International Merchandise Trade Statistics

Compilers Manual, Rev. 1

United Nations

Department of Economic and Social Affairs
Statistics Division

International Merchandise Trade Statistics:

Compilers Manual, Revision 1
(IMTS 2010-CM)

United Nations
New York, 2013

Department of Economic and Social Affairs

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Preface

The present publication, International Merchandise Trade Statistics: Compilers Manual, Revision 1 (IMTS 2010-CM), has been prepared in accordance with a decision taken by the Statistical Commission at its forty-first session, held in New York from 23 to 26 February 2010.[1]In that decision, the Commission adopted International Merchandise Trade Statistics: Concepts and Definitions 2010 (IMTS 2010)[2]and endorsed the proposed implementation programme, including the preparation of the revised IMTS Compilers Manual (IMTS 2010-CM).

1.   See Official Records of the Economic and Social Council, 2010, Supplement No. 4 (E/2010/24), chap. I, sect. B, decision 41/103.

The provisional draft of IMTS 2010-CM was prepared by the United Nations Statistics Division, in cooperation with members of the Expert Group on International Merchandise Trade Statistics and the inter-agency Task Force on International Merchandise Trade Statistics. It incorporates inputs from national statistical offices, customs administrations and other governmental agencies of various countries, as well as from international, supranational and regional organizations, received during a worldwide consultation, three virtual meetings of the Expert Group and a specially organized meeting on compilation issues of IMTS 2010, held from 6 to 9 December 2011. The draft was reviewed and endorsed by the Expert Group at its fourth virtual meeting on the update of the Manual, held from 20 December 2011 to 19 January 2012.

2.   United Nations publication, Sales No. E.10.XVII.13.

At its forty-third session, held in New York from 28 February to 2 March 2012, the Statistical Commission took note of the report of the Secretary-General on international merchandise trade statistics (E/CN.3/2012/22) which introduced IMTS 2010-CM, and, thereby endorsed IMTS 2010-CM for use.[3]The draft text of IMTS 2010-CM was itself provided to the Commission as a background document for information.

3.   See Official Records of the Economic and Social Council, 2012, Supplement No.4 (E/2012/24), chap. I, sect. B, decision 43/117.

IMTS 2010-CM is the cornerstone of the United Nations Statistics Division action plan for the implementation of IMTS 2010. The Manual contains further and more detailed explanation of certain recommendations and provides practical guidance for compilers by describing good or best practices applicable under different circumstances. The Manual promotes the adherence to good practices and recommends specific solutions to compilation issues related to international merchandise trade statistics. To assist in the identification of such practices, the Manual uses wording such as "it is good practice", "countries are advised to" or "countries could". The Manual is consistent with IMTS 2010, which is the internationally agreed standard for international merchandise trade statistics, and does not introduce any new recommendation or encouragement in addition to those contained in IMTS 2010.

The structure of IMTS 2010-CM is largely similar to that of the original Compilers Manual of 2004,[4]and the updates respond to the need to (a) incorporate guidance on the implementation of new recommendations and encouragements contained in IMTS 2010 and (b) reflect any new or updated country practices. The structure of IMTS 2010-CM follows the logic of the data compilation process.

4.   United Nations publication, Sales No. E.02.XVII.17.

Great efforts have been undertaken to reflect current practices and information. However, since country practices change over time, the information provided in this Manual is a reflection of the information available to the authors at the time of drafting.

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SACU	Southern African Customs Union (SACU)	Paragraph 10.11
COMESA	Common Market for Eastern and Southern Africa (COMESA)	Paragraph 10.12
ASEAN	Association of Southeast Asian Nations (ASEAN)	Paragraphs 10.13-10.14

