even responsible for data collection itself. It is also important to note that in these three NSOs the data collection, business statistics, national accounts and balance of payments are also organized differently and may have different roles, responsibilities and coverage.

4.68. Following the principles, and approaches, described in the Guidelines on Integrated Economic Statistics (United Nations, 2013) and the GSBPM, it is recommended that the LCU should sit close to, and separate from, the statistical business register and data collection areas, thus near the start of the statistical value chain. [An important role of a LCU is to act as a link between the data collection areas and national accounts. Therefore, a LCU also needs strong ties to national accounts, where the results of consistency checks and MNE analyses must be applied in a timely manner.](#)

4.69. The LCU needs to be an autonomous unit at arms-length from its stakeholders to ensure impartiality and independence, for example, the LCU would apply the guidelines consistently, correctly and fairly, taking into account all relevant statistical areas such as short-term statistics or structural statistics. The LCU would then naturally feed timely, reconciled, coherent and consistent data through to the statistical survey domains, and beyond, avoiding unnecessary process and feedback loops. The responsiveness and timeliness dimensions are key for short-term surveys and associated statistics. And since timeliness is paramount in some cases, even with an LCU there may not be sufficient information to realize there is a data inconsistency until after initial estimates are published. Therefore, the LCU will still need to [be adequately integrated into existing organizational structures and](#) involve key downstream actors such as national accounts and balance of payments statisticians as well as link to other areas such as productivity and micro-data linking.

4.70. Figure 4 illustrates the role that a LCU may play in the statistical production process. As already mentioned, providing consistent primary data to national accounts, balance of payments and other [downstream](#) domains by building relations with MNEs and ensuring close cooperation with other relevant authorities inside and outside the country make the role of LCU crucial in the statistical production process.

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important - the LCU should listen to users and discuss (conceptual) issues as well as be able to convince the statistical domains that the data provided are correct, consistent and coherent and need no further adjustments;

- Experience and knowledge about business models, business practices and the functioning of MNEs to understand the content and validity of the statistical returns;
- Experience in different types of profiling techniques, preferably including manual “intensive” profiling;
- Expertise in accountancy, to be able to understand business accounts and translate the information to statistical concepts in line with the SNA and Balance of Payment’s Manual (BPM). Communicating in language that businesses understand is key to bridging the gap between statistical and accounting concepts;
- Experience and knowledge of the statistical system and the relationship between different statistical domains;
- Proficiency in statistical techniques and data engineering dealing with a large amount of information;
- Analytical, investigative and problem resolution skills such as reconciling data from different domains as well as company accounts and other sources;
- Administrative skills; and
- Supporting information technology solutions.

4.74. In short, the staff will need a mix of internal competencies from different areas (e.g. registers, business surveys, national accounts, balance of payments, etc.) and knowledge of business practices (e.g. finance, international accounting standards, business strategy) and the analytical competency to work across these domains.

4.75. In most of the above cases, it is rare that “all” of the skills mentioned are available in one person. Thus, the focus is on building a team wherein all the skills and competencies required are brought together and complement each other. The number of staff, part-time and/or full-time, solely deployed in the LCU will vary in each NSO depending upon the issues mentioned above.

4.4.2 Working procedure

4.76. When MNEs are significant players in the economy of a country, and thus in statistics, it makes sense to establish solid working procedures for dealing with respondent relationships and data issues. Based on experience from currently existing LCUs, such working procedures usually includes:

- Regular official contacts and meetings with the MNEs, complemented by ad-hoc and less formal contacts;
- Good preparation for MNE meetings by reviewing the company structure, company data and notes and actions of previous meetings;
- Regular contact with all statistical domains which need to use the MNE data and would benefit from receiving consistent and coherent data for compiling statistics; and

- Intra-institutional and international cooperation should be part of the work from the beginning, including contact with MNE experts in other countries.

4.77. It should be noted that to work as effectively as possible, it is important to have the right selection of MNEs to be covered by the LCU. The size of the MNE is an important but not the sole criterion as discussed in Section 4.2 above on the criteria for selection to the LCU population. It will also be important to monitor the resident subsidiaries of MNEs with the controlling institution outside the resident territory.

4.78. It might be useful to use a suite of criteria, and priorities, to help define (and possibly to regularly review) the units selected for special measures.

4.79. Furthermore, success of the LCU program will depend on the willingness of the MNE to cooperate - this may not always be the case. Such cases underline that one of the prime functions of the MNE experts [in LCUs](#) and senior management will be to pursue initiatives to foster collaboration with the MNE.

4.4.3 Information sources

4.80. Various information sources are used to examine large and complex enterprises. To get a better understanding of the work done in LCUs, the UNECE Task Force on Global Production carried out a survey in 2015.⁴¹ According to the survey, they always use business surveys for consistency analysis. In addition, countries rely on register information and investment surveys. The register information includes the statistical business register, national enterprise groups registers, EGR, different tax and customs registers. The enterprise groups register and the EGR are often an integrated part of the statistical business register. The structures of enterprise groups recorded by these registers provide the main building blocks for the consistency work and the starting point for data sharing.

4.81. Often countries also analyse data on international trade in goods and services and corporate accounts. The research and development (R&D) surveys, producer price statistics, business outlook surveys, statistics on the production of manufactured goods (e.g. PRODCOM⁴²), specific surveys such as information and communication technology (ICT) surveys, enterprises' quarterly and annual reports, and balance sheets of enterprise groups are useful data sources for consistency work. Some countries have managed to improve international trade in goods and services data of complex MNE units by using information from the outward FATS and global value chain (GVC) surveys.

4.82. Use of data from the balance of payments surveys is becoming more common as cooperation between NSOs and NCBs has been developing. There are many good examples of national accounts and balance of payments reconciliation exercises (see Chapter II for example from Canada). Data sharing between national statistical providers is a very good first step in extending reuse and reconciliation of data between statistical authorities.

4.83. The LCU teams analyse available data sources usually on a quarterly and annual basis depending on the frequency of the data in each data source. More and more often these teams

⁴¹ Full analysis of the results of the survey is available in chapter 6 of the Guide to Measuring Global Production (2015): www.unece.org/index.php?id=42106

⁴² Classification of manufactured goods in the European Community (French acronym)

also analyse monthly short-term statistics. This is important to get early signals on critical changes. However, more complete analysis can be carried out annually when the relevant datasets become available.

OECD analytical database on individual multinationals and affiliates

4.84. One potential source of information on MNEs that could be used to assess which MNEs could be the focus of data sharing among LCU teams is the OECD ADIMA⁴³. The main purpose of the OECD ADIMA is to contribute to the measurement of flows related to multinationals by i) providing improved information to account for the scale and complexity of international MNE activity, and ii) generating timely information on any restructurings MNEs may undertake.

4.85. ADIMA leverages innovative and traditional data sources and harnesses new Big Data techniques in order to compile a harmonized and blended dataset of publicly available data on the scale and scope of the international activities of MNEs. This approach is meant to deliver a unique 'whole of the MNE' view.

4.86. ADIMA draws on:

- MNEs' financial and non-financial variables from annual company reports and corporate sustainability reports;
- Global Legal Entity Identifier Foundation's (GLEIF) Legal Entity Identifier (LEI) database;
- MNEs' websites and attributed Internet page rank (see box below);
- Secure sockets layer (SSL) certificates: websites can have an associated security certificate, i.e. SSL to verify that the identity of the company operating the website and data communicated between parties using that website are secure. The use of these certificates has increased rapidly since the announcement that SSL security is a determining factor for rankings on search engines. Each SSL certificate can contain information for Legal Name of Company, Jurisdiction of Company, Business Register Identifier and Other websites operated. SSL certificates serve two purposes: helping to add websites to the MNE family/website universe that may not be apparent otherwise. In practice, there is an incentive for a MNE to consolidate its digital presence under one certificate and to highlight changes in the MNE family/website universe. This is particularly important for more digital companies, which may take over a website to add an application or brand to their services; and
- Other digital data sources: key digital inputs into the ADIMA monitor come from Wikipedia and the Global Database of Events, Language and Tone (GDELT) news services. To be noted, while Wikipedia and GDELT news services are being tested to highlight the most often mentioned MNEs in the media as part of the ADIMA monitor, these often highlight suspicions and announcements while a change takes a number of months to be confirmed or implemented.

4.87. The ADIMA project encompasses the development of four distinct outputs for 500 of the largest MNEs by sales:

Deleted: 100

⁴³ <https://www.oecd.org/sdd/its/measuring-multinational-enterprises.htm>

- A series of economic indicators at the level of the MNE and for the individual countries in which it operates;
- A physical register of MNE parent-affiliate structures;
- A digital register of websites belonging to each MNE; and
- A monitoring tool that aims to provide early warnings on potential restructurings of MNEs with significant impacts on trade, GDP and FDI data and resulting changes in the level of activity or stock variables to aid the work of national compilers.

4.88. An aspect that is being discussed is how NSOs can use public ADIMA data, for the initial sample of MNEs currently available, to validate and improve their data. [For the EU Member States, ADIMA could be of great interest especially when considering the analysis of economic activities of MNEs outside of Europe.](#) The information underlying ADIMA is all open data and under no restriction. ADIMA could serve as the foundation for an international collaboration to improve sharing of publicly available information on MNEs with no additional response burden on companies or individual countries. In that perspective, it is encouraging that there are countries embracing the open government data platform (outside of official statistics) to share company information specifically including relationship and ownership data; this work has, for instance, been undertaken by the United Kingdom's Companies House that publish⁴⁴ the first open data register of the real owners and controllers of companies-the register of beneficial owners. [One step forward could also be comparison of the ADIMA and EGR databases at European level \(taking into account necessary security provisions for EGR\).](#)

4.89. ADIMA currently (as of Q1 2020) covers 500 MNEs with headquarters in both OECD and non-OECD countries.

Box 4

MNE websites and attributed internet page rank

⁴⁴ download.companieshouse.gov.uk/en_pscdata.html

Websites are generally owned and operated uniquely by a single company, and websites are a key component of ADIMA in order to gain an understanding of the profile of a company.

Websites belonging to a company are determined from a number of sources. A number of databases include information on the websites belonging to companies such as the Permid Organisation database and Wikipedia. The project also considers alternative data sources such as publically available security certificates for websites which list the ownership of the website, and information from webpages collected from an open source 'copy of the internet' generated via web crawling by the Common Crawl Project. These relationships help to build links between companies and websites, unravelling a series of connections which were previously unknown.

Each of the webpages discovered can be ranked in terms of their importance. This importance is determined by an algorithm which accounts for the number of links a website has into the domain and the quality of these links. This is more formally referred to as 'page rank' and reflects the percentage chance that an internet user clicking randomly on links will find themselves on that given webpage. These values can be used to determine a number of indicators for a given MNE:

- The importance of a particular website within a MNE family, such as total.be (Belgium) of TOTAL SA relative to say total.ca (Canada) or total.fr (France).

- The full family of websites can also be 'summed' in terms of their page rank to rank one MNE family of websites against another MNE family of websites. For instance, as a result of this, it appeared that US firms, on average, tend to have a higher digital intensity than firms in other countries (albeit in this small initial sample of 100 MNEs), and that the digital intensity of firms engaged in traditional manufacturing tends to be lower than firms engaged in manufacturing of computer and telecommunications equipment.

4.5 Conclusions

4.90. Data sharing within and across countries requires a significant amount of coordination. Even selecting which MNEs' information would be most useful to share can be challenging. This chapter described strategies for focusing efforts to gain the most benefits for improving data and understanding MNE activities. In particular, the LCU teams that some countries have set up already have the skills and expertise needed to advance data sharing internationally. These should be the focus of data sharing efforts, and countries that do not already have LCUs can learn more about how to establish one with the information provided by other country experiences documented in this chapter.

4.91. Even though the activities of LCUs vary across countries, with MNEs rapidly changing cross-country production chains, the LCUs can provide an essential mechanism to support statisticians in dealing with the data for MNEs across statistical domains. LCUs can also improve efficiency by promoting the use of common tools, drafting instructions for data collection and enhancing consistent treatment of data for the large and complex enterprises operating nationally and/or internationally. Moreover, when LCUs review the data for MNEs, they do so for various statistical domains, whereas without LCUs, this work would be done multiple times in various statistical domains leading to higher costs and lower data consistency.

4.92. Good communication with MNEs can result in receiving timely and accurate information on MNE restructuring or relocation in time for the first statistical dissemination by the NSO. The EWS, which has been launched by Eurostat with the participation of all EU Member States, relies on the potential of a well-functioning LCU and would benefit from the development of an international LCU network.

4.93. Examples from countries with existing LCUs show that while the setting up of the LCU requires initial investment and training, in the medium and longer-term efficiency gains and even resource reduction can be achieved, as well as reduction on the response burden for MNEs. All

countries with an established LCU (or sometimes referred to as a consistency unit) are benefitting from better knowledge and understanding of major MNEs and higher quality data covering their activities.

4.94. In summary, in an ever-changing globalized world, the investment in a LCU type unit is essential to ensure that the national statistics are of high quality and do not double-count or miss any activity. It is also important to take the step to share data, exchange data and reconcile the data for MNEs beyond just the national concept. Global data sharing will enable NSOs (and NCBs) to develop a consistent and complete view of MNEs, thereby improving international comparability of economic statistics and reducing trade asymmetries⁴⁵.

⁴⁵ Mahajan S. (2017)

V. COMMUNICATION AND ENGAGEMENT WITH MULTINATIONAL ENTERPRISES

5.1 MNEs are a key stakeholder in statistical systems

5.1. Data received from MNEs are an important source of information for business statistics and are of central importance for all economic statistics and national accounts. These official statistics are used in decisions that influence the direction of economic policy and they inform many decisions about government services and infrastructure. Official statistics provide an independent and impartial means for assessing progress and should be based on the best possible source data. Accuracy of economic statistics depends greatly on the data from the largest MNE respondents.

5.2. While the data from MNEs has had a large influence on the quality of statistics for many years, the more recent changes in the organization of global production and the increasing importance of IPPs in production has changed the complexity of gathering the needed data. The national activities of MNEs must now be viewed in the context of their global operations to insure the accuracy of national and international economic statistics. These largest respondents often receive many statistical surveys coming from different statistical domains, perhaps from different statistical authorities, and it may be difficult for the MNE itself to properly determine which activities should be reported in each country.

5.3. MNE respondents are key stakeholders in the statistical system. The relationship with MNE respondents requires time and attention to achieve good communication and mutual trust. Engagement and communication with MNEs not only improve the understanding of the economy and the role of MNEs in it, but it can also improve MNE understanding of the use of statistics, statistical challenges and their role as data providers.

5.4. Good communication does not only mean providing respondents with information regarding their obligations and reporting deadlines. Respondents also need clear and efficient guidance for answering statistical surveys. Statisticians need to educate MNE respondents regarding the importance and significance of their data to statistical outputs, and that their contribution is vital for the quality of statistics and the consequent policy decisions at both the national and global level. Statistical offices should also inform MNEs of how their data are used and exchanged within the statistical system to maximize the use of data and limit response burden. [Engaging with respondents is key in building a suite of principles around the sharing of their data for statistical purposes and in ensuring broad community acceptance.](#)

5.5. Some NSOs have developed relationship management programmes or communication strategies that consider respondents as strategic stakeholders, or that offer dedicated respondent management. The respondent relations management programme of Statistics Canada (2016), for instance, includes the following strategic pillars that apply to communication with MNEs:

- Promoting the agency's positive image and credibility
- Protecting the confidentiality of respondent information
- Working continuously to reduce the response burden as much as possible

- Encouraging respondents to participate in surveys

5.6. Creating a system of frequent contact with representatives of the largest enterprises is important for establishing and maintaining good relationships and building trust with these key data providers. Positive image and credibility help the statistical office to conduct successful surveys and engage with MNE respondents. Better collaboration with MNEs requires dedicated resources in the NSO. The MNE data work can be organized in a special unit: a LCU as discussed in the previous chapter, or dedicated persons can be assigned to focus on the management of relations and data provision with large and complex enterprises.