Abbreviations and acronyms

2008 SNA	System of National Accounts 2008
ASEAN	Association of South East Asian Nations
ASYCUDA	Automated System for Customs Data
BEC	Classification by Broad Economic Categories
BMP5	Balance of Payments Manual, 5th edition
BMP6	Balance of Payments and International Investment Position Manual, 6th edition
CATI	computer-assisted telephone interviewing
CIF	cost, insurance and freight
COMESA	Common Market for Eastern and Southern Africa
CPA	Classification of Products by Activity
CPC	Central Product Classification
DQAF	Data Quality Assessment Framework
ECE	Economic Commission for Europe
EG-IMTS	Expert Group on International Merchandise Trade Statistics
ESMS	Euro SDMX Metadata Structure
ESS	European Statistical System
EUROSTAT	Statistical Office of the European Communities
FAO	Food and Agriculture Organization of the United Nations
FOB	free on board
GATT	General Agreement on Tariffs and Trade
HS07	Harmonized Commodity Description and Coding System, 2007 edition
ICC	International Chamber of Commerce
IMF	International Monetary Fund
IMTS	International merchandise trade statistics
IMTS 2010	International Merchandise Trade Statistics: Concepts and Definitions, 2010
IMTS 2010-CM	International Merchandise Trade Statistics: Compilers Manual, Revision 1
IMTS 2010, Rev.1	International Merchandise Trade Statistics: Concepts and Definitions, Revision 1
IMTS 2010, Rev.2	International Merchandise Trade Statistics: Concepts and Definitions, Revision 2
INCOTERMS	terms of delivery standardized by ICC
ISIC	International Standard Industrial Classification of All Economic Activities
MSITS 2010	Manual on Statistics of International Trade in Services 2010
NACE	Statistical Classification of Economic Activities in the European Community
OECD	Organization for Economic Cooperation and Development

QMF	quality management framework
RKC	revised Kyoto Convention
SAD	single administrative document
SDMX	Statistical Data and Metadata Exchange
SITC	Standard International Trade Classification
SQL	Structured Query Language
TF-IMTS	inter-agency Task Force on International Merchandise Trade Statistics
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UN/EDIFACT	United Nations rules for Electronic Data Interchange for Administration, Commerce and Transport
UPU	Universal Postal Union
VAT	value added tax
WCO	World Customs Organization
WTO	World Trade Organization

PART ONE.

Legal framework and data sources

Chapter I
The legal framework for IMTS Introduction.

1.1.   The present chapter stresses the importance of the legal framework for the compilation and dissemination of international merchandise trade statistics (IMTS), including for ensuring the availability of, and access to, the necessary data sources such as customs records (see chap. II) and non-customs sources (see chaps. III and IV), for establishing effective institutional arrangements (see chap. V) and for ensuring the protection of confidentiality (see also chap. XXVI). Country practices are described in several case studies.

A.   Importance of the legal framework for trade statistics

1.2.   *Importance of the legal framework.* Because of its relevance for economic policy and market analysis, international merchandise trade statistics generally enjoy the broad support of Governments and the business community. However, owing to a number of factors, such as reporting burden on companies and traders, confidentiality concerns, and the lack of proper cooperation among various agencies, basic data may not be provided or accessible in a timely and comprehensive way, thus making it difficult for the compilers to produce complete and high-quality international merchandise trade statistics. Basic trade data include data provided by traders through customs declarations, data provided by the customs administration, the central bank, ministries and other national agencies (in the case where they are not the agency responsible for compiling official trade statistics in the country), and data provided directly by importing and exporting companies through surveys. The legal agreements, relevant laws and regulations that govern such data-provision relations, as well as all other aspects of data compilation and dissemination in a country, constitute the legal framework for IMTS. It is important that the legal acts and appropriate administrative regulations be in place to mandate and enable trade statisticians to collect, compile and disseminate high-quality trade statistics and to safeguard the confidentiality of the individual data (see International Merchandise Trade Statistics: Concepts and Definitions 2010,[1] para. 8.17).

1.3.   *Types of legal acts.* Legal acts relevant for international merchandise trade statistics, which exist at three different levels are of three types, namely: (a) legal acts governing the completion of the customs documentation; (b) legal acts regulating the collection, processing and dissemination of international merchandise trade statistics and the working relations of the concerned agencies; and (c) legal acts protecting the confidentiality of information. The last-mentioned kinds of acts are usually incorporated in the acts covered under (a) and (b). Whereas legal acts are enacted by the national (or regional) legislative bodies, international organizations set out international guidelines and recommendations. If a country becomes a member of an international organization, or a party to an international convention, or adopts international recommendations, it then needs to incorporate those recommendations in its national laws and regulations. Especially in the field of international trade, many international agreements exist to properly govern the cross-border transactions in goods and services. In a similar sense, international recommendations for trade statistics should be properly reflected in national laws or regulations of the country. The compilation and

1.   Statistical Papers, Series M, No. 52 (UN publication, Sales No. E.10 XVII.13).

dissemination of international merchandise trade statistics should also follow the Fundamental Principles of Official Statistics, such as independence, impartiality, etc. (see IMTS 2010, para. 0.12). Furthermore, trade statisticians will be able to do their job more efficiently if these national laws and regulations also cover the establishment of appropriate institutional arrangements.

B.   Legal acts governing customs records

1.4.   International conventions and agreements relevant to customs records. The World Customs Organization (WCO) is the international platform at which countries reach agreements on customs regulations, while the World Trade Organization (WTO) is the body concerned with international trade agreements. From an IMTS perspective, the two most relevant conventions adopted by WCO are the revised International Convention on the Simplification and Harmonization of Customs Procedures (known as the revised Kyoto Convention, or RKC), which provides standards for various customs procedures and describes corresponding good practices, and the International Convention on the Harmonized Commodity Description and Coding System (known as Harmonized System Convention, or HS Convention)[2], which sets out the commodity classification. For trade statistics, the most important international agreement adopted by WTO is the WTO Agreement on Customs Valuation.[3] All of these and some other relevant international conventions will be discussed in more detail in the subsequent chapters.

1.5.   *National laws and regulations.* When a country becomes a signatory to a WCO convention (or parts of it), the content of that convention needs to be properly reflected in its national law. Generally, the national law adds further details applicable to the national needs and circumstances. Based on and authorized by the respective national law, various government regulations, administrative acts and service level agreements can be put in place to further elaborate the rights and the responsibilities of the various agencies with respect to the statistical process (see chap. V for details).

1.6.   *National laws and regulations:* experience of the United States of America. The United States Code contains the general and permanent laws of the United States by subject matter. It is divided, by broad subjects, into 51 titles and published by the Office of the Law Revision Counsel of the United States House of Representatives. More than half of these titles make reference to laws and regulations enforced by the Administration for Customs and Border Protection. For instance, Title 13, entitled "Census", contains a chapter on "Collection and Publication of Foreign Commerce and Trade Statistics". Box I.1 below contains an excerpt from section 301 of that chapter. Another example is Title 19, entitled "Customs duties", which contains most references to customs procedures.

2.   United Nations, Treaty Series, vol. 1503, No. 25910.

3.   See Legal Instruments Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, done at Marrakash on 15 April 1994 (GATT secretarial publication, Sales No. GATT/1994-7).

Box I.1

United States Code: excerpt from Title 13 entitled "Census"

Chapter 9 entitled "Collection and Publication of Foreign Commerce and Trade Statistics": section 301, entitled "Collection and publication", parts (a) and (b).

(a.)   The [United States Secretary of Commerce] is authorized to collect information from all persons exporting from, or importing into, the United States and the noncontiguous areas over which the United States exercises sovereignty, jurisdiction, or control, and from all persons engaged in trade between the United States and such noncontiguous areas and between those areas, or from the owners, or operators of carriers engaged in such foreign commerce or trade, and shall compile and publish such information pertaining to exports, imports, trade, and transportation relating thereto, as he deems necessary or appropriate to enable him to foster, promote, develop, and further the commerce, domestic and foreign, of the United States and for other lawful purposes.

(b.)   The Secretary shall submit to the Committee on Ways and Means of the House of Representatives and the Committee on Finance of the Senate, on quarterly and cumulative bases, statistics on United States imports for consumption and United States exports by country and by product. Statistics on United States imports shall be submitted in accordance with the Harmonized Tariff Schedule of the United States Annotated for Statistical Reporting Purposes and general statistical note 1 thereof, in detail as follows:

   1.)   net quantity;

   2.)   United States customs value;

   3.)   purchase price or its equivalent;

   4.)   equivalent of arm's length value;

   5.)   aggregate cost from port of exportation to United States port of entry;

   6.)   a United States port of entry value comprised of (5) plus (4), if applicable, or, if not applicable, (5) plus (3); and

   7.)   for transactions where (3) and (4) are equal, the total value of such transactions.

The data for paragraphs (1), (2), (3), (5), and (6) shall be reported separately for nonrelated and related party transactions, and shall also be reported as a total of all transactions.

1.7.   *Access to information:* experience of Canada. Ideally, the national law or regulations on statistics require that statistically relevant information on foreign trade in possession of any institution be made available to the authorized compiling agency. Box I.2 below gives an example of such a legal arrangement, which requires the customs administration of Canada to provide Statistics Canada, the country's compiling agency of international trade statistics, with the relevant data.

Box I.2

Excerpt from the Statistics Act of Canada

Return of exports and imports from Customs

25. For the purposes of this Act and subject to section 17, the Solicitor General of Canada shall cause to be sent to the Chief Statistician returns of imports and exports into and from Canada and details of the means of transportation used therefor, in such manner and at such times as the Governor in Council may prescribe on the recommendation of the Minister and the Solicitor General of Canada. 1970-71-72, c. 15, s. 23; 1976-77, c. 28, s. 41; 2005, c. 38.