5.7. One of the MNEs' key concerns relates to the confidentiality of their data. MNE respondents should be clearly informed of the strict confidentiality of all data reported to statistical authorities and that full confidentiality is guaranteed by statistical legislation. NSOs take measures to [analyse and](#) reduce risks and use secure platforms for data reporting from businesses and for all phases of statistical production process and data exchange. Handling data securely is a core of competence of official statistics.

5.8. Statistical offices are striving for user-friendly data collection tools and developing more integrated survey methods to reduce response burden. Many NSOs have undertaken work to simplify data collection, and to eliminate excessive regulation and overlap of surveys. Several NSOs have reduced the time businesses need to devote to surveys, cut down the number of surveys or questions in the surveys, use modern data collection methods such as online surveys or partially prefilled electronic surveys, or replaced surveys, in whole or in part, by using administrative data or other secondary data. NSOs should offer to provide a full overview of all the surveys that the MNE will receive from them.

5.9. Good communication regarding improvements to data collection and MNE relationship management are important for making these continued efforts visible to MNEs. While statistical offices cannot always promise a direct reduction of response burden as a result of increased collaboration, there are also other benefits to offer to encourage MNEs' engagement with statisticians.

5.10. One of the benefits NSOs can offer is to provide a single point of contact or an account manager for the MNE, usually welcomed by business respondents. Statistical staff who are in contact with MNEs need to be able to speak the language of the businesses and have expertise in accountancy. MNEs are usually not familiar with statistical terminology such as output or intermediate consumption. MNE respondents do not have the time to learn about statistical classifications, frameworks and terminology. Statisticians need to understand MNEs' processes and activities and how best they fit the statistical frameworks. This also ensures high-quality data are collected at source, avoiding or minimizing misunderstandings.

5.11. Good communication and analytical skills are important in developing and maintaining a good working relationship with the MNEs. NSO staff working with MNEs should be able to listen carefully to MNEs and to discuss both practical and conceptual business accounting issues as well as be able to convince the MNEs about the benefits of close collaboration. They also need skills to adjust MNE data to the purposes of different statistics and convince staff working in other statistical domains that the consolidated data are correct, consistent and coherent and should need no further adjustments.

5.12. Some statistical offices have developed tailored solutions for the reporting of the largest MNEs that are most burdened by numerous statistical surveys. However, NSO resources are limited and they cannot often tailor data collection from MNEs or receive bulk data dumps from respondents. They may, however, be able to offer to map MNEs' data to the statistical frameworks, or to map statistical and accounting terminology, which can help automate statistical reporting.

5.13. Respondents may be surprised by how important their data are for statistics and for decision making in society. Statisticians could explain to the MNE respondents, for instance, how much the largest MNEs account for in the total economy. For instance, the Irish LCU manages a group of MNEs that produces 70 per cent of GDP in Ireland. The message should be clear that if your data are wrong or missing, national statistics may not be of sufficient quality to support government or business decision making. This message is generally well understood by MNEs and highlights how important their engagement is for official statistics. Various corporate responsibility schemes are also emerging among businesses, and transparency about business structures and activities is among the key themes in that regard. [In addition, some MNEs may be accustomed to providing large amounts of confidential and public financial information to policymaking bodies in trade dispute investigations and other trade policy procedures.](#)

5.14. Survey participation can be encouraged by providing examples of how the resulting statistics are used by individuals and communities. In large businesses, data users and respondents of statistical surveys are rarely the same people. It may come as a surprise to MNE respondents that their business planning and marketing makes use of statistical data and analysis.

5.15. Official statistics are a key input to a wide variety of commercial products and services that benefit from having the best possible data. Private businesses value data as a strategic asset and invest important amounts in data to find their competitive advantage. In the United States, an estimate based on some firms that rely heavily on official statistics, suggests that government data help private firms generate revenues of at least USD 24 billion annually, many times greater than spending on official statistics (UNECE, 2018).

5.16. Mapping MNE information systems to statistical frameworks helps us get much more accurate statistics in terms of what is intended to be measured, and this would also significantly ease the response burden of MNEs that are most heavily burdened by statistical surveys. Close work with MNEs can also result in receiving information on MNE restructurings or relocations in a timely manner, thus avoiding some potentially large revisions to statistics when information is received only later.

5.2 Challenges of MNE communication and engagement

5.17. It is important to prepare well for engagement and communication with MNEs so that their time is used efficiently and that the meetings are as useful as possible and contribute to mutual trust and agreement. Finland, Ireland, Italy and Mexico prepared a list of main challenges in MNE communication and engagement (see Table 15).

5.18. They note that it may be difficult to obtain cooperation with MNEs in the beginning as statistical surveys may not be considered a priority by MNEs. Furthermore, the high reporting

burden and costs caused by statistical reporting may also hamper collaboration and render MNEs unwilling to invest additional time to the collaboration with the NSO.

5.19. The production of data for statistics may be regarded only as a cost by MNEs, while LCUs are essentially dependent on their cooperation and willingness to engage. Finding the right contact person at the MNE with the ability to make things happen is also of crucial importance for successful collaboration and may be challenging. Having contact points at the managerial, strategic and operational level of the largest MNEs would help address data issues quickly and effectively. In the experience of countries with established LCUs, most MNEs wish to cooperate as best they can, given the time constraints and data access restrictions they face.

5.20. However, a small minority of MNEs may prove unwilling to engage. In such cases, the options of the LCU are limited. Strategies such as a change in LCU account manager who may establish a better relationship with the MNE respondent; escalation within the MNE to encourage cooperation; or referral to the NSO's legal department for enforcement may be successful. Failing all this, the NSO may have to impute or model the activities of the MNE, to reflect them in the national aggregates. Here data exchange with statistical authorities of other countries might help but will not typically fully solve the national data needs.

5.21. Successful cooperation with MNEs also depends on how dynamic and effective the LCU's cooperation is with statistical domains, the statistical business register and possibly other national statistical authorities as sources of key data on MNEs and partners in improving consistency.

5.22. Statistical and business terminology differ significantly. Statisticians and accountants often speak a different language, which can make accurate data reporting difficult and hamper collaboration. Differences also relate to accounting units that may be difficult to match with statistical reporting units.

5.23. NSOs are increasingly challenged by the need to get information about MNEs' activities, structures and branches in other countries, the global intra-group agreements, and the division of intangibles and R&D across countries. NSOs may not always have the legal grounds to collect data on MNEs' foreign subsidiaries. Country-level consolidated figures on the activities of foreign branches may also be difficult to report for MNEs.

5.24. Another difficulty is the continuously changing enterprise group structure and changing organization of MNE units, which is why selected data collection units and pre-filled data often get outdated quickly and require continuous efforts to keep up with the latest changes.

5.25. In general, close cooperation between MNEs and statisticians is the way to solve and mitigate these problems. Close, on-going dialogue with MNEs through the LCU or MNE account managers helps to address the challenges. Information on the importance of MNE data for national macroeconomic aggregates and the use of these statistics for policy making and business decisions often helps. NSOs should also show flexibility and be proactive in developing tools for efficient data collection from MNEs.

5.26. It would be important to have a communication plan and some risk management tools available when engaging in data exchange and to ensure that all necessary measures are taken to safeguard privacy.

Table 15

MNE communication and engagement - challenges and possible solutions

Challenges	Possible solutions
1. Difficulty to obtain cooperation - not a priority for MNEs	
	Official first contact at a high level of corporate and NSO management
	Involve national trade associations or sectoral federations
	Emphasize the strict confidentiality of data
	Explain the legal background and statistical requirements
	Prepare arguments to motivate the MNE to engage
	Make an agreement on data reporting and provision of support
	Explain how the MNE's data appear in statistical releases
	Explain how the resulting statistics are used
2. High response burden and reporting costs	
	Inform MNEs of the importance of their data
	Show flexibility in data collection
	Develop clear guidance for reporting together with MNEs
	Proactive development of modern data reporting
	Offer a single contact point in the NSO
	Share information on improvements that reduce response burden
	Use MNEs' feedback for improving their service
3. Finding the right contact person	
	Agree on the contact person at the first high-level meeting
	Seek a senior contact in charge of corporate accounting
	Maintain an on-going dialogue through LCU or account managers
4. Speaking the same language	
	Try to learn and use business language: training activities
	Keep the terminology as simple as possible
	Explain the necessary statistical terms clearly
	Avoid acronyms and terms only applicable to NSOs or NCBs
5. Difficulty to get data about units and activities abroad	
	Share data exclusively for statistical purposes with statistical offices of other countries
	Engage in voluntary projects with MNEs to assess global structures
	Increase statistical cooperation internationally and do cross-country comparisons
6. MNE structures continuously changing	
	Maintain continuous contacts through the LCU or MNE relationship management
	Follow up on changes in MNE structures through media and other available sources
	Identify issues to be clarified or discussed directly the MNE

5.3 Process of engaging with MNE respondents

5.27. This section outlines the process of engagement with MNE respondents with the above challenges and solutions in mind. The first contact with a MNE to introduce the LCU or account

manager frequently requires the involvement of senior management from both organizations, and this contact should be maintained on an on-going basis thereafter.

5.28. Some basic principles apply when preparing to make this first contact with a MNE, based on the experience of countries with well-established LCUs. The correct point of contact at the most appropriate level of seniority within the MNE should be identified. Extensive preparation should be done in advance of the initial contact, including information on the importance of the MNE in economic statistics and potential benefits of the new program to the MNE such as improved data or possible lower response burden. Specific issues with the MNE's data should also be identified so that it can be clear where future contacts will be required.

5.29. An official letter to the identified point of contact, signed at a corresponding level of seniority within the NSO, may be appropriate, requesting a first meeting between the LCU and the MNE. The main objective of the initial meeting is to establish trust at a senior level in both organizations, and to obtain the future cooperation of the MNE, while follow-up meetings should involve experts to discuss more technical aspects.

5.30. LCUs may encounter different corporate structures within MNEs, which may lead to complexity when establishing contact and arranging meetings. These different structures may range from one contact with access to all relevant data, to multiple contacts situated domestically and abroad.

5.31. Arguments should be prepared to motivate the MNE to engage with the LCU, as in some countries there may be no legal obligation for the company to engage further once survey forms or accounts have been submitted. While burden reduction for the MNE would be a clear motivator for cooperation, this may not always be possible to deliver.

5.32. Dedicated LCU account management; a clear overview of the timings of all survey requirements in advance (including those from NCBs, where relevant) to allow for resource planning by the MNE; and assurances regarding data confidentiality may help elicit their cooperation. It is important to stress that data submitted to the NSO are used solely for the compilation of statistics and cannot be shared with tax authorities or any other government authorities other than statistical authorities.

5.33. In smaller countries, contextualizing the disproportionate effect that the MNE's activities have on the local economy may also prove persuasive. It may be also useful to highlight that the quality of data published by the NSO, which the MNE may freely access to inform their business strategies, relies on good quality data being provided to the NSO by the MNE and other respondents. The NSO can also offer some "insights" to the MNE about the statistics that rely on their information, as well as a detailed explanation of how the data from the MNE is used in key statistics.

5.34. Once the first meeting has been secured, a detailed agenda sent in advance should help the MNE to prepare. The agenda, and any supporting documents or data, should ensure that the MNE has a clear understanding of how the new program is to be implemented and what will change in the communications between the MNE and the NSO and what will not change. It should be clear what is being requested from the MNE, e.g. a single point of contact for the LCU, and what issues require resolution or discussion. It is important to engage with MNEs using the language of business and accounting, rather than the language of statistics.

5.35. Suggested themes for a first meeting may include, but not be limited to, the following:

- Legal powers of the NSO (if appropriate)
 - Role of the LCU within the NSO, and its relationship with other statistical domains.
 - Importance of the MNE to the national aggregates.
- Confirmation of structure (profiling)
 - The legal entities (including branches or subdivisions) registered in the local economy should be established, along with their tax residency.
- Number of sites, employees and breakdown of functions within each relevant entity
 - Global functions, control, and whether inhouse R&D is conducted should be explored.
- Manufacturing arrangements
 - Do the resident units manufacture on behalf of other group companies or third parties, and/or are others employed to manufacture on their behalf? A precise shared understanding of concepts such as “contract manufacturing” or “cost plus” should be reached and documented. It is helpful to have statistical definitions of globalization arrangements such as merchanting, tolling factoryless goods production etc. to hand during the meeting to ensure the MNE is clear on how data relating to these activities should be reported.
- Supply chain arrangements
 - The physical movement vs. changes in economic ownership of materials should be clarified, along with the ownership of inventory and production inputs.
- Residence of the IPP related to the output of the enterprise
 - Royalty flows and counterparties should be established.
- Organizational practices
 - Specific features of the MNE’s accounting practices such as “true ups” or “price adjustments” should be clarified. The valuation of inventory and exports, as well as any seasonality in their sales patterns, should be queried.

5.36. It is important that notes and actions from the meeting are agreed with the MNE and recorded and followed up by the LCU to ensure that agreed timelines are met.

5.4 Communicating about MNE data exchange for statistical purposes

5.37. This subsection presents the types of arguments that could be used to convince an MNE of the need for data exchange. Data of MNEs is crucial for the quality of economic statistics as MNEs typically have a significant impact on national statistics due to their size, complexity and

global reach. Data exchange is essential for measuring economic development correctly, especially to be able to treat global production consistently across countries. NSOs have experienced notable improvements of coherence, relevance, accuracy and timeliness of statistics through having better source data through data exchange.

5.38. Data exchange also helps to avoid excessive burden on respondents. Statisticians aim at collecting data only once and reusing the collected data across statistics within the national statistical system. NSOs, Customs and NCBs, for instance, need to use the same statistical data across their respective statistics, and it makes sense to collect it only once. Countries have managed to improve the quality of statistics by developing joint data collection between statistical authorities. Joint surveys also reduce the time and resource use of businesses when they receive only one survey instead of two or three.