1.8.   *Contents of national regulations and advantages of custom records.* National customs law usually requires that importers and exporters of goods report particulars of their transactions to customs for the purpose of collection of duties and taxes, for

health, environmental and/or other control purposes, and for statistical purposes. In many countries, a person who fails to lodge the required declaration, or knowingly or recklessly lodges an inaccurate declaration, is liable for an offence. Such regulations make customs records a readily available and generally reliable source of data. Further details on customs records as the main data source for trade statistics are provided in chapter II. Their advantages and limitations are discussed in chapter VII and a number of related quality assurance issues are elaborated in chapter IX.

1.9.   *International recommendations for trade statistics.* The United Nations Statistical Commission is the international forum at which countries adopt the international recommendations for trade statistics. At its forty-first session in 2010, the Commission adopted the revised recommendations for international merchandise trade statistics (IMTS 2010).[4] The reflection of these recommendations in national laws or regulations, especially where the recommendations require additional information, allows the responsible agency to more effectively collect, process and disseminate the information necessary for the compilation and dissemination of high-quality international merchandise trade statistics.

4.   See Official Records of the ECOSOC, 2010, Supplement No. 4 (E/2010/24), chap. I, Sect. B, decision 41/103, para. (b).

C.   Legal acts regulating non-customs data sources

1.10.   *Legal acts regulating non-customs data sources.* As will be discussed in more detail in chapter II and further on in the present Manual, international merchandise trade statistics are based largely on information from customs documents, but, compilers are not limited to using only those documents. Certain kinds of transactions do not pass through customs and therefore information on those transactions needs to be obtained from other data sources. The results of a survey on country practices in the compilation of international merchandise trade statistics, conducted in 2006 by the United Nations Statistics Division (UNSD), showed that, besides customs declarations, countries also use postal records, tax records, currency exchange records, enterprise surveys, aircraft and ship registers, foreign shipping manifests, and reports of commodity boards (see chap. III) for more details on the 2006 survey results). All of those additional data sources may be necessary or useful in completing or verifying a country's international merchandise trade statistics.

1.11.   *The legal acts regulating the content of such data sources, the means by which they are maintained and the access to them are of great importance for the compilers of international merchandise trade statistics.* The main national organizations involved in the compilation of international trade statistics are national statistical offices, customs offices and central banks and, in some countries, the ministry of trade or other specialized governmental or private bodies. Other entities such as commodity boards, trade development boards, specialized ministries or the ministry of commerce/economy, etc., may also play an important role, for example, by providing information on particular categories of goods.

D.   Legal acts regulating institutional arrangements

1.12.   *Effective institutional arrangements.* The establishment and maintenance of effective institutional arrangements among governmental agencies relevant to international merchandise trade statistics can be greatly facilitated if the national law contains clear provisions with respect to the roles, rights and responsibilities of those agencies as well as the mechanisms of their cooperation (see IMTS 2010, para. 8.16).

If such provisions and mechanism of cooperation are lacking or are not sufficiently detailed, then it might be more difficult, and time consuming, to establish effective institutional arrangements.

1.13.   *In this context, it is good practice for compilers to actively participate, whenever appropriate, in the necessary modifications to national legislation or relevant administrative regulations in order to establish a solid foundation for enhancing the quality and timeliness of trade statistics (see IMTS 2010, para. 8.14).*   It is good practice for the national laws and regulations to designate only one governmental agency as responsible for the dissemination of official trade statistics and to define the rights and responsibilities of all agencies involved in the collection, processing and dissemination of trade statistics, so that those agencies will be in a better position to establish the necessary institutional arrangements detailing their involvement in the statistical process. For instance, if adequate legal provisions are in place, the responsible agency can establish, faster and more efficiently, a working arrangement with the organizations keeping records relevant to international merchandise trade statistics (e.g., records of imports and exports of electrical energy and of pipeline shipments of natural gas and crude oil, maintained by specialized governmental agencies, etc.). See chapter V for further discussion of institutional arrangements.

E.   Legal acts protecting confidentiality of traders and trade information

1.14.   *Confidentiality of customs declarations.* In general, customs declarations are not subject to the same level of confidentiality measures as other statistical sources. By design, customs declarations are used to assess tariffs, fees and taxes, and to enforce multiple agencies' requirements for admissibility of goods into the country or to enforce the country's exports laws and regulations. However, once the information is transmitted to the agency responsible for the compilation of international merchandise trade statistics, in many cases, that agency treats it as confidential. Nevertheless, in most cases, the compiling agency does not subject all data to rigorous disclosure reviews, and applies instead "passive disclosure" methods, where importers and exporters inform the agency of possible disclosure situations for investigation and for some form of statistical suppression.