5.39. The following Figures 5a and 5b illustrate the current data flows and how they might look like in the future if the vision of the data sharing for statistical purposes would be fully achieved. [The figures aim to be generic and do not highlight all specific arrangements.](#)

Figure 5a
Illustration of current data flows

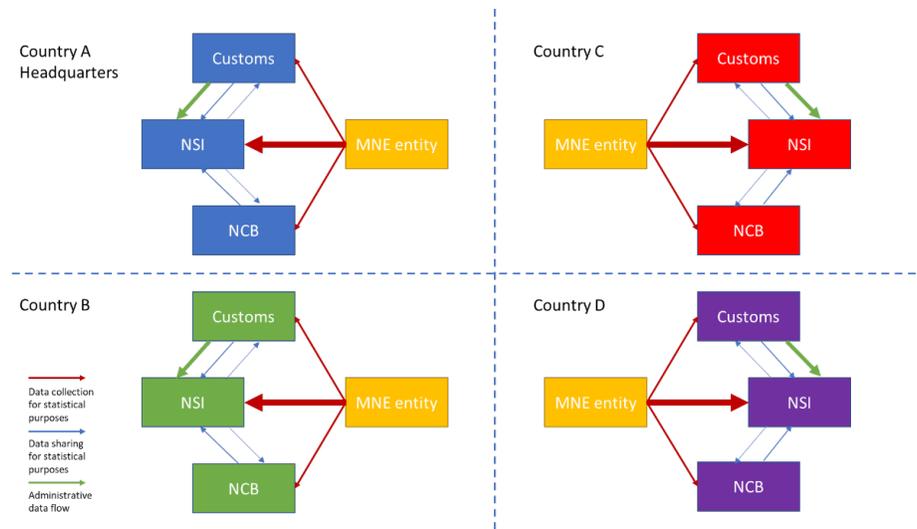
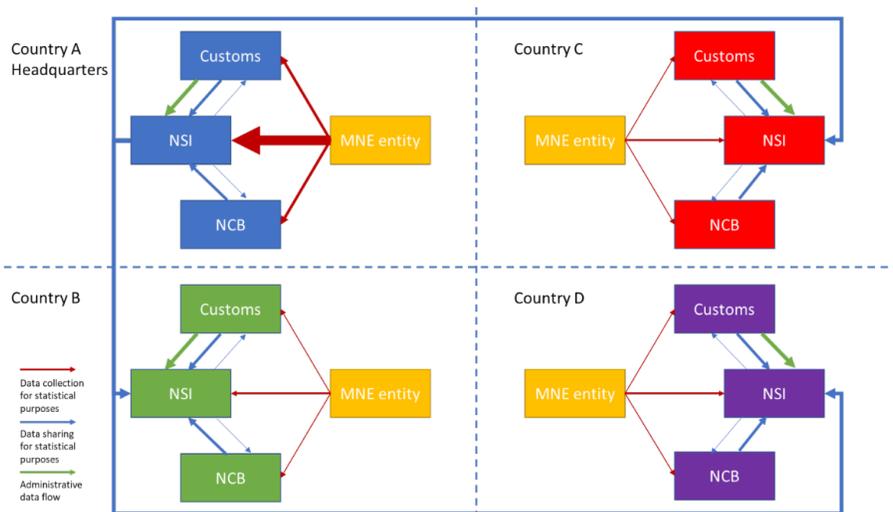


Figure 5b
Illustration of future data flows



5.40. MNEs' structures develop over time to reflect business requirements, and it may be difficult for MNEs to report their activities by country. To ensure correct recording of the largest MNEs in national statistics, it is necessary to understand their global structures and value chains and, thus, share data with statistical authorities of other countries.

5.41. Developing international data exchange within official statistics offers a possibility to reuse data collected by one statistical authority, if it is required for the official statistics of another country. Through targeted data exchange, NSOs would not need to do additional data requests for MNEs in each country if the collected data could be exchanged. Having better statistical data about the MNE structures and activities may also help the MNE in their business reporting within the MNE and with its affiliates.

5.42. There have been significant quality improvements from data exchange, for instance in the area of foreign trade statistics. Countries have carried out mirror exercises to compare flows across countries based on statistics. International data exchange has helped to reduce asymmetries between countries, and to increase data integration. Data exchange helps to save scarce resources while improving the output of statistical offices.

5.5 Conclusions

5.43. It is very likely that the key point in communicating with MNEs will centre on what provisions are in place to guard the confidentiality of their information. While the necessary provisions have been covered elsewhere in the Guide, NSOs should be prepared to address all of the following eight points when communicating with the MNEs.

- The NSOs may exchange statistical data only with recognized statistical authorities of other countries exclusively for statistical purposes. A statistical authority can only access data relating to its area of competence, meaning data that are necessary for those statistics that are produced by the statistical authority in question;
- The NSO shall ensure that the recipient authority has a strict legal framework in place to ensure the full protection of confidential data in all circumstances. Data provided by MNEs for statistical purposes will not leave the statistical system at any stage. All data reported or acquired for statistics are strictly confidential, and statistical legislation requires that these data are used exclusively for statistical purposes, [Where necessary, the legal framework for the collecting data may explicitly address the transfer to third parties for statistical purposes;](#)
- The statistical law gives statisticians a strong mandate to collect data. Statisticians receive data from tax authorities and other government agencies, but as a one-way communication stream only, and any data will not go back to other authorities from statistical offices. Furthermore, data collected or acquired for statistical purposes shall not be used for any decisions or legal proceedings regarding an individual or a business;
- Each international data exchange for statistical purposes must be authorized by the Head of NSOs of the involved statistical authorities and be documented in a mutually signed agreement. Any data exchange agreements do not diminish the responsibility of the statistical authority to ensure the confidentiality of the data they provide for exchange;
- The data that are shared can be qualitative, quantitative, confidential, non-confidential, aggregated or disaggregated, collected directly or otherwise obtained by statistical authorities from varying sources, or data that are publicly available. Confidential data can only be shared by using secure technology and among producers of official statistics that have a legal framework in place to ensure statistical confidentiality;
- Statistical legislation ensures that violations of confidentiality shall be prosecuted ([as applicable in the country](#)). Any person or organization with access to data before its release, or to data subject to statistical confidentiality, using this information for other than statistical purposes will face legal action. Therefore, before international data exchange, the involved statistical authorities will confirm that such regulation is in place in all countries involved. This is the case in all EU countries, for instance;
- In case of a breach of confidentiality or data security of exchanged data, the statistical office will take all measures to minimize the damage and will immediately inform the respondent concerned. Data breaches are extremely rare in official statistics. More often misuse relates to either intended or unintended misinterpretation of statistics and erroneous conclusions made based on statistics; and
- Statistical offices take advantage of new secure technologies to improve data reporting and exchange and implement various risk management tools to prevent any unauthorized use of statistical data. NSOs cooperate internationally to develop risk

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management and continuously improve data security and practices in dealing with the data and respondent relations of MNEs.

5.44. However, MNEs are likely to have operations in countries that are not willing to share data with statistical authorities of other countries, or they may be present in countries that do not have the required safeguards for ensuring confidentiality, and cannot thus be involved in the data exchange. Multi-pronged strategies may well be required for data sharing in those instances, including some micro data exchange, some macro data exchange and other means of reconciliation.

5.45. Engaging with MNEs and obtaining their support for data sharing and data exchange projects will be important if these tools are to be available to NSOs for addressing the challenges in measuring the increasing MNE influence on national economies and overall economic activity.

VI. PRINCIPLES AND GUIDANCE FOR DATA SHARING

6.1 Introduction

6.1. Ensuring an efficient, secure and fit for purpose sharing and exchange of economic data requires considering various legal and technical aspects. Thereby, special attention needs to be paid to the exchange and sharing of confidential data. Secure data exchange should follow the Guidance on Modernizing Statistical Legislation, endorsed by over 60 countries and a number of international organizations at the CES plenary session in 2018, which includes a chapter on statistical confidentiality providing guidance on the necessary legal framework. The Guidance is fully in line with the United Nations Fundamental Principles of Official Statistics, endorsed by the General Assembly in 2014, the European Statistics Code of Practice⁴⁶, adopted in 2005 and revised in November 2017 and the Recommendation of the OECD Council on Good Statistical Practice⁴⁷, adopted in 2015 and amended in 2019. The European Statistics Code of Practice and the Recommendation of the OECD Council on Good Statistical Practice go beyond principles and legislative requirements to provide useful guidance on good practices.

6.2. This guidance for international data exchange has been compiled to support the exchange of confidential data between statistical authorities in different countries to ensure the quality of data and statistics. Exchange and sharing of data might also bring other beneficial impacts such as resource savings and reductions in the statistical reporting burden on enterprises. The guidance is largely based on the instructions developed by Statistics Finland for cases of international data exchange.

6.3. The Finnish instructions concern ad-hoc and small-scale exchange of data with European statistical authorities or statistical authorities of other countries. The exchanged data can be used for enterprise profiling and for validation of business statistics, national accounts and balance of payments data etc. The guidance that follows can be applied to bilateral discussions and actual data exchange. While the Finnish instructions have been generalized in the following chapter, outside of the EU context care will need to be taken to ensure procedures meet the basic principles. More extensive and regular exchange of data with one or more foreign countries will require separate decisions, agreements and even more stringent processes. This guidance also describes the documentation and agreements needed for data exchange and for the monitoring of data sharing activities.

6.4. Currently, international data exchange for statistical purposes is not usually allowed or mentioned in the legal frameworks of countries outside of the EU, whereas the ESS law defines the necessary concepts and constraints of data exchange within the ESS and with the ESCB. Later in the chapter, EU operationalization of data exchanges will be described as examples of implementation.

⁴⁶ ec.europa.eu/eurostat/web/quality/european-statistics-code-of-practice

⁴⁷ www.oecd.org/statistics/good-practice-toolkit/

6.2 Principles for safeguarding confidentiality

6.5. The increased use, reuse and sharing of data for statistical purposes requires reassuring businesses and the public, who answer censuses and surveys, providing detailed information about themselves, their families, their businesses and their lives, that their private information will not ever be made public. Statisticians need to demonstrate that we can use that information in a way that benefits society, and serves the public good, without ever allowing those who provide data to be identified.

6.6. The job of statisticians includes the requirement to maximize the use of the detailed data that NSOs hold, while keeping it secure at all times; to then produce statistics for the government, academics, businesses and other users of these data, while individuals or business units providing their data will never be identified from the public statistics. Private information will never be disclosed and will only be used in ways that clearly serve the public good. In the United Kingdom⁴⁸, the statistical confidentiality principles can be summarized into what is commonly called the “Five Safes”: Safe people; Safe projects; Safe settings; Safe outputs; Safe data. These principles also fully apply to data sharing among statistical authorities and are embedded in the instructions for data sharing presented in the following section.

Safe people

6.7. Only safe people can access data held by NSOs. Only those staff members who are responsible for producing statistics that require the handling of sensitive data about people or businesses can access those data. All persons that have access to data are bound by confidentiality that will not cease to apply even after the staff member no longer works at the NSO.

Safe projects

6.8. Data are used exclusively for statistical purposes. In data sharing for statistical purposes, data can only be used for purposes defined in the data sharing agreement. Data provided to statistical authorities are never given for any administrative purposes, or for any investigation, surveillance, legal proceedings, administrative decision making or other similar handling of matters concerning a person or business.

Safe settings

6.9. The data shall be stored in a secure environment. In the case of international data sharing for statistical purposes, the received data shall be deleted when they are no longer needed or after a pre-agreed period of time. Confidentiality breaches, which are extremely rare, shall be immediately reported and prosecuted. Data are only exchanged among recognized statistical authorities upon confirming that the national legislation and practices of contractual parties will guarantee the full protection of confidential data.

⁴⁸ The ‘Five Safes’ - Data Privacy at ONS: blog.ons.gov.uk/2017/01/27/the-five-safes-data-privacy-at-ons/

Safe outputs

6.10. The outputs of statistical production, releases, publications, tables, charts and maps cannot identify the data-subjects. The statistical authority shall protect exchanged confidential data in such a way that the person, business or other entity cannot be identified, either directly or even indirectly, when account is taken of all relevant means that might reasonably be used. [Safe outputs in the framework of micro-data exchange necessitate a high degree of harmonization of disclosure control as practiced by participating NSOs. Common methods for ensuring confidentiality in dissemination need to be found, agreed on and implemented.](#)

Safe data

6.11. Data sharing among statistical authorities, is done on a need to know basis only by revealing the minimum required data. Statistical authorities can only receive data they need for those statistics they are mandated to produce. To do this, statisticians need to consider different data sensitivity levels (see paragraph 6.24 and Table 16).

6.12. This framework means respondents can be assured, in case their data need to be exchanged with other statistical authorities, the following conditions apply:

- Only recognized statistical authorities and their staff who have been accredited are involved;
- The data will be used exclusively for statistical purposes to deliver high-quality official statistics;
- The data will reside in a secure setting where it is impossible for unauthorized people to access data;
- That all statistical outputs are checked and confirmed as non-disclosive; and
- That only the minimum amount of data to fulfil the mandate of statistical authorities is exchanged.

6.13. Although specific rules may vary across countries, the same core principles remain, and help to ensure safe use of a diverse range of data for the production of official statistics.

6.3 Guidance on statistical legislation

6.14. A fundamental action that may be necessary to permit and promote data exchange is the modification of national legislation. The Task Force on exchange and sharing of economic data had an opportunity to engage with the UNECE Task Force on Common Elements of Statistical Legislation (co-chaired by Latvia and the United Kingdom) as they worked at the same time to draft the guidance for all statistical offices and also touched upon data exchange. The objective of that Task Force was to identify common elements of national statistical legislation for all CES member states, in line with the Fundamental Principles of Official Statistics, the European Statistics Code of Practice and the Recommendation of the OECD Council on Good Statistical Practice. The Task Force on exchange and sharing of economic data provided views on how to enable secure data exchange for statistical purposes between statistical authorities both nationally and internationally.

6.15. The draft guidance on statistical legislation already included elements that enabled the exchange of confidential micro-data within the national statistical system, and elements that enabled the access of producers of official statistics to all private and public data sources, if needed for statistical purposes.

6.16. Further, the Task Force on exchange and sharing of economic data made the following proposals relating to the guidance on statistical legislation:

1. It would be useful to consider an exemption to data confidentiality to allow unit level data which are made publicly available by the respondent itself, directly or indirectly, to be considered non-confidential. This could include data published through annual or quarterly reports, if they meet the statistical definitions. These data could then also be exchanged without any breach of confidentiality among producers of official statistics.
2. It would be useful to enable in the guidance on statistical legislation the exchange of micro-data with the NSOs of other countries and possibly with associated producers of official statistics under strict confidentiality by using secure processes. [Currently this kind of wide-scale data exchange is possible only within the ESS.](#)
3. The Task Force drew attention to the need to mention quality improvement as part of the definition of “use for statistical purposes” as it is a key justification for engaging in data exchange.

6.17. The Task Force on exchange and sharing of economic data also noted that ideally the international community should work towards having global unique identifiers for statistical units which would match with the current reality of businesses that operate across national borders. At this stage, this issue was merely flagged as an idea for future strategic development in international statistics.

6.18. After consultations with the Task Force on exchange and sharing of economic data, the draft Guidance on Modernizing Statistical Legislation was modified to enable waiving the protection of statistical confidentiality of publicly available data (point 1 above). Common element 7.2 on “exemptions from confidentiality” states that:

The Chief Statistician may waive the protection of statistical confidentiality of data that are available to the public, in accordance with other legislation, while considering the related quality and reliability issues.

6.19. The guidance also enables seeking consent from the respondent according to a provision stating, in common element 7.2, that:

Statistics, which may make it possible to identify a natural or legal person, may be disseminated and communicated only if the person has unambiguously given its consent to the disclosure of data.

6.20. As a result of discussions between the task forces, common element 11.3 on “international transmission of individual data for statistical purposes” was added to the Guidance [on Modernizing Statistical Legislation](#) to enable data sharing with a producer of official statistics of a foreign country (point 2 above), as follows:

National statistical office with other producers of official statistics, as relevant, may enable the voluntary exchange of individual data and other confidential data exclusively for statistical purposes in the area of competence of a producer of official statistics of a foreign country. National statistical office shall ensure that the recipient has the necessary legal framework in place for the full protection of confidential data.

Each such transmission must be authorized by the Chief Statisticians of the involved national statistical systems and the conditions be documented in a mutually signed agreement. Such agreements do not diminish the responsibility of the producer of official statistics to ensure the confidentiality of the data they exchange. A list of all such transmissions shall be made publicly available on request.

[6.21. Still, the cultural element is heavily involved in enabling data exchange when explicit regulations about data sharing for statistical purposes are not included in the statistical legislation. In some countries, legal concerns may arise regarding data exchange based on a mutually signed agreement only.](#)

6.22. Furthermore, the Guidance on Modernizing Statistical Legislation now includes an updated definition of “use for statistical purposes” with reference to quality improvement in line with the Task Force’s proposal (point 3 above). Common element 2.2, point (a), defines “use for statistical purposes” as follows:

Use for statistical purposes means the exclusive use of data for the development, production, dissemination and communication of official statistics, quality improvement, statistical analyses and statistical services, including all activities regulated by the statistical law⁴⁹.

6.23. Extracts of the common elements of statistical legislation related to collaboration with central banks and data exchange among producers of official statistics are available in Annex 1.

6.4 Nature of data to be exchanged and required documentation

6.4.1 Nature of data

6.24. A key factor in establishing the documentation needed for any particular data sharing proposal is the level of detail and sensitivity of the data to be shared. It is not always necessary to exchange unit-level data between statistical authorities for the validation of statistical figures. Aggregate or even public data can be used to investigate the reasons behind some asymmetries.

6.25. The level of detail and sensitivity of exchangeable data can be roughly grouped as follows:

- Type 1: Aggregate-level data, e.g. statistical data groupings released to the public or delivered to an international organization, including generic information on methods applied. Exchanging or discussing such data does not usually involve any restrictions.

⁴⁹ [In this Guide the focus is mainly on sharing of data for quality improvement, development and production of official statistics to be shared within the global statistical system. This guide does not directly deal with dissemination issues like statistical disclosure principles when publishing the statistics. Therefore, the definition of "use for statistical purposes" used in this Guide does not apply to dissemination and publication practices and statistical services, including all activities regulated by the statistical law.](#)

The sensitivity of publicly available data at the company level can be equated with this type of data.

“The exports of this industry deviate by this much from the counterparty country’s imports”; “A clear level shift is visible in the time series during period x.”; “Bookkeeping values are used for valuing unlisted companies for the aggregates”; “According to the annual report the turnover of company x is EUR x in country x.”

- Type 2: The unit-level metadata and classification data refer to ways to classify units and methodological or other metadata connected with the processing of figures. These data describing for instance the size class ([sufficiently large](#)) or industry of units are not as sensitive by nature as the actual figures, and their exchange should not cause major confidentiality problems [\(there may be exemptions\)](#).

“The figures of company x are included in this aggregate, we classify company x in this category, the business of company x is of this nature”

- Type 3: Figures describing units covered by statistical inquiries or through administrative files, whose confidentiality must be ensured. Confidential information given by the unit for e.g. statistical profiling purposes can be contrast with this type of data.

“The turnover of company x was EUR x in this period, our estimate on the value of company x is EUR x, we have made a coverage revision of EUR x to this figure, in connection with profiling exercise the company x representative described their business model to be of type x”

6.26. Statistical programs must ensure that the data exchange is documented so that it is possible to find out later with whom the data were exchanged and what purposes of use were allowed. At minimum, the following must be documented concerning the exchange of type 2 and 3 data:

- Date
- From which statistics program the data were exchanged and including which data items or variables and which statistical units were concerned
- Who exchanged the data (name and contact information)
- To whom the data were provided (name and contact information)
- Which purposes of use of the exchanged data are allowed

6.27. In connection with the exchange of type 2 or 3 data, a confidentiality agreement must be required from the counterparty statistical authority. The suggested content of the confidentiality agreement is presented in the next subsection.

6.4.2 Confidentiality agreement

6.28. A confidentiality agreement sets out the rules to be followed by NSOs and other statistical authorities when exchanging individual data. As defined by the UNECE Guidance on Modernizing Statistical Legislation, individual data refers to “the most detailed level of data about statistical

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units". In the case of economic data, such enterprise specific data may include both quantitative and qualitative information about the unit. By committing to obey this confidentiality agreement, the statistical authority agrees to follow these rules when using the exchanged data:

- The receiving statistical authority shall only be granted access to the data upon presenting the articles of statistical or related legislation that guarantee the full protection of confidential data;
- The data are used only for statistical purposes in order to produce or develop statistics or improve their quality only in the area of competence mandated for the statistical authority receiving the data and for uses explicitly defined. Data are not allowed to be used for administrative or scientific purposes or for any investigation, surveillance, legal proceedings, administrative decision making or other similar handling of matters concerning a natural or a legal person by any authorities;
- Enterprises cannot be contacted on the basis of the data received;
- The data shall not be provided to any third parties and the receiving statistical authority "shall take all necessary regulatory, administrative, technical and organizational measures to prevent access by unauthorized persons" (in line with common element 7.4). Any confidentiality breaches shall be immediately reported to the statistical authority that provided the data and [depending on the nature of breach may result in prosecution](#);
- Strict disclosure control must be applied when publishing statistics to which the received data contribute. The receiving statistical authority "shall protect confidential data in such a way that the natural or legal person cannot be identified, either directly or indirectly, when account is taken of all relevant means that might reasonably be used by a third party" (in line with common element 7.3);
- The data shall be stored in a secure environment and the access to data shall be limited to only persons directly in charge of tasks for which the data are received; and
- The received data shall be deleted when they are no longer needed or after a pre-agreed period of time.

6.4.3 Memorandum of Understanding

6.29. In addition to a confidentiality agreement the exchange of type 3 data with statistical authorities will generally require a specific MOU⁵⁰ to be signed with the counterparty statistical authority. In practice, with this MOU counterparties agree on binding measures relating to the legal, technical and confidentiality aspects of data exchange.

6.30. Box 5 presents a model MOU [inspired by the](#) agreements used in the data exchange of SIMSTAT projects in 2015-2017. The model agreement will need to be modified based on country and organization specific issues.

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⁵⁰ Data exchanges involving only EU countries do not need an MOU because of the EU legal provisions.

Box 5

Memorandum of Understanding for international data exchange (Template)

Agreement on exchange of individual data by statistical authority (SA_1 and statistical authority (SA_2

1. Definitions

1.1. Contractual parties

1.2. Other definitions

Individual data refers to detailed level of data about statistical units, and in the case of economic data, such enterprise specific data and may include both quantitative and qualitative information about the unit and may be sourced from various sources.

2. Purpose of the agreement

To facilitate data exchange needed to ensure the quality of statistics.

The agreement sets out the rules to be followed by the contractual parties when exchanging data.

3. Agreement

SA_1 represented for the purposes of this agreement by Name1, Head of NSO and SA_2 represented for the purposes of this agreement by Name2, Head of NSO have agreed upon the following rules and practices to be followed when exchanging data and using the exchanged data:

3.1. Exchanged data

The contractual parties shall supply each other with the data listed in Annex1, including enterprise identifiers (if available). The parties shall agree upon a data structure and a secure method when exchanging data elements defined in Annex 1 of this agreement.

3.2. Use of exchanged data

The data will be used exclusively for statistical purposes in order to produce or develop statistics or improve their quality. Data exchanged within this MOU, will be used exclusively for the...

Each party shall protect the confidentiality of exchanged data in such a way that a natural or legal person cannot be identified from the released statistics, either directly or indirectly, when account is taken of all relevant means that might reasonably be used by a third party.

3.3. Restrictions on the use of exchanged data

Data are not allowed to be used for administrative or scientific purposes or for any investigation, surveillance, legal proceedings, administrative decision making or other similar handling of matters concerning a natural or a legal person by any authorities. The data shall not be provided to third parties and the SA shall take all necessary regulatory, administrative, technical and organizational measures to prevent access by unauthorized persons. Any confidentiality breaches shall be immediately reported to the statistical authority that provided the data.

3.4 Communication with enterprises

Enterprises cannot be contacted on the basis of data received.

3.5 Access to data

Access to data shall be limited to only persons directly in charge of tasks for which the data are received. The names of the employees who will have access to data are listed in Annex 2.

3.6 Data storage

The data shall be stored in a secure environment. The received data shall be deleted when they are no longer needed or after a pre-agreed period of time or upon the termination of the agreement.

3.7 Duration of the validity of the agreement

This agreement is valid from the date of signatures to 31 December 202x. Data exchange shall be launched after both parties have ensured that the recipient has the necessary legal framework in place for the full protection of confidential data. The relevant articles of statistical or other legislation are documented in Annex 3.

3.8 Changes in the agreement

This agreement can be supplemented or changed by subsequent agreements that shall be signed by contractual parties as described in section 1. Annex 2 indicating persons who have access to the data received shall be amended before any new employee is assigned to tasks requiring the use of the exchanged data. The amendment is done by submitting a notification to the contractual party. In case of non-observance of the agreement, both contractual parties can terminate this agreement. In this case all the exchanged and stored data shall be deleted immediately.

SIGNATURES

ANNEXES

Annex 1. Data elements to be exchanged (variable names, formats etc.)

Annex 2. List of employees that have access to the data foreseen in this agreement (address of premises, name, title)

Annex 3. Articles of statistical or other legislation guaranteeing the full protection of statistical confidentiality

6.4.4 A summary of required documentation and agreements

6.31. Table 16 below presents a summary of required documentation and agreements related to the exchange of different types of data:

Table 16

Confidentiality issues and documentation for data exchange by type of data

Confidentiality issues by type of data	Type of data				Characteristics	Example	Required documentation and agreements
	Quantitative		Qualitative				
	Aggregate -level data	Individual data	General	Specific			
Type 1 data, None	Published data	Publicly available data	Methodology	-	Published by the NSO or NCB Published by the company Other data considered non-confidential under the statistical laws	Published tables Quality description in a standard format Annual report data	No documentation or agreement requirements
Type 2 data, Minor	-	-	-	Classification and other metadata related to the unit	Not published by the statistical authority Identifies some (broad) characteristics of an economic unit Not sensitive data for the unit	Unit name Classification data related to the unit Theory of international manuals applied to the unit Selected recording method and valuation principles Period in which the transaction is visible in statistics	Confidentiality agreement + Date From which statistics the data were exchanged Who exchanged the data (name and contact information) To whom the data were exchanged (name and contact information) For which purpose are the exchanged data used
Type 3 data, Major	-	Administrative data Survey data	-	Confidential data given by the unit to another statistical authority	Not published by the statistical authority Identifies specific characteristics of an economic unit Sensitive data for the unit	Estimated figures related to the unit Actual figures related to the unit Business model Trade partners Names of the unit's contact persons	Confidentiality agreement + MOU⁵¹ with statistical authorities Same as above + Unit consent to the disclosure of data if needed

⁵¹ Data exchanges involving only EU countries do not need an MOU because of the EU legal provisions.

6.5 Guidance on the infrastructure for secure exchange of economic data

6.5.1 Introduction

6.32. While legal aspects of exchange and sharing of confidential data are dealt with earlier in this chapter as well as the required documentation and agreements, this section concentrates on novel organizational structures and business models as well as secure, easy to use and state of the art technical infrastructure, like information technology (IT) platforms and secure transmission channels. In addition, there is a need to preserve the privacy of sensitive data while they are being processed. In some cases, shared computation and sharing results instead of sharing data themselves may represent a better solution.

6.33. Various secure technical solutions for data sharing already exist, which enables promoting sharing of data for statistical purposes in the coming years. Statisticians can also learn secure techniques from other administrative fields (e.g. from tax authorities), where cross-border data sharing has already been implemented and established processes designed.

6.5.2 Aspects of data exchange

6.34. To exchange data successfully, the structure of the data must be known. Such structures can be described using international standards or by using bilateral agreements. Examples of standards that can be used to share data structures are SDMX⁵² and Data Documentation Initiative (DDI)⁵³. In cases where data may be extracted from unstructured sources such as big data, a target structure should still be defined. Structuring some data may initially be ad-hoc; however, it needs to be fixed at a certain point to be able to use the data effectively in statistical algorithms. Depending on the volatility of the data structure, type of data and regularity of exchange, different technical solutions may be envisaged.

6.35. In order to exchange data in the best way, the following aspects need to be considered:

- The type of data;
- What the data are to be used for; and
- How frequently the exchange of this data will take place.

6.36. These three aspects are key in determining the technical approach needed to meet the data sharing goals.

1. **Purpose:** the approach chosen to exchange and analyse data is largely linked to the specific agreed use to which the data are to be put. The purpose for which the data were collected may differ to a great extent from the proposed purpose for such data. Especially in the case of big data, collection is often a by-product of non-statistical activities and thus validation and statistical treatment (e.g. correction for bias) may get more complex or even disqualify certain data sources
2. **Type of data:** the major characteristics of data that need to be considered when deciding on exchange modes are:

⁵² sdmx.org/

⁵³ www.ddialliance.org/

Field Code Changed

Field Code Changed

- i. Sensitivity: free for publication, under embargo, limited use, confidential;
- ii. Volume: low, medium, high, big data;
- iii. Granularity: macro, meso⁵⁴, micro.

While these characteristics can be, in principle, analysed separately, there is a certain link between them. In most cases, macro-data are low volume and less sensitive. Their exchange will normally not face strict organizational or technical constraints. On the other hand, micro-data are often of higher volume and fall in many cases under data security and confidentiality restrictions; and

3. **Regularity:** Ad-hoc, irregular or one-time exchange will not merit high investment in organizational and technical infrastructure. On the contrary, regular exchange will demand pre-specified data structure, smooth, efficient and automatic techniques.

6.37. Depending on the above-mentioned aspects, data exchange has to be embedded in a technical framework that serves the purpose in the best way.

6.5.3 Technical approaches

Exchanging data

6.38. Once data are structured, exchange becomes possible through various technologies. Traditionally, email or secure email was used. Standardization also offers additional transmission means, such as secure web services, to make data sharing more efficient and better suited for multi-party use cases (e.g. pulling instead of pushing data).

6.39. An example of standardized web service architecture is the SDMX web service specification.

Exchanging algorithms

6.40. When analysing data and the impact of changes in data across different organizations, it is not only important to exchange the data themselves, but also to exchange the algorithms that should be performed on the data and the resulting quality indicators or changes in them that would necessitate further action. Those algorithms could be validation rule-sets, data transformations or even complex methodological procedures.

6.41. An example for a standard that can be used to exchange algorithms across organizations is the validation and transformation language (VTL).

Shared services

6.42. When shared algorithms have a certain stability, a more efficient way would be directly sharing a statistical service. The service would be developed once, by one or more organizations, and then offered to the community. Services can be shared directly or replicated. When sharing directly, one organization hosts the service and others use it through web service calls. When replicating, the owner offers the service as a download package and it is installed in the premises

⁵⁴ In this Guide, meso-level refers to aggregates that are more detailed than publicly available statistics and but less detailed than microdata. They can help understand the type of international transactions involved and provide a better overview of MNEs' activities, when microdata are not shared.

of the user. The main considerations are availability and support (shared) versus control and deployment (replicated).

6.43. Even storage can be seen as a service. In case data cannot be exchanged (e.g. for legal reasons), it might still be possible to replicate a service to the remote location and only exchange the results of the algorithm. In many cases, those results would not in themselves be confidential.

6.44. Shared services may be hosted on the cloud, which would then be available on demand. A cloud server is a logical server that is built, hosted and delivered through a cloud computing platform over the Internet. As a hosting infrastructure, it also offers the possibility of storing files and accessing, storing and retrieving them from any web-enabled interface. Clouds often have functions distributed over multiple locations from central servers.

6.45. An example for a standard that can be used to describe shared services is the CSPA developed and maintained by UNECE.

Shared Computation

6.46. In some use cases, it is necessary to combine data from multiple data sources held by different organizations to compute the information of interest. In case it is not possible or very difficult to exchange data or services directly, secure multiparty computation (MPC) can help achieve the same goal without involving the exchange of input data.

6.47. Such technologies represent a major paradigm shift from “sharing data” to “sharing computation” reflecting that the input data can be “used” across different organizations and administrative domains without being “exchanged”. MPC can be used when the input data are confidential, due to privacy and/or business sensitivity reasons, while the desired output information is not.

6.48. In this new scenario, the input data are sliced into so-called “secret shares”. Only those are transmitted. Secret shares are constructed in a way that (i) enables the other parties to collectively compute the correct output information and at the same time (ii) does not allow any other party to reverse the transformation and discover the input data. The goal is to get the necessary outputs while not revealing one’s own input data to the partner organization. In this way, national aggregates for a country might benefit from data collected by other NSOs without any NSO (or other statistical authority) exchanging the actual collected data.

6.49. MPC involves higher costs in terms of computational resources compared with the traditional data exchange or shared service approaches. A MPC infrastructure requires the definition of operations, which would take place on the “combined/shared” datasets to deliver relevant results without identifying the confidential source data of the partner.