1.15.   *Confidentiality of trade information.* Confidentiality of information in the case of international merchandise trade statistics encompasses confidentiality of personal information (for instance, on individual records, the trader could be identified by name and address, or by a publicly accessible identification number) and confidentiality of commercial information. In general, the confidentiality of personal information should be protected by law in every country. The compiling agency may also establish appropriate regulation to safeguard confidentiality in the exchange of basic information among agencies. However, regardless of the legal status of confidential information, whether personal or commercial, this information should still be included in the trade statistics but reported in aggregate form, so that the confidential aspects of these operations are not identified (see chap. XXVI for details). It is also desirable for national legislation to define rights and responsibilities regarding access to the micro data, highlighting the appropriate principles and procedures. The responsible agency should cooperate with the national legislature in establishing such laws.

F.   Country experiences

1.16.   *The legal framework for trade statistics in Morocco.* In Morocco, the Office of Exchange is responsible for the compilation and dissemination of external trade statistics. The Office of Exchange is a public institution charged with two missions: to enact measures relating to exchange control regulations and to establish the foreign trade statistics, balance of payments and international investment position. The compilation and dissemination of foreign trade statistics have been entrusted to the Office of Exchange since 1967 under a decision of the Minister of Finance. The legal acts concerning trade statistics were consolidated in 2007 with the promulgation of Law 19-06, on statistical reporting for the compilation of statistics of foreign trade. This law contains provisions that permit:

(a).   Establishment of the requirement for residents with respect to reporting transactions with non-residents to the Office of Exchange;

(b).   Specification of the reportable transactions: commercial and financial transactions with non-residents;

(c).   Definition of violations of the law on statistical reporting: non-declaration, misrepresentation and non-compliance with statistical declaration requirements;

(d).   Empowerment of the Office of Exchange to initiate investigations directly with traders.

1.17.   *The Confidentiality Act of the Philippines.* Confidentiality of trade data in the Philippines is based on provisions of Commonwealth Act 591, section 4. The Act states, inter alia, that data furnished to the National Statistics Office by an individual, corporation, partnership, institution or business enterprise shall not be used in any court or in any public office as evidence either for or against the individual, corporation, association, partnership, institution or business enterprise from whom such data emanate; nor shall such data or information be divulged to any person except authorized employees of the National Statistics Office, acting in the performance of their duties; nor shall such data be published except in the form of summaries or statistical tables in which no reference to an individual, corporation, association, partnership, institution or business enterprise shall appear. Any person violating the provisions of this section shall, upon conviction, be punished by a fine or by imprisonment, or by both. Strict compliance with Commonwealth Act 591, section 4, is being implemented in the Philippines in the compilation and dissemination of international merchandise trade statsitics. Data being released are all in summary form, and tables are in aggregate value, with no reference to individual importer or exporter data. Value and volume of import and export data are released only by commodity and by country. No information on the identity of the exporter or the importer is indicated in the statistical tables.

Chapter II
Customs declarations and related customs records

2.1.   *Introduction.* The present chapter elaborates the recommendations on the use of customs declarations and related customs records contained in IMTS 2010, chapter VIII, on data compilation strategies. The present chapter provides details on the revised Kyoto Convention (RKC) and identifies customs procedures indicating inclusion or exclusion of movements of goods from international merchandise trade statistics. The verification of the information contained in customs declarations and other issues related to data collection and data quality are also covered. As customs declarations are the main source of trade data in most countries, compilers of trade statistics should be fully aware of the relevant laws and administrative regulations that define customs procedures and the scope and level of detail of the declarations, which are in effect in their countries. This chapter builds on chapter I, which discusses the overall legal framework for the compilation and dissemination of international merchandise trade statistics. The use of non-customs sources is covered in chapter III. This chapter is closely related to and provides the background for chapters XII to XVIII, which elaborate on the compilation of particular data items from the point of view of customs declarations as the main data source for international merchandise trade statistics.