6.5.4 Decision matrix

6.50. Based on the case studies analysed (see Annex 2), it becomes evident that the choice for the secure technical solution depends mostly on the sensitivity of data, the volume of data and the exchange frequency criteria. Considering these criteria, the decision on a technical solution can be represented as follows (see Figures 6a and 6b):

Figure 6a
Criteria for deciding on a technical solution for data sharing

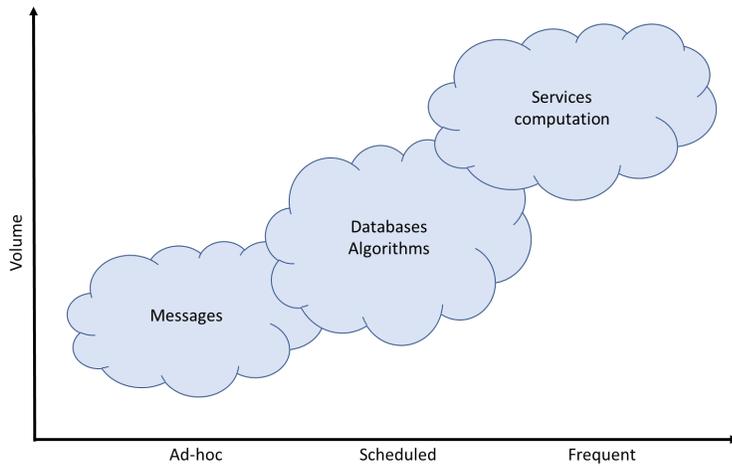
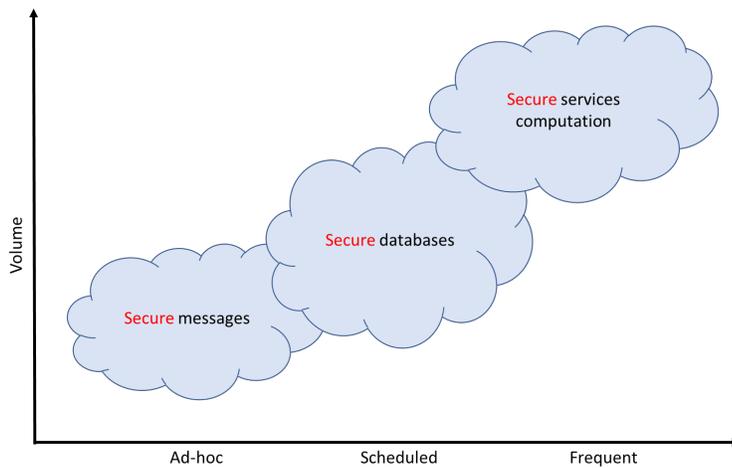


Figure 6b
Criteria for deciding about a new technical solution for the sharing of sensitive data



6.51. The more often the exchange is to take place and the higher the expected volume, the more likely it is that the cost for investing in shared computation is justified. For simple ad-hoc and low volume exchanges, classical messaging (e.g. emails) may be sufficient. Depending on the sensitivity classification of the data to be exchanged, security layers may need to be added.

6.52. Examples for such solutions are:

Technology	Example	Example case study
Secure messages	Email	IAG IDC ⁵⁵ (partly)
	Encrypted Email	Early warning system
	Secure transmission systems (EDAMIS ⁵⁶)	FDI Network
Shared databases (web service)	SDMX Web Services	IAG IDC (target)
Shared services	ESS validation services	National accounts in the EU (ESA ⁵⁷ validation) ⁵⁸
Shared computation	UN Global Platform pilot	UN Global Platform pilot

6.53. Some of these are already used successfully in production, others are being piloted. Details are provided in the case studies in Annex 2.

6.6 European practices for international data sharing

6.6.1 Legislation and decision-making procedure related to EU data exchange

6.54. The Regulation on European statistics (EC) No 223/2009 allows data exchange between agencies belonging to the ESS and the ESCB when the data concern European statistics, that is, statistics that belong to the ESS's statistical programme or the work programme of the ESCB. Eurostat maintains and makes available lists of producers of European statistics, i.e. a list of recognized statistical authorities in the EU.

[6.55. With the implementation of the new Regulation \(EU\) 2019/2152 on European Business Statistics in international trade in goods statistics, the exchange of micro-data on intra-EU exports of goods will start in 2022. Therein, all EU Member States are obliged to exchange intra-EU export data. Additionally, where the imports or exports of goods involve the customs authorities of more than one EU Member State, the new Regulation \(EU\) 2019/2152 on European Business Statistics obliges Member States to exchange the relevant customs micro-data, to make it available to compilers of trade statistics in other EU Member States.](#)

6.56. Producers of economic statistics can exchange aggregate-level data, publicly available data, classification data and methodological data (type 1 and 2 above) on the basis of this guidance as long as the documentation and required confidentiality agreements (see the contents of such agreements presented earlier in this chapter) are in place. Exchange of confidential micro-data (type 3 above) requires a separate decision by the Head of the NSO of the country, with the Head of another producer of official statistics as relevant.

⁵⁵ Initiative of International Data Cooperation (IDC) under the Inter-Agency Group on Economic and Financial Statistics (IAG)

⁵⁶ Electronic Dataflow Administration and Management Information System (EDAMIS)

⁵⁷ European System of National and Regional Accounts (ESA)

⁵⁸ Not described in the case studies, see details here:

ec.europa.eu/eurostat/documents/7755309/7769541/Business+Architecture+for+ESS+Validation+-+Final.pdf

Data exchange between ESS and ESCB statistical authorities

6.57. Unit-level data (classifications and figures) can be exchanged and shared with authorities belonging to the ESS and the ESCB if the sharing is necessary for efficient development, production and dissemination of statistics or for improving the quality of the statistics. Confidentiality agreements must be required from the counterparty statistical authority in case type 2 or 3 data are exchanged.

6.58. Examples of data that can be exchanged between the ESS and ESCB authorities given that the required documents and confidentiality agreements are in place are:

- Unit name
- Data source related to the unit
- Classification data related to the unit
- Theory of international manuals applied to the unit
- Selected recording method and valuation principles
- Period in which the transaction is visible in compiled statistics
- Business model publicly revealed by the enterprise
- Estimated figures related to the unit
- Actual figures related to the unit

6.59. Data that cannot be exchanged without the consent of the respondent to disclose the data:

- Data on the business model and trade partners provided by the enterprise to the statistical office
- Names of the unit's contact persons

Data exchange with statistical authorities outside the EU

6.60. Exchange of type 1 and 2 data on aggregate level and classification data describing the units is allowed among statistical authorities without a decision by the Head of NSO, but in case of type 2 data, only if a confidentiality agreement is in place. Type 3 data cannot be exchanged with other than ESS and ESCB statistical authorities without a separate decision by the Head of NSO and without a MOU (see Box 5 defining the contents of data exchange MOUs). Confidentiality agreements are also required as with ESS and ESCB statistical authorities.

6.61. Examples of data that can be exchanged without a MOU:

- Unit name
- Statistical data source related to the unit
- Classification data related to the unit
- Theory of international manuals applied to the unit
- Selected recording method and valuation principles

- Period in which the transaction is visible in compiled statistics
- Business model publicly revealed by the enterprise

6.62. Data that can be exchanged with a MOU:

- Actual figures related to the unit
- Estimated figures related to the unit

6.63. Data that can be exchanged with a MOU and consent by the respondent:

- Data on the business model and trade partners provided by the enterprise separately to the statistical office
- Names of the unit's contact persons

6.6.2 ESCB principles of effective and secure data exchange

6.64. The exchange of confidential statistical information among statisticians of the ESCB has been critical in the support of ECB's policy. The confidential statistical information helps to interpret the aggregate information. This has become ever more important, especially in the wake of the recent economic crisis when many countries were in distress and, where even in non-distressed countries, some financial institutions were in distress. Hence, knowing how the dispersion in the markets influenced the monetary policy transmission, or assessing systemic risk-including contagion effects - at the level of macro-prudential analysis have become a key analytic for policy making and are here to stay.

6.65. A lot of work has been done on the legal aspects since the beginning of this data exchange, which represent a crucial element. In addition, the elaboration of technical and organizational aspects has proven to be a key ingredient in formalizing the process and in strengthening the collaboration and trust among institutions.

How does the ECB implement its statistical requirements?

6.66. The ECB adopts regulations establishing its statistical reporting requirements for the reporting population of Euro Area Member States. ECB regulations are the most relevant ECB legal instruments for the statistical domain. They are binding in their entirety and directly applicable in all Euro Area Member States. They do not need to be transposed into national law as they impose direct reporting obligations on reporting agents. Eleven ECB Regulations are currently in force and impose statistical reporting requirements on a variety of financial institutions.⁵⁹

6.67. The ECB also issues guidelines, which are also directly binding legal instruments but only with regard to euro area NCBs (and the ECB). These guidelines contain, inter alia, rules to be implemented by the NCBs concerning the definition of the data that the ECB requires, the form

⁵⁹ They relate to monetary financial institutions balance sheet items (BSI) and interest rate (MIR) statistics, Post office and Giro institutions, investment funds, financial vehicle corporations engaged in securitisation transactions (FVCs), insurance corporations, pension funds, payment statistics, Money Market Statistical Reporting, securities holdings statistics and Analytical credit datasets (AnaCredit).

in which these data should be transmitted to the ECB, as well as their timeliness and other transmission modalities.

6.68. ECB guidelines can complement ECB regulations or stand on their own. As an example of a standalone Guideline, the ECB adopted the Guideline of 22 December 1998 concerning the common rules and minimum standards to protect the confidentiality of the individual statistical information collected by the ECB assisted by the NCBs.

6.69. Further to regulations and guidelines, the ECB and NCBs have increasingly developed non-legally binding documents that explain in greater detail how to implement the requirements, in the form of manuals (e.g. on AnaCredit), questions and answers or reporting instructions.

6.70. The Eurosystem/ESCB has worked in close cooperation with the European Insurance and Occupational Pensions Authority (EIOPA) to issue a fully consistent set of requirements to Investment Corporations and Pension Funds under the form of two ECB regulations that are translated into XBRL taxonomies updated and maintained jointly, so that in most EU Member States the respective industry reports only once to a national authority, usually the supervisory one, which then shares the information with the other (usually the NCB) and with the European level.

6.71. Last but not least, work is in progress to achieve a similar convergence for banks. Already, the Banks' Integrated Reporting Dictionary (BIRD) is in place and covers several important domains, e.g. credit and credit risk data (AnaCredit), securities holdings statistics (SHS) or financial reporting (FinRep) - based on a voluntary effort by central and commercial banks⁶⁰. In parallel, the Integrated Reporting Framework initiative aims at converging across domains and across countries in the various data collections addressed to banks so as to get more stable and streamlined reporting requirements, thereby reducing the burden and costs⁶¹. Here too, the aim would be that banking data can be shared among authorities on a need-to-know basis, while appropriately protecting confidentiality.

6.72. Based on these legal acts and accompanying documentation and on data sharing agreements where applicable, the Governing Council decides on the necessity to exchange confidential information⁶² collected under Council Regulation 2533/98 within and outside the system and for the usage of the data.

6.73. Data are not freely exchanged. Confidential statistical information may only be exchanged if agreed by the Governing Council and in line with the legal framework and procedures in place

⁶⁰ www.ecb.europa.eu/stats/ecb_statistics/co-operation_and_standards/reporting/html/index.en.html

⁶¹ www.ecb.europa.eu/pub/pdf/other/ecb.escb_integrated_reporting_framework201804.en.pdf

⁶² Council Regulation 2533/98 defines statistical information as confidential when it allows reporting agents or any other legal person, natural person, entity or branch to be identified, either directly from their name, address or from an officially allocated identification code, or indirectly through deduction, thereby disclosing individual information. Statistical information taken from sources which are available to the public in accordance with national law is not confidential. Confidential information is increasingly exchanged within the system and some statistical information collected by some Regulations are by their nature confidential. In practice, confidential statistical information means that less than three entities are covered in a given statistical observation, or a single entity is representing 85 per cent of more in a given observation. Such primary confidentiality is complemented by secondary confidentiality as the next aggregation level also becomes confidential when information can be engineered to guess what is/are the missing observation(s).

which ensure that those staff members, working in units which have been recognized as having a need-to-know, are effectively on a list under managerial responsibility in each institution - with periodic (e.g. semi-annual) updates.

6.74. Hence, the sharing remains subject to a strict process in accordance with the rules:

- The need for exchange of confidential data is justified;
- Confidential data are used for statistical purposes and/or for other purposes where legally allowed⁶³;
- Authorities involved take the necessary regulatory, administrative, technical and organizational measures to ensure the physical and logical protection of confidential statistical information;
- Data are accessible only to staff working with the required authorization and under managerial responsibility; the lists of authorized persons are maintained up-to-date; and
- Access by researchers to micro-data (mostly anonymized) is being pursued by a group of national and international organizations (called INEXDA) to define the conditions for access.

6.7 Conclusions

6.75. This chapter has outlined principles and practical guidance on data sharing based primarily on the European experience and instructions developed by Finland. These have been generalized by the Task Force but need further development and testing with a broader set of statistical examples and range of participating countries. The following Chapter 7 develops a plan for addressing these challenges.

⁶³ The sharing of confidential statistical information between the ESCB and the ESS can only be done strictly for statistical purposes.

VII. WAY FORWARD

7.1 Introduction

7.1. The guidance provided in the preceding chapters arises from work launched as a reaction to the view held by the CES Bureau that in a globalized economy, national official statistics cannot be produced in isolation from the rest of the world. Statisticians need to be able to exchange data with statistical authorities of other countries, in some cases potentially in the same way as tax authorities already do. To get a complete and accurate picture of the MNE activities affecting national statistics, the global statistical system needs to act decisively and in coordination to tackle the obstacles of international data sharing for statistical purposes, and more importantly, build a more consistent and efficient international statistical system by reaping the benefits from shared data. Statisticians should reach out to MNEs to establish and maintain close partnerships to discuss benefits and facilitate data reuse in order to develop statistics that can offer new insights about national economies, global value chains, economic interlinkages and other policy-relevant phenomena in the global economy.

7.2. What is the vision for statistical data sharing? If official statisticians had all the data needed, what could be achieved? Statisticians could reconcile the data on MNEs globally and produce economic statistics without statistical asymmetries, gaps or double counting. The same data could only be collected once from an MNE to be used for producing different statistics by various statistical authorities across countries. Policy makers, businesses and researchers would be able to base their work and decisions on more accurate statistics. It would be possible to analyse shifts in economic globalization and changes in the global division of work more accurately.

7.3. Unfortunately, statisticians are still far from being able to put together all relevant data on MNEs. First, we need to translate this vision, step by step, into practice. Where would the MNE data reside - in a global statistical data base? How would the data end up there - through a secure data exchange platform? Who would be responsible for data collection and validation - would there be a single point of MNE data collection or multiple? Who would be responsible for management of the global statistical database? Who would have access to data - producers of official statistics certified as statistical authorities with a sufficient legal backstopping to fully protect the confidential data?

7.4. This Guide is a starting point for advancing data exchange practices in official statistics. Discussion on data sharing will continue at various fora, but discussion will not be enough. Concerted efforts are needed to bring forward the global agenda of data sharing for statistical purposes. This chapter puts forward proposals for such a global agenda and presents other ongoing work of international data sharing initiatives like the G20 Data Gaps Initiative and similar initiatives in the European Statistical System.

7.2 Main recommendations on data sharing for statistical purposes

7.5. The recommendations on data sharing for statistical purposes are split between those where progress can be achieved at the national level and those where international institutions will need to be active in international cooperation with national statistical offices. The

recommendations are followed by a detailed list of practical action items. The practical actions are presented in the order in which they should probably be implemented, and the link to strategic recommendations is shown in brackets.