A.   Customs declarations as the most prevalent source of trade data

2.2.   *Customs declarations as a source of information.* At most points of entry, goods are brought into (or withdrawn from) the customs territory of a country under various customs procedures with associated declarations which contain many statistically important particulars of such movements. So far, only within a few customs unions (for instance, the European Union or the Customs Union of Belarus, Kazakhstan and the Russian Federation), have customs procedures been lifted in favour of free market circulation. Transactions among all other countries and between union and non-union countries are regulated through customs procedures. Therefore, IMTS 2010 treats those customs records as the most prevalent source of data and recommends that statisticians take advantage of them (IMTS 2010, para. 8.2).   Recognizing the need to ensure international comparability and to increase the relevance of trade data for national policy purposes, compilers should cooperate with the national customs authorities in promoting the application of international guidelines on customs procedures as laid out by the World Customs Organization (WCO).[5] A summary of terminology and customs procedures is provided below.

2.3.   *The customs (goods) declaration and the declarant.*   A customs declaration is "any statement or action, in any form prescribed or accepted by the Customs, giving information or particulars required by the Customs".[6]   A declarant is "any natural or legal person who makes a customs declaration or in whose name such a declaration is made".[7]   The RKC notes that a declarant need not be the owner of the goods but may be any person having the right to dispose of the goods (e.g., the carrier, the forwarding agent, the consignee or an agent approved by the customs agency).[8] The term "customs

5.   Most of those procedures are formulated in the International Convention on the Simplification and Harmonization of Customs Procedures, which was signed at Kyoto, Japan, on 18 May 1973 and revised in June 1999; WCO has issued the "Glossary of international customs terms" (Brussels; October 2011) to facilitate uniformity in use of customs terminology. The Revised Kyoto Convention is available from: http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/conventions/pf_revised_kyoto_conv/kyoto_new.aspx (interactive web version); and http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/conventions/pf_revised_kyoto_conv/~/media/A7D0E4 87847940AD9 4DD10E3FDD39D60.ashx (pdf). The Glossary of International Customs Terms is available from http://wcoomdpublications.org/downloadable-publications/glossary-of-international-customs-terms.html?___store=english&___from_store=french; http://wcoomdpublications.org/downloadable/download/sample/sample_id/123/ (pdf); and http://www.wcoomd.org/~/media/WCO/Public/Global/PDF/Topics/Facilitation/Ressources/Publications/Updated%20Glossary%20E%20v2%202011.ashx?db=web (pdf).

6.   See the definition of "goods declaration" in the WCO Glossary; see also the RKC, General Annex, Chap. 2, E19/F8, "goods declaration."

7.   See the definition of "declarant" in the WCO Glossary; see also the RKC, General Annex, Chap 2, E14/F7, "declarant".

8.   See the RKC, General Annex, Chapter 3, standards 3.6 and 3.7.

declaration" includes not only traditional declarations in the form of paper documents but also declarations made through electronic and oral means and actions required on the part of passengers under the dual-channel (red/green) system. The "data content" of those declarations may vary significantly; normally, the most comprehensive data records are provided when goods are cleared for home use or declared for outright exportation.

2.4.   *Related customs records and accompanying documents.* The tern "related customs records" is understood to refer to customs documents to be filled out in addition to the goods declaration, such as, for example, a declaration of customs value or special forms in cases where goods enter or leave customs free zones or industrial free zones. The requirements of countries might be very different. Related customs records differ from documents accompanying customs declarations, such as an invoice, a shipping manifest, a bill of lading or a certificate of origin, which are not completed or issued at customs.[9] For the purpose of this Manual, the documents accompanying customs declarations are considered non-customs data sources, while related customs records are considered customs records. However, countries might not adhere to such a distinction and might consider all or some of the supporting documentation provided at customs as part of the customs records.

2.5.   *Changing requirements at customs.* It should be noted that the role of customs is changing owing to an increased emphasis on security and a global proliferation of trade agreements. The lowering of tariffs and the simplification of customs formalities change the commercial practices as well. Therefore, some assumptions about customs records are no longer as accurate as they used to be. Also, as a result of these changes, some of the customs procedures that statistical agencies might have relied upon to identify certain types of transborder movements of goods are no longer widely used or are used differently. For instance, in certain cases the goods that are being simply transported through a given country, which in the past would have normally been declared as in-transit shipments and excluded from trade statistics, are now often declared and recorded as normal imports (and subsequent re-exports) and therefore inflate the country's trade statistics. In this connection, it is good practice for customs officers and statisticians to cooperate closely so as to arrive at a common understanding of the distinctions between certain customs and statistical definitions and of the fact that a transaction falling under the same customs procedure may later be classified differently for statistical purposes.