7.6. National level:

- Review national conditions for MNE data exchange: the statistical law and statistical framework, interpretation of legislation and confidentiality procedures and rules. (actions i-iii);
- Prepare the national set-up for MNE data sharing: allocate resources, prepare tools, [implement all necessary administrative, technical, security and organizational measures](#), engage with MNEs [to build trust](#) and organize [other](#) activities as appropriate for the country. (actions iv-ix); and
- Engage in international collaboration and data sharing to address national challenges in measuring MNEs (actions x-xiii).
 - i. Review the current legal framework to confirm whether it directly prohibits data exchange for statistical purposes among statistical authorities (nationally or internationally), or if such exchange could be allowed. For EU Member States, refer to the EU law that allows such exchange. Prepare legal texts to enable data exchange for statistical purposes among statistical authorities explicitly (nationally and internationally). This would be included in the next revision of the national statistical law. The UNECE Guidance on modernizing statistical legislation (2018) can serve as a reference when reviewing and revising the statistical law.
 - ii. Review current data exchange practices and revisit the interpretation of the statistical law in relation to the current confidentiality procedures and rules. Assess needs to improve data interoperability, integration and linking within the national statistical system. Identify barriers and enablers of MNE data exchange to plan actions, as reflected in Chapter III of this Guide.
 - iii. Review the possibility of access for statistical purposes to the relevant internationally exchanged data, such as the country-by-country reporting data on MNEs held by tax authorities. Refer to international recommendations⁶⁴ on access to all data needed for statistical production and seek examples of how statistical offices use these data in other countries.
 - iv. Assign a responsible team/unit to oversee and support data exchange between statistical authorities nationally and to engage in international data sharing. Such work could be part of the tasks of a LCU or a similar function. Agree on the tasks of the unit in charge of data exchange, start building knowledge and skills for data sharing and assign a focal point for international collaboration in this area.

⁶⁴ The UNECE (2018) Guidance on modernizing statistical legislation notes that statistical legislation should allow access to all data sources necessary for statistical production.

- v. [Make use of tools and best practices presented in this Guide to prepare for data exchange, including improving the statistical data infrastructure, updating instructions and confidentiality agreements, using the template agreement for bilateral data exchange, as suggested in Chapter VI of this Guide.](#)
- vi. [Implement all necessary administrative, technical, security and organizational measures as a precondition for international MNE data exchange.](#)
- vii. Prepare communication materials and guidance to address key points of data sharing and confidentiality when communicating with MNEs, as described in Chapter V of this Guide. [Cooperate with MNEs on data sharing based on voluntary agreements and build and ensure, through good communication, a common trust in sharing data for statistical purposes. This may include conducting a public consultation to address the public perceptions and privacy aspects of data sharing for statistical purposes in conjunction with any proposed legislative changes.](#)
- viii. Identify priority areas for data exchange to ensure the quality of economic statistics; and select critical MNEs and data items for exchange. Use the selection criteria and the list of data items defined in Chapter IV of this Guide.
- ix. Form a collaboration group with major producers of economic statistics in the country or add data exchange to the agenda of an existing collaboration group. Start by the exchange of less sensitive aggregate level data, metadata and publicly available data.
- x. Engage in closer collaboration to share experience, tools and lessons learned in international expert meetings, and to discuss challenges in measuring MNEs, collaborating with MNE respondents and collecting and using their data in statistical production. The joint UNECE/Eurostat/OECD Group of Experts on National Accounts has dedicated every second meeting to issues related to measuring global production. [The UN Committee of Experts on Business and Trade Statistics also provides a forum that regularly meets to discuss issues in business and foreign trade statistics.](#)
- xi. Start international MNE data exchange with major trade partner countries to review asymmetries e.g. in foreign trade, foreign affiliate and international investment data. Use the opportunities for bilateral discussions organized and facilitated by Eurostat and OECD.
- xii. Make use of data reconciliation tools and platforms developed by international organizations, such as the IMF coordinated direct investment survey (CDIS) asymmetry database, the UN Global Platform⁶⁵, [the EGR](#) and

⁶⁵ [The UN Global Platform is a digital collaborative environment to work together on new data solutions with the whole statistical community and to learn together.](#)

the OECD ADIMA database on MNEs. Participate in validating and developing ADIMA as [an international database](#) of MNE data, e.g. by sharing non-confidential business data, as possible.

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- xiii. Participate in coordinated [and well-established \(including secure IT system, clear confidentiality agreements etc.\)](#) multi-country data sharing exercises as needed to review data of one or several MNEs.

7.7. These actions aim at helping statistical offices to develop the statistical infrastructure and increase the technical and methodological knowledge on data sharing and micro-data linking jointly with other national agencies and statistical offices of other countries.

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7.8. International level:

- Set up and coordinate an international network of experts on MNEs and the exchange of experience and innovations. (actions i-iii);
- Create platforms to facilitate the analysis of asymmetries and encourage coordinated multi-country data sharing exercises. (actions iv-vii);
- Develop guidance and training to build national capacities to exchange and reconcile MNE data. (actions viii-x);
- Facilitate secure exchange of MNE data building on existing initiatives. (actions xi-xii); and
- Engage with MNEs, accountants and law makers to improve the basis for future data collection. (action xiii-xv).
 - i. Launch and coordinate the work of an international network of experts on MNEs to exchange experience and best practices, as well as to share innovations in MNE collaboration and data exchange. At a later stage, the network should engage in sharing MNEs data and reconciling economic statistics.
 - ii. Discuss and clarify the definition of the global statistical system: Which organizational entities of international organizations belong to the global statistical system? How is their adherence to the Fundamental Principles of Official Statistics ensured, and are they entitled to handle confidential data?
 - iii. Establish a platform for the sharing of new tools, innovations and best practices related to data exchange. If possible, an inventory of international data sharing agreements could be developed, also covering examples from fields other than official statistics. Statistical authorities could consult this inventory as a source of best practices and templates when looking to establish similar data sharing agreements or arrangements.
 - iv. Develop tools and platforms to analyse asymmetries of cross-border statistics (e.g. IMF CDIS asymmetry database and the UN Global Platform) in order to encourage cross-border cooperation to reconcile asymmetries by exchanging statistical information.

- v. Launch coordinated multi-country data sharing exercises to allow countries to benefit from an opportunity to resolve simultaneously data issues in countries where the MNEs in question are present.
- vi. [Establish a common system including all NSOs that are involved in the international MNE data exchange to review and certify all the involved parties having necessary legal framework \(including confidentiality rules\), MOUs, and secure technical environment in place for sharing confidential data.](#)
- vii. Dedicate sessions for the discussion of asymmetries, their causes and solutions at national accounts, balance of payments and trade statistics expert meetings, i.e. organized by Eurostat, UNECE, OECD, IMF, UNSD and WTO. Identify major reasons for asymmetries.
- viii. Develop and provide training to build NSO's capacity to share data, including the skills and tools, as well as development of data architecture that supports data sharing.
- ix. Develop a Guide to Data Reconciliation, outlining the operational approaches and methods countries can use to reconcile bilateral and multilateral trade, investment, production and income figures.
- x. Explore the possibilities of adapting European practices for international data sharing for agencies in other countries.
- xi. Develop a central repository of key data on MNEs, [such as the GGR](#), for use by NSOs by learning from the EGR and ADIMA. The work can start by validating ADIMA data by sharing publicly available information on MNEs, e.g. from public business registers, and by reviewing the possibility to develop an "ADIMA extension for statistics" to include confidential data exchanged between statistical authorities for authorized statistical purposes only. Review lessons learned in national projects, e.g. those developing the business register as the core of economic statistics production.
- xii. Create an infrastructure for secure data exchange among the network of MNE and other data exchange specialists of statistical offices, as the volume of data exchange starts increasing. In addition to the above repositories, learn from, and further develop, the Eurostat's Early Warning System, [EU profiling](#), FDI Network and the GNI-MNE Pilot approach. As a first step, enhance opportunities for, and motivate, countries outside the EU to contribute to the Early Warning System. This may include exploratory work on processes by which statistical offices apply an 'algorithm' to link micro-data, identify enterprise level asymmetries and feed the results back to countries. In this case, micro-data would not need to be exchanged between countries.
- xiii. Make global efforts to introduce unique identifiers and plan concrete steps to advance their use and adoption by governments. For example, the EGR

Identification Service is an application supporting statistical producers in identifying legal units. Another interesting example is the Global Legal Entity Identifier System (GLEIS). These examples provide a good starting point for developing a global unique identifier that could be applied across countries.

- xiv. Engage with a couple of the largest MNEs to review their data provision processes to different national statistical authorities, and review possibilities for developing a more coherent and efficient data reporting process serving statistical authorities of several countries (towards the vision of data collected only once for MNEs). Collaborate with business software producers (e.g. SAP).
- xv. Reach out to international communities working on business accounting standards to pursue collaboration with MNEs and further improve the quality of data, such as the Business at OECD (BIAC) and the UN Standing Intergovernmental Working Group of Experts on International Standards of Accounting and Reporting.

7.9. These actions aim at gradually improving the global statistical infrastructure and the technical and methodological capacity for secure MNE data sharing for statistical purposes.

7.3 On-going other work on data sharing

7.10. Parallel to preparation of this Guide, the G20 Data Gaps Initiative II on data sharing has made seven recommendations to promote data sharing. European NSOs and NCBs have also established a common task force to conduct a feasibility study on the exchange of confidential statistical information⁶⁶ between statistical offices and central banks. The work of these groups is still on going, but initial recommendations seem to be well in line with this Guide.

7.3.1 G20 Data Gaps Initiative

7.11. The second phase of the G20 Data Gaps Initiative contains a general recommendation to promote data sharing. Building on the participating economies' practical experience on data sharing with a focus on the main obstacles preventing the sharing of granular data and the possible approaches to overcoming such obstacles, the G20 Data Gaps Initiative makes the following seven recommendations⁶⁷:

1. Promote the use of common, [internationally agreed](#), statistical identifiers
2. Promote the exchange of experience on statistical work with granular data and improve transparency

⁶⁶ The term 'confidential statistical information' comes from the EU law (2533/98: eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01998R2533-20150308&from=ES) concerning the collection of statistical information by the European Central Bank. Confidential statistical information' shall mean statistical information which allows reporting agents or any other legal or natural person, entity or branch to be identified, either directly from their name or address or from an officially allocated identification code, or indirectly through deduction, thereby disclosing individual information.

⁶⁷ See further detail: data.imf.org/api/document/download?key=61400076

3. Balance confidentiality and users' needs
4. Link different datasets
5. Provide data at the international level
6. Consider ways of improved data sharing of granular data
7. Collect data only once.

7.12. Further to the above recommendations, the G20 Data Gaps Initiative also identifies certain main principles. National statistical authorities should first facilitate the sharing of data at the national level across and within relevant institutions. This will help build a solid base for data sharing at the international level. To do this, national authorities should review data sharing frameworks (including legal, technical, financial and cultural constraints) to maximize the amount of information which can be shared for statistical purposes (nationally and internationally). The detailed analysis of obstacles and enablers of data sharing in Chapter III of this Guide and related recommendations support national authorities in this work. National authorities should also, in collaboration with the international organizations, build and maintain trust between all relevant parties. The discussion of communication issues in Chapter V of this Guide provides tools for this. Common [and internationally agreed](#) identifiers, harmonized definitions of data and the use of standard statistical methods and classifications accompanied with high-quality metadata would facilitate data sharing and, the ultimate goal, data reconciliation and high-quality statistics. Chapter IV of the Guide discusses the data items to be exchanged, and criteria for selecting MNEs for data exchange. The proposed Guide on data reconciliation should develop this thinking further.

7.13. The DGI Contact Group Members⁶⁸ were suggested as first contact points for questions on data sharing and accessibility. To extend the network of experts and enhance exchange of experience, this Guide recommends setting up and coordinating an international network of experts on MNEs. Further to sharing good practices and discussing issues related to the data of multinational enterprise groups and the sharing of economic data for statistical purposes, this network should engage in sharing MNE data in practice and, eventually, focus on reconciling economic statistics at global, national or regional levels based on the shared data. The network of MNE experts should also engage with some of the largest MNEs to review their data provision processes to different national statistical authorities and consider possibilities for developing a more coherent data reporting process.

7.3.2 CMFB Task Force on the exchange of confidential information

7.14. The Committee on Monetary, Financial and Balance of Payments Statistics (CMFB) [established a](#) Task Force on the exchange of confidential information in 2019. [The Task Force](#) aims at preparing a feasibility study on the exchange of confidential statistical information between the ESS and the ESCB. They will use the experience gained in the GNI-MNE Pilot exercise and the FDI Network and take stock of international work in the area of data sharing (including the work of the UNECE Task Force on exchange and sharing of economic data, Irving Fisher

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⁶⁸ DGI Contact Group Members are senior-level officials identified by the G20 national authorities to serve as the main contacts for the IAG on the DGI. These officials are the first contact points for the annual monitoring reports, attend the global conferences, and coordinate with the policy departments of their respective institutions.

Committee, the second phase of the G20 Data Gaps Initiative etc.). The aim is to complete these on-going studies by conducting a survey of European NSOs and NCBs in order to identify confidential information held by the ESS and ESCB in statistical and other areas, restrictions that prevent the exchange of data and good practices of cooperation. This survey was carried out at the beginning of 2020, and a final report will be presented to the CMFB in July 2020. Concrete options will be explored for ensuring the exchange of confidential statistical information between the ESS and the ESCB (nationally and cross-border), based on the stock-taking exercise and on the findings of the above mentioned questionnaire.

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- Deleted:** co-operation

7.4 Conclusions

7.15. The choice to engage in data sharing for statistical purposes is in the hands of the Head of the statistical organization. However, that decision will be influenced by the overall pressure to reduce response burden, reuse and manage existing data better and retain the high quality of economic statistics in the face of the data challenges posed by globalization. Engaging in data sharing for statistical purposes is likely to require a review of statistical legislation and data sharing agreements to ensure full adherence with statistical confidentiality, possibly a new data sharing policy, the necessary systems enabling secure data sharing and new governance procedures. Each of these activities requires a substantial amount of effort and the consideration of risks. The development of data exchange systems is also expensive and should, therefore, be pursued in collaboration internationally.

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7.16. Small steps and successful experiences are probably the best way to demonstrate that data sharing among statistical authorities is the way forward in the globalized world. The exchange of individual data cannot happen without the approval of the Head of the NSO or another authorized statistical authority. Furthermore, management needs to ensure sufficient resources for the work and support the necessary initial investments in technology, process improvements and methodology.

7.17. International data exchange will only happen if NSOs are open and willing to:

- Amend legislation if needed.
- Harmonize practices of statistical production with other producers of official statistics across the world.
- Coordinate data analysis and exchange across statistical domains.
- Adapt technical solutions with counterparts in data exchange.
- Consult with respondents and other stakeholders.
- Implement quality control measures and describe relevant quality observations with the metadata.
- Incur costs, especially when launching or extending data sharing for statistical purposes.

- Deleted:** statistical
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- Deleted:** analyse data

7.18. NSOs should build trust and enhance cooperation between NSOs and MNEs that provide them with data that are crucial for the quality of key economic statistics across countries. Legal

[consequences of, and processes for detecting, accidental or intentional leakage of micro-data should be defined internationally.](#)

7.19. International organizations are key players in promoting cultural change and providing discussion fora to share country experiences. These fora should bring together various statistical authorities in addition to NSOs, such as statistical units of central banks, ministries of finance and customs, to discuss the practical needs for data sharing and inform participants of successes and lessons learned.

7.20. It will be important to have a communication plan and a set of risk management tools available to ensure that the general public is well-informed of the activities of the NSO in terms of data exchange and measures to safeguard privacy. Statisticians should work internationally to develop common tools for communication and risk management in the area of data sharing among statistical authorities.

7.21. The results of data sharing should be measured, [even though difficult](#), in quantitative terms to show how the statistical asymmetries were decreased and the quality of statistics improved as a consequence of data sharing among statistical authorities. Respondents' trust would be easier to achieve if statistical authorities could show a measured decrease in response burden [and an increase in the quality of statistics](#) as a result of sharing data between NSOs.

REFERENCES

[TO BE ADDED]

Annex 1: Extracts from the Guide to modernizing statistical legislation

Data exchange among Producers of Official Statistics

Increasing need for data exchange among statistical producers

This section focuses on challenges of data exchange based on the reflections of the UNECE Task Force on the exchange and sharing of economic data⁶⁹. Statistical offices are urgently looking for new solutions to enable effective exchange of data nationally and internationally, especially to capture the activities of multinational enterprise groups. Statistical Law can be both an enabler and an obstacle to data exchange among producers. Therefore, this section considers the legal aspects of data exchange for statistical purposes.

Without a full picture of international activities, it is a challenge to ensure meaningful and correct measurement of global production and trade, and to understand the influence of multinational enterprise groups on economic statistics.

Better possibilities of secure data exchange, nationally and internationally, could help some statistical offices to enhance the quality, coherence and relevance of economic statistics and the efficiency of their production. Part of this exchange can be carried out at the aggregated level, but it will be necessary to find solutions allowing the exchange of individual data in a secure environment for statistical purposes only.

The 2015 and 2016 meetings of the joint UNECE/Eurostat/OECD Group of Experts on National Accounts recognized that data exchange is essential when looking for solutions to the challenges related to global production. At the meetings, countries emphasized the need for data confrontation within a country and between countries to enable proper data validation to improve quality, relevance and consistency of data across domains.

Both legal and technological solutions will need to be sought to enable such data exchange in a highly controlled environment, while avoiding any risks to privacy and fostering the trust of respondents and the public.

Current practices in data exchange for statistics

In 2016, Statistics Finland and UNECE carried out a survey of countries to review the current practices of data sharing for statistical purposes, at national and international levels. In total, 48 statistical offices replied to the survey.

All offices indicated exchanging some data nationally among producers of statistics, most commonly aggregated data (80 per cent of countries). In addition, almost 80 per cent of NSOs receive micro-data from other producers of statistics and 75 per cent receive micro-data from administrative data providers. Half of the offices obtain micro-data from commercial sources, and

⁶⁹ Exchange and sharing of economic data. ECE Task Force on exchange and sharing of economic data. Report to the 11th Meeting of the Advisory Expert Group on National Accounts, 3-5 December 2017, New York, United States

over half provide micro-data to other producers of statistics. Further, over two thirds of offices make anonymized micro-data available for research purposes.

The importance of international data exchange is shown by the result that over 90 per cent of offices engage in international data exchange. However, in most cases, this international data exchange involved aggregated data only. The survey shows that only 30 per cent of offices engage in international micro-data exchange.

Usually, data exchange takes place in statistics where cross-border transactions are recorded and the exchange aims at minimizing bilateral asymmetries between the same cross-border flows reported by different countries. International data exchange may be facilitated by international organizations, for instance Eurostat and the European Central Bank do this in Europe, or they are based on bilateral or multilateral agreements between countries.

Exchange of data on multinational enterprise groups is still relatively rare. Every fourth responding office had examined the activities of multinational enterprise groups with other countries and every third office within a country with Other Producers of Official Statistics.

In the survey, almost 90 per cent of offices reported improved consistency as the main benefit of data sharing and over 80 per cent reported better data quality such as accuracy, relevance and timeliness. Efficiency gains and reduced response burden were pointed out in two thirds of the replies. Data sharing may also increase coverage of target population and enable a more detailed analysis and understanding of business activities. The increased collaboration and reuse of data helps to promote common standards and classifications.

The legal frameworks regulating data exchange

National legislation regulating data sharing exists in 90 per cent of countries that responded to the survey. A common business identifier is used in over 75 per cent of countries. The protection of confidential data is well ensured in the legal frameworks.

Sometimes data exchange is agreed and defined in the statistical work programmes. Agreements on the provision of administrative data to the Producers of Official Statistics are very common with various administrative data providers. It is becoming more common that the Statistical Law provides a mandate for access or an obligation to use administrative data sources for statistical purposes.

While in some countries statistical legislation may not allow the exchange of individual data even among the Producers of Official Statistics, the common elements of statistical legislation do. The common elements recommend a mandate for exchanging individual data among the entities belonging to the NSS exclusively for statistical purposes in the respective area of competence of each Producer of Official Statistics.

In the European Union (EU), the regulation 223/2009 provides a legal framework for the exchange of confidential data between NSOs and Central Banks for statistical purposes. However, the national legislation may be more restrictive than the European legislation. This European legislation has provided a very helpful principle for improving the quality of monetary, financial and other economic statistics. It has also led to the closer integration of work, streamlining of data collection, reduction of costs and burden as well as a more effective exchange of knowledge.

Challenges of data exchange relating to the legal framework

According to the survey, robust procedures to ensure confidentiality of data complicate data exchange among Producers of Official Statistics. Two thirds of offices sometimes refrain from data exchange to avoid risks of possible disclosure of confidential data by the counterpart. Legal frameworks are considered too limiting in 60 per cent of offices. In addition, insufficient technological readiness prevents data exchange for statistical purposes in almost half of the offices. While most offices judge their legal and institutional frameworks providing strict confidentiality, about 15 per cent of offices consider that a decrease in respondents' trust is a key risk when exchanging data.

In some countries, statistical legislation prevents the exchange of individual data among Producers of Official Statistics. In some cases, such exchange of individual data is allowed without identifiers. This makes the exchange and linking of datasets challenging. In some countries, data exchange is allowed between few organizations that have been explicitly mentioned in the legislation. Statistical legislation should allow the exchange of individual data among the Producers of Official Statistics nationally, as is recommended by the common elements.

On national level, data flow also from other data providers towards the statistical system. The common elements recommend that administrative data providers should have a legal obligation to provide the necessary unit-level data to statistical offices for statistical purposes.

Currently, international data exchange for statistical purposes is not usually allowed or mentioned in the legal frameworks of countries. Outside of the EU (where the ESS law defines the necessary concepts) it is difficult to determine who is a Producer of Official Statistics in the counterpart country, or who belongs to the international system of official statistics. Eurostat maintains and makes available lists of producers of European statistics. In principle, legal frameworks should be developed to enable voluntary international exchange of individual data among NSOs or Other Producers of Official Statistics. For this purpose, however, having global and unique identifiers would be ideal for identifying entities across borders.

Instead of trying to define all Producers of Official Statistics of each country, the principle used in the common elements could apply to international data exchange. The Producer of Official Statistics that authorizes access to or exchanges its confidential data, shall ensure that the recipient has the necessary legal framework in place for the full protection of confidential data.

Based on the consultations with the UNECE Task Force on the exchange and sharing of economic data, the proposals relating to statistical legislation can be made:

- It is necessary to add a common element on the voluntary exchange of individual data with other countries' NSOs and possibly with their Other Producers of Official Statistics. Exchange of individual data, including identifiers, with foreign Producers of Official Statistics may take place exclusively for statistical purposes in the respective area of competence of each producer, and provided that this transmission is necessary for the efficient development, production and dissemination of official statistics or for increasing the quality of official statistics. The responsibility lies with each office allowing the exchange of their data; and
- Quality improvement should be added as one part of the definition of "use for statistical purposes" as it is an important justification for engaging in data exchange.

Therefore, “use for statistical purposes” is defined as the exclusive use of data for the development, production and dissemination of official statistics, quality improvement, statistical analyses and statistical services, including all activities regulated by the Statistical Law.

Collaboration with Central Banks

Collaboration of National Statistical Offices and Central Banks

The turmoil in the financial markets and increasing economic globalization call for close collaboration of NSOs, Central Banks and other producers of key economic statistics, such as the Ministry of Finance and Customs. As Central Banks have a strong, independent status in countries, and in Europe they have their own European System of Central Banks parallel to the European Statistical System. Therefore, this section discusses questions on what should be the role of the entities of Central Banks that produce official statistics in relation to the NSS, and how to enable an effective collaboration in statistical production, quality improvement and development.

Inter-agency collaboration is important for the quality of key economic statistics, such as international trade statistics, balance of payments, and sector accounts and the rest-of-the-world accounts compiled as part of the national accounts. This chapter discusses the relationship between the Central Bank and the NSO, including the NSS.

Three main factors influence the conditions for successful cooperation between Central Banks and NSOs⁷⁰:

- Division of tasks between the Producers of Official Statistics
- Structure and governance of the NSS
- Collaboration and regular sharing of expertise

Central Banks are amongst the heavy users of official statistics, for instance in the preparation of macroeconomic projections and simulations and carrying out economic research. For these purposes, Central Banks may also seek to develop new statistics where there are gaps. One such example is the Household Finance and Consumption Survey, initiated by the Central Banks in Europe.

Institutional arrangements for collaboration with Central Banks

The Central Bank and the NSO cooperate in statistical activities, including the compilation of the balance of payments and financial accounts. Many countries have established inter-agency agreements or working groups involving NSOs and other producers of macroeconomic statistics, mainly the entities producing official statistics in Central Banks and Ministries of Finance.

The entities in charge of official statistics in Central Banks play an important role in statistical production as producers of many key economic statistics. Central Banks and NSOs have different mandates for their statistical work. In the European Union, NSOs belong to the ESS and Central

⁷⁰ See for instance: Conditions for a successful statistical cooperation between National Central Banks and Statistical Offices. Abdelhamid El Maazouzi, Central Bank of Morocco. ISI2017 World Statistics Congress. www.bis.org/ifc/events/wsc_isi/ips021_elmaazouzi_pres.pdf

Banks to the European System of Central Banks (ESCB). Central Banks produce statistics to inform monetary and financial policies. As these statistics provide important information on economic development, they are often considered as official statistics.

In the EU, according to the regulation (EC) no 223/2009 on European statistics “It is important to ensure close cooperation and appropriate coordination between the ESS and the ESCB, notably to foster the exchange of confidential data between the two systems for statistical purposes”. It further states: “European statistics will thus be developed, produced and disseminated by both the ESS and the ESCB but under separate legal frameworks reflecting their respective governance structures”.

Article 5(a) of the amended regulation (EC) no 223/2009 notes that “Each Member State shall ensure that other national authorities responsible for the development, production and dissemination of European statistics carry out such tasks in accordance with the national guidelines produced by the head of the national statistical institute.” In the EU, therefore, the coordination by the NSO clearly reaches out to all statistical authorities, including entities of Central Banks that produce official statistics required by EU legislation. This encourages collaboration between the Head of NSO and the heads of Other Producers of Official Statistics, including with the head of the entity producing official statistics in the Central Bank.

According to Article 21 of the regulation, transmission of confidential data between statistical authorities and Central Banks “may take place provided that this transmission is necessary for the efficient development, production and dissemination of European statistics or for increasing the quality of European statistics”. This provision has been important for the improvement of consistency and quality of national accounts, balance of payments and other economic statistics in many countries. However, some countries have more restricting legislation in place.

Some countries mention the Central Bank explicitly in their Statistical Law as an entity belonging to the NSS; some countries do not. If the entity producing official statistics in the Central Bank is part of the NSS, the entity is subject to the coordination of statistical activities in the country and subject to the Statistical Law.

The NSS aims to ensure a clear division of responsibilities between the producers and the application of common methodologies, concepts and classifications. The NSS is also a platform for joint development of statistical work. According to a survey on the implementation of the Fundamental Principles of Official Statistics in 2012 (with 126 country respondents) 87 per cent of countries had organizational arrangements in place to coordinate data collection, agree on statistical standards and avoid duplication of activities at the national level⁷¹.

Challenges of collaboration between Statistical Offices and Central Banks

Even though Central Banks compile key monetary and financial statistics, they are not always considered as a Producer of Official Statistics that belongs to the NSS, possibly due to their highly

⁷¹ Conditions for a successful statistical cooperation between National Central Banks and Statistical Offices. Abdelhamid El Maazouzi, Central Bank of Morocco. ISI2017 World Statistics Congress. www.bis.org/ifc/events/wsc_isi/ips021_elmaazouzi_pres.pdf

independent standing. For instance, in the EU, only 8 countries list the Central Bank as other national statistical authority⁷².

The division of work between Central Banks and NSOs varies in countries. While NSOs most often compile national accounts and price statistics, in some countries, those are compiled by the Central Bank. Central Banks typically produce the balance of payments statistics. However, NSOs compile the balance of payments in a couple of countries.

Central Banks are typically institutionally independent from the government to avoid any political interference. The independence of Central Banks may include institutional independence in monetary policy decisions, in setting its own goals, determining the best way of achieving these goals, high security of tenure for its high governors and autonomy on their budget. Some Central Banks, like the European Central Bank, have their own legal personality allowing them to ratify international agreements without government's approval.

Due to the strong independent status of Central Banks, NSOs may not have a direct coordination role vis-à-vis the statistical work of the entity in charge of official statistics in the Central Bank. Central Banks are also traditionally strong institutions, well-resourced and pose strong independent views on economic development.⁷³

The current legal frameworks typically do not allow the NSO and entity producing official statistics in the Central Bank to exchange individual data for the production of their statistics. This may also hamper the exchange of expertise between the two organizations. Countries are increasingly putting in place formal agreements to enable the necessary data exchange.

Regular exchange of expertise and joint work addressing the links between business statistics, national accounts and financial statistics would be beneficial. This could include a review of survey questionnaires, data collection methods and available information to measure properly the activities of multinationals involved in global production.

Furthermore, NSOs and the entities producing official statistics in Central Banks may not be fully aware of the statistical requirements to be filled by each organization, nor the possible synergies of their activities. Thus, opportunities for joint, streamlined statistical work remain largely untapped.

Legal aspects of collaboration with Central Banks

As the macroeconomic, financial and monetary statistics produced by Central Banks are key official statistics, their role in the statistical work should be reinforced. Therefore, the entities of Central Banks that produce official statistics should be recognized as statistical authorities and be considered part of the NSS. To be part of the NSS, these entities have to be professionally independent from the rest of their organization. This would enable many efficiencies within the NSS, improved consistency of statistics and effective collaboration and coordination of work to avoid duplication.

⁷² Situation as at December 2017, see the List of National Statistical Institutes and other national authorities here: ec.europa.eu/eurostat/web/european-statistical-system/overview?locale=fr

⁷³ See for instance: A strategic vision for statistics: Challenges for the next 10 years. Fourth ECB Conference on Statistics, on 24-25 April 2008, Germany. www.ecb.europa.eu/pub/pdf/other/strategicvisionstatistics2008en.pdf

Whatever the formal setting is in each country, good coordination of statistical activities with the entity producing official statistics in the Central Bank is necessary to ensure the quality and consistency of key macroeconomic statistics and streamline work. Furthermore, the use of common definitions, classifications and methodologies is important in the key macroeconomic statistics.

The NSS should acknowledge the data requirements towards the entity producing official statistics in the Central Bank as part of national statistical obligations. This may call for exchange of data between the NSO and the entity in the Central Bank to reuse existing data and avoid duplication of data collection. Similarly, the entity in the Central Bank should take into account in its work the data needs the NSO and Other Producers of Official Statistics have to fill.

It may be useful to formalize the division of labour in the legal setting, the statistical programmes or formal agreements between the organizations. Such coordination is likely to increase the alignment of work between the entity producing official statistics in the Central Bank and the NSO. Some countries have integrated data collection frameworks of the entity in the Central Bank and the NSO with good results.