B.   Structure and content of the revised Kyoto Convention

2.6.   T*he International Convention on the Simplification and Harmonization of Customs Procedures entered into force in 1974.* The revised Kyoto Convention (RKC) was adopted in June 1999. The provisions contained in the RKC aim at the facilitation of trade but at the same time make customs records a highly standardized and reliable data source for trade statistics across countries. The RKC comprises a Body, a General Annex and Specific Annexes.

2.7.   *The Body of the revised Kyoto Convention.* The main body of the RKC contains information on the scope, structure and management of the Convention, and defines its ratification process by the contracting parties. For instance, article 9 (1) of the RKC specifies that "any Contracting Party which ratifies this Convention or accedes thereto shall be bound by any amendments to this Convention, including the General Annex, which have entered into force at the date of deposit of its instrument of ratification or accession". Further, article 9 (2) specifies "any Contracting Party which accepts a

9.   For example, the bill of lading is a document issued by a carrier to a shipper, while the certificate of origin is usually a document issued by the ministry of trade or industry or by another authorized governmental agency.

Specific Annex or Chapter therein shall be bound by any amendments to the Standards contained in that Specific Annex or Chapter which have entered into force at the date on which it notifies its acceptance to the depositary".

2.8. *Ratification by contracting parties.* As indicated in its article 9, contracting parties can ratify the RKC without signing off on the chapters of its Specific Annexes. For instance, while Austria, Azerbaijan and Belgium are all contracting parties to the RKC, they did not sign off on any of the chapters of its Specific Annexes. As at 1 December 2011, 78 countries had become contracting parties to the RKC. Only 25 contracting parties have accepted chapters of the Specific Annexes.

2.9. *Structure and content of the Annexes.* The annexes of the original Kyoto Convention were replaced by a General Annex and Specific Annexes. The General Annex and each Specific Annex to the RKC are subdivided into Chapters, which comprise (a) definitions and (b) standards, some of which, in the General Annex, are transitional standards. Each Specific Annex also contains recommended practices in addition to standards. Standards have to be followed strictly and included in a country's customs law. The term "transitional standard" in the General Annex refers to a standard for which a longer period for implementation is permitted. Recommended practices are mandatory unless countries enter reservations against them. Each Annex is accompanied by guidelines, the texts of which are not binding upon contracting parties. Box II.1 provides an example of standards in the General Annex: those for the goods declaration formats and contents.

Box II.1

General Annex of the revised Kyoto Convention: example of standards

Goods declaration format and contents

Standard 3.11. The contents of the Goods declaration shall be prescribed by the Customs. The paper format of the Goods declaration shall conform to the UN-layout key. For automated Customs clearance processes, the format of the electronically lodged Goods declaration shall be based on international standards for electronic information exchange as prescribed in the Customs Co-operation Council Recommendations on information technology.

Standard 3.12. The Customs shall limit the data required in the Goods declaration to only such particulars as are deemed necessary for the assessment and collection of duties and taxes, the compilation of statistics and the application of Customs law.

Standard 3.13. Where, for reasons deemed valid by the Customs, the declarant does not have all the information required to make the Goods declaration, a provisional or incomplete Goods declaration shall be allowed to be lodged, provided that it contains the particulars deemed necessary by the Customs and that the declarant undertakes to complete it within a specified period.

Standard 3.14. If the Customs register a provisional or incomplete Goods declaration, the tariff treatment to be accorded to the goods shall not be different from that which would have been accorded had a complete and correct Goods declaration been lodged in the first instance.

The release of the goods shall not be delayed provided that any security required has been furnished to ensure collection of any applicable duties and taxes.

2.10. *Definitions contained in the General Annex of the revised Kyoto Convention.* The General Annex of the RKC defines and explains all customs terms and operations that are applicable to a variety of specific customs procedures which are defined in the Specific Annexes. Chapter 2 of the General Annex provides useful definitions of, for example, "clearance", "customs law" and "customs territory". Chapter 3 provides a detailed definition of "clearance and other customs formalities" which includes

descriptions of the goods declaration and of the examination of the goods. The General Annex also contains chapters, among others, on duties and taxes; security; customs control; application of information technology; the relationship between the customs and third parties; and information, decisions and rulings supplied by the customs.

2.11.   *Specific Annexes of the revised Kyoto Convention:* customs procedures. The Specific Annexes of the RKC provide all of the details associated with customs procedures. Such information contained therein is highly relevant for the compilation of international merchandise trade statistics. A list of the Specific Annexes and of the chapters is provided in Table II.1.