Exchange of micro-data between the NSS and the entity producing official statistics in the Central Bank should be allowed in the statistical legislation or other agreements for statistical purposes only. In the Netherlands, for instance, the exchange of business register data between the NSO and the entity in the Central Bank that produces related statistics has helped to reduce response burden, reduce costs and increase the quality of data, as the NSO shares its data and expertise on non-financial institutions and the entity in the Central Bank on financial institutions.

It would be beneficial to have a body to coordinate statistical work of the NSS in each country consisting of Producers of Official Statistics. The coordinating body of official statistics should compose of all Producers of Official Statistics, including the entity producing official statistics in the Central Bank, whether it is part of the NSS or not.

Annex 2: Selecting the organizational and technical infrastructure for secure exchange of economic data-case studies

Some examples of data exchange initiatives have been presented in more detail in Chapter II of this Guide. In this Annex, they are reviewed against the criteria used for decisions on technical solutions explained above.

Traditional data sharing in statistical domain

IAG International Data Cooperation in Macroeconomic Statistics

Purpose	
Collection	Official statistics
Exchange	Following national dissemination
Type of data	
Sensitivity	Non-confidential
Volume	Low
Granularity	Macro
Regularity	Regular (up to daily)
Structural volatility	None
Exchange mode	Push through secure transmission and email planned to migrate to pulling from each other's web services

In 2008, several international organizations decided to form the Inter Agency Group on Economic and Financial Statistics (IAG). The IAG includes the Bank for International Settlements, ECB, Eurostat, IMF, OECD, the United Nations and the World Bank. It is chaired by the IMF.

These international organizations collect macroeconomic data from their constituent countries to respond to user needs with regard to the availability of data for economic analysis and decision-making. Parts of the data have also been exchanged through different bilateral agreements in various formats and with different timelines. Recently, several international organizations have taken a further step in making selected macroeconomic statistics more readily available thanks to close collaboration through the IAG and new technical possibilities.

One of the main features of the cooperation is the establishment of a clear distribution of responsibilities between international organizations. National data providers transmit GDP and selected related macroeconomic indicators to international organizations. Following national compilation, validation and transmission, data are further validated once by an international organization chosen as primary validator. A subset of these data is subsequently shared among the international organizations concerned through SDMX standards. Data are then shared and finally published through the existing dissemination systems of all international organizations involved.

GDP and selected related macroeconomic indicators were the first datasets implemented by the IAG. In the future, this work will be expanded to:

- include additional economic and financial indicators;
- improve timeliness and quality of these datasets;
- improve dissemination to users, including reference metadata;
- reduce the reporting burden on national statistical authorities in the long run.

Eurostat is responsible for the validation and subsequent sharing of the data of the EU Member States, candidate countries and EFTA countries. OECD shares data for the OECD member states, key partners and accession countries, not belonging to the country group above. IMF and UNSD are responsible for the rest of the world. For the Eurostat example, these data are disseminated via newly created Eurostat dissemination tables, enabling users to find key macroeconomic statistics for all available countries in one single place (<http://ec.europa.eu/eurostat/data/database> → Economy and finance → National accounts (ESA2010) → National accounts - international data cooperation).

Early Warning System (EWS)

Purpose	
Collection	Various (press articles, company websites, company contacts, etc.)
Exchange	Early warning about possible restructurings of MNEs
Type of data	
Sensitivity	Source usually not confidential, nevertheless related data may be confidential
Volume	Low, includes qualitative/quantitative information
Granularity	Micro
Regularity	Ad-hoc
Structural volatility	High
Exchange mode	Secure channel

The EWS⁷⁴ is an ad-hoc and irregular exchange of numerical as well as textual information on a voluntary basis among EU Member States' NSOs and Eurostat (ECB if needed) concerning restructuring of MNEs. A network of correspondents, representing the individual institutions has been created for this purpose. The correspondents keep themselves updated through virtual meetings and exchange the required information through secure Emails and discussion groups whenever necessary.

⁷⁴ For more information, please see <https://ec.europa.eu/eurostat/web/economic-globalisation/early-warning-system>

GNI-MNE Pilot

Purpose	
Collection	Compilation of statistics
Exchange	Verification of compilation process
Type of data	
Sensitivity	Confidential/non-confidential
Volume	Low; qualitative/quantitative information
Granularity	Micro
Regularity	one-off
Structural volatility	None
Exchange mode	Secure channel

The GNI-MNE Pilot exercise is a project, which involves the exchange of data on selected MNEs for a limited period. For this purpose, for each MNE in question, a group of countries has been constituted where the MNE is represented. The concerned countries exchange pre-defined information according to an agreed timetable through a secure transmission channel. The purpose is to validate national account figures and ensure consistent recordings in the concerned countries.

EuroGroups Register (EGR)

Purpose	
Collection	National Business register
Exchange	EuroGroups Business register
Type of data	
Sensitivity	Confidential
Volume	medium; qualitative/quantitative information
Granularity	Micro
Regularity	Regular
Structural volatility	Low
Exchange mode	Secure channel

In EGR, the regular exchange of data [takes place according to an agreed calendar](#). However, instead of bilateral exchange (every country sending to and receiving from all other countries), the countries send data to a central repository. The countries' statistical authorities have access only to those segments of the database which they are entitled to access for statistical purposes. The data format and the structure of the files are pre-defined.

Deleted: is envisaged

FDI Network

Purpose	
Collection	Compilation of statistics
Exchange	Validation of cross-border FDI figures
Type of data	
Sensitivity	Confidential
Volume	Low, quantitative information
Granularity	Micro
Regularity	Regular (triggered by events and thresholds)
Structural volatility	None
Exchange mode	Secure channel

The purpose of the FDI Network is to facilitate a secure exchange of information on FDI between the national compilers (national authorities compiling FDI statistics), Eurostat and DG Statistics of the ECB in order to increase the quality of FDI and balance of payments statistics. Unit level micro-data are exchanged between the authorities in order to validate figures and avoid asymmetries in cross-border financial flows and stocks.

Canada-US Exchange of Information - Dealing with the day to day operations

Purpose	
Collection	Compilation of trade in goods statistics
Exchange	Compilation of trade in goods statistics
Type of data	
Sensitivity	Confidential
Volume	High, quantitative information
Granularity	Micro
Regularity	Regular (monthly)
Structural volatility	Low
Exchange mode	Secure channel

As mentioned in Chapter II, since 1990 Statistics Canada and the United States Census Bureau (USCB) have been sharing customs import transactions data and using the data to compile official export statistics. The exchange is governed by a MOU between four organizations: Statistic Canada, the Canadian Customs Authority, the United States Census Bureau and the United States Custom Authority. From this date, the two statistical agencies no longer base their bilateral export statistics on export declarations. Instead, they rely on the import statistics of the counterpart country. Because of the greater scrutiny paid to imports by the customs agencies in both countries, this exchange provides a more reliable measure of the bilateral trade. In addition, the reporting burden on exporters and forwarders in both countries was significantly reduced, as export declarations are no longer required for trade between the two partners. It has also

significantly reduced non-reporting of exports to the other partner, particularly in the United States.

From time to time the production systems, processes and timelines for any one of the participants may change - either on a permanent basis or on a temporary basis. Article 4 of the Memorandum of Understanding on the Exchange of Import Data between Canada and the United States includes the following statement to deal with these instances:

“The Committee members will provide to each other reasonable prior notification of any intended changes regarding the production and availability of the data exchanged between the two countries.”

The intent of this article is to ensure that consultation takes place; with changes being implemented only after all parties have had sufficient time to adapt. A recent example of the use of this article was when the USCB was requested to increase the timeliness of the release of their international merchandise trade estimates, from roughly 45 days to 35 days following the reference period. The implementation of this change had to be coordinated with both Statistics Canada and the Canada Border Service Agency (CBSA). Not only did Statistics Canada and the CBSA need to ensure that the USCB received the data in time to meet the new timeline, but Statistics Canada also had to commit to moving up its release date, since the two agencies have an operational constraint requiring both parties to release their monthly international merchandise trade statistical release at the same time.

In addition to operational modifications, the MOU also directs the parties to put in place certain controls to ensure the accuracy of the data being exchanged. The Annex to the MOU outlines a number of control totals that Statistics Canada must provide to the USCB in the transmission of Canadian data to the United States, and that the USCB needs to provide to Statistics Canada on the transmission of the American data to Canada. These include:

CANADA TO US

1. Total number and value of transactions by entry type.
2. Total number and value of transactions by clearance port.
3. Total number and value of transactions by entry month.
4. Total number of amendments processed during the reference month and their associated values by two-digit Harmonized System categories.

US TO CANADA

1. Total number and value of transactions included in general imports from Canada and consumption imports from Canada.
2. Total number and value of transactions by date of export month for each import type.
3. Total value of imports from Canada by two-digit Harmonized System category.
4. Total number of amendments processed during the reference month and their associated values by two-digit Harmonized System categories.

Each time Statistics Canada receives the import data, tabulations are generated and the results of these tabulations are compared to the control totals supplied by the USCB. The same procedure is undertaken by the USCB when it receives data from Statistics Canada.

Traditional data sharing in non-statistical domain

Exchange of MNE related data by tax authorities (country-by-country reporting)

Purpose	
Collection	Tax purposes
Exchange	Tax purposes
Type of data	
Sensitivity	Confidential
Volume	Medium, quantitative information
Granularity	Micro
Regularity	Regular
Structural volatility	Low
Exchange mode	Secure channel

In the recent past, several cases had been discussed about how MNEs artificially "shift" profits from higher-tax locations to lower-tax locations. These corporate tax planning strategies were addressed by the G20/OECD BEPS project and actions were proposed to ensure that profits are taxed where economic activities take place and value is created. According to BEPS Action 13, the ultimate parent entity of a MNE with more than EUR 750 million in consolidated revenues, should submit a country-by-country (CbC) report for each fiscal year for the whole group within 12 months of the end of the fiscal year to the tax authority in the jurisdiction where it is tax resident. The Report should include information on several key variables e.g. revenues, employment, profits and taxes.

The tax authority, who receives the CbC report, is required to share the report with tax authorities in other jurisdictions where the relevant group has either resident entities or permanent establishments. This is subject to conditions governing the confidentiality, consistency and the appropriate use of the information contained in the CbC report. The exchange of CbC reports is carried out under the terms of an international agreement, which permits automatic exchange of information, and a competent authority agreement (CAA) which sets out the operational details of the exchange. More than 100 countries have committed to CbC reporting, covering the tax residence jurisdictions of nearly all large MNEs.

Within the European Union, such exchange of information is based on a Council Directive (2016/881 of 25 May 2016), which requires MNEs located in the EU with total consolidated revenue equal or higher than EUR 750 million, to file a country-by-country report in the Member State in which the ultimate parent entity of the MNE or any other reporting entity is resident for tax purposes. According to Article 8aa, the tax authority of the concerned Member State is legally obliged to communicate the report to any other Member State in which one or more constituent entities of the MNE are resident for tax purposes. The report will include information for every tax jurisdiction in which the MNE does business on: the amount of revenue, profit before income

tax, income tax paid and accrued, number of employees, stated capital, retained earnings and tangible assets. Starting for 2017, the report has to be filed on an annual basis, no later than 12 months after the last day of the reporting fiscal year of the MNE.

The agreements provide that CbC reports will be exchanged electronically using a common schema in the extensible markup language (XML). The members of the EU will exchange the CbC report via the secure Common Communications Network (CCN), which is managed by the Directorate General Taxation and Customs Union of the European Commission (DG Taxud). Other countries use a common transmission system, which is developed by the OECD. The information contained in the CbC XML Schema must be prepared and encrypted prior to transmission in accordance with the common file preparation and encryption approach agreed to by the countries.

Extractive Industries Transparency Initiative (EITI)

Purpose	
Collection	Commercial
Exchange	Transparency
Type of data	
Sensitivity	non-confidential
Volume	medium; quantitative information
Granularity	Micro
Regularity	Regular
Structural volatility	Low
Exchange mode	On-line publication

The Extractive Industries Transparency Initiative (EITI) is the global standard to promote the open and accountable management of oil, gas and mineral resources. The EITI Standard requires the disclosure of information along the extractive industry value chain from the point of extraction and how the resulting revenues make their way through the government, and how they benefit the public. By doing so, the EITI seeks to provide data to inform reforms for greater transparency and accountability in the extractives sector.

Each of the 51 implementing countries publish EITI Reports that disclose the revenues and other information on the extractive sectors. As part of these publications, companies report payments to government (taxes, royalties, etc.) and the government reports what it has received. These two sets of figures are compiled and reconciled by an independent administrator and published in the EITI Report. The reports address availability of contextual information, such as contracts, licenses, legal and fiscal framework as well a summary of the sector specific figures (contribution to the economy, total revenues, etc.).

To advance this work, the EITI Board has agreed to an open data policy, which comprises open data disclosure in EITI implementing countries as well as extractives data collected by the implementing countries being submitted to the EITI International Secretariat.

Under the EITI Open data policy, implementing countries are encouraged to:

- Orient government systems towards open data by default by respecting national and international confidentiality laws;
- Release data as early as possible and ensure the highest standards of open data quality;
- Ensure that the data are accompanied by necessary metadata and make sure that data are interoperable with national and international standards
- Release data under an open license that allows users to freely obtain and easily re-use it;
- Where possible use unique identifiers to link data across years of reporting or different sources; and
- Provide data in granular, machine-readable formats.

Annex 3: Examples of sharing of confidential information within the ESCB and outside

With regard to the register of institutions and affiliates database (RIAD), which includes primarily financial institutions and institutions that are counterparts to microfinance loans (in practice: non-financial corporations), the following aspects may be highlighted:

- The information collected and stored in RIAD is disseminated to statisticians and users across the ECB, NCBs and national competent authorities belonging to the single supervisory mechanism (SSM). Other (e.g. ESS, Commission) users would also be interested but there is currently no sharing of this information;
- Related to the information included in RIAD, the confidentiality flag should only be used for cases which fall under the definition of ‘confidential statistical information’ according to Council Regulation 2533/98, as indicated in Article 10 of Guideline ECB/2018/16. In this respect, the ECB continuously monitors that NCBs correctly follow these indications so as to limit the use of the confidentiality flag to the relevant cases, and ensure that more data can be published in lists and a larger number of users can have access to the data they need. Most information in business registers is made public by the firms themselves under European (e.g. Prospectus and Transparency Directives) and national laws - e.g. on who are the firms and what are their (at least annual) balance sheet and profit and loss results. However, part of this information is still flagged as confidential; and
- A reciprocal exchange of information related to entities resident in the euro area/EU would be beneficial to both systems (the ESS and the ESCB) to improve the quality of the information in business registers/RIAD. The legal framework would allow for such an exchange to take place to the extent the information is used for statistical purposes (the respective decision-making bodies would have to be involved to allow such an exchange to take place). However, not only an MOU would have to be signed but further work would be needed to ensure the practical modalities on the side of the ESCB to flag the confidentiality of data the ESS would provide to enrich RIAD (those “enriched” RIAD data may not be disseminated to users that use the information for analytical purposes and other central banking purposes). Such practical modalities may be feasible as the flagging is done at the level of the attribute.

Related to loan-by-loan data (AnaCredit), the Governing Council adopted the methodology whereby statisticians in the ESCB have access to the granular data for statistical purposes and that:

- Some users only would have access to the granular, confidential data on a need-to-know basis (across the Eurosystem and the SSM);
- Other users will have access to data aggregated along dimensions that are relevant for them (e.g. the Commission has already expressed an interest); and

- Furthermore, reporting banks will, stepwise, get feedback on their data, benchmarking indicators and information relevant for them to assess the creditworthiness of their customers. For the latter, NCBs will prolong their practices with credit registers applied to the new AnaCredit attributes - standardized across Europe.

Access to granular confidential information by other institutions such as NSOs or others have not yet been discussed. Such access may take place if deemed necessary for the compilation of European Statistics and subject to the provisions outlined in Council Regulation 2533/98 (Article 8 and 8a).