Table II.1
List of specific annexes of the revised Kyoto Convention and their chapters

Specific Annex		*Chapters therein*	
A	Arrival of goods in a Customs territory	A1	Formalities prior to the lodgement of the Goods declaration
		A2	Temporary storage of goods
B	Importation	B1	Clearance for home use
		B2	Re-importation in the same state
		B3	Relief from import duties and taxes
C	Exportation	C1	Outright exportation
D	Customs warehouses and free zones	D1	Customs warehouses
		D2	Free zones
E	Transit	E1	Customs transit
		E2	Transshipment
		E3	Carriage of goods coastwise
F	Processing	F1	Inward processing
		F2	Outward processing
		F3	Drawback
		F4	Processing of goods for home use
G	Temporary admission	G1	Temporary admission
H	Offences	H1	Customs offences
J	Special procedures	J1	Travellers
		J2	Postal traffic
		J3	Means of transport for commercial use
		J4	Stores
		J5	Relief consignments
K	Origin	K1	Rules of origin
		K2	Documentary evidence of origin
		K3	

10. See chap. III for a description of trade flows that might not be covered by customs and for which the use of non-customs sources of data might be needed.

C.   Customs procedures and IMTS

2.12.   *Customs procedures and trade statistics.* Most of the international transactions of goods pass through the customs administrations of the exporting and the importing countries, and are subject to customs procedures. Customs records created as a result of the application of such procedures are the most prevalent and most important source of data for trade statistics.[10] Further, the customs procedures are used to determine what movements of goods are to be included or excluded from international merchandise

trade statistics. However, countries may not always strictly follow the standards and recommended practices of the RKC or may have other procedures or procedures in addition to those identified within it. Therefore, compilers should carefully review the details of the customs procedures and then decide on whether to include or exclude any given procedures, following the IMTS 2010 recommendations on the scope of recording (see IMTS 2010, para. 8.5).

2.13.   *Inclusion and exclusion of goods based on specific customs procedures.* The most common customs procedure for imports is the declaration of goods for Clearance for home use, whereas for exports it is the procedure of outright exportation. Goods transactions under these customs procedures are, as a general guideline, to be included in the international merchandise trade statistics. Goods movements under the procedures transit, transshipments and temporary admissions are, in general, to be excluded. Boxes II.2 and II.3 below provide the list of customs procedures identified in the RKC under which, as a general guideline, goods are to be included in or excluded from trade statistics, assuming that the country follows the RKC in the definition and application of these customs procedures (see IMTS 2010, para. 8.5). Box II.4 provides examples of cross-border movements of goods that might not be covered by separate customs procedures but that should be included in international merchandise trade statistics.

2.14.   *List of customs procedures under which goods are to be included in IMTS.* Box II.2 provides the list customs procedures identified in the RKC and whose application should result in the inclusion of cross-border movements of goods in imports or exports following the relevant recommendations of IMTS 2010.

Box II.2

Customs procedures covering goods to be included in IMTS

1.   Imports

Clearance for home use (Specific Annex B, Chapter 1)
Specific Annex B of the RKC defines "clearance for home use" as the Customs procedure which provides that imported goods enter into free circulation in the Customs territory upon the payment of any import duties and taxes chargeable and the accomplishment of all the necessary Customs formalities. It further defines "goods in free circulation to" mean goods which may be disposed of without Customs restriction.

Customs warehouses (Specific Annex D, Chapter 1)
 "Customs warehousing procedure" means the Customs procedure under which imported goods are stored under Customs control in a designated place (a Customs warehouse) without payment of import duties and taxes. Customs can establish public and private customs warehouses, for which Customs shall lay down the requirements for the establishment, suitability and management and the arrangements for Customs control. The arrangements for storage of goods in Customs warehouses and for stock keeping and accounting shall be subject to the approval of the Customs. As mentioned above, the authorized operations are strictly defined. Goods are allowed to stay in the warehouse for at least one year, unless the goods are perishable.

Free zones (Specific Annex D, Chapter 2)
"Free zone" means a part of the territory of a Contracting Party where any goods introduced are generally regarded, insofar as import duties and taxes are concerned, as being outside the Customs territory. National legislation shall specify the requirements relating to the establishment of free zones, the kinds of goods admissible to such zones and the nature of the operations to which goods may be subjected in them. Customs shall lay down the arrangements for Customs control, including appropriate requirements as regards the suitability, construction and layout

of free zones, and have the right to carry out checks at any time on the goods stored in a free zone.

Inward processing (Specific Annex F, Chapter 1)
"Inward processing" is defined as the Customs procedure under which certain goods can be brought into a Customs territory conditionally relieved from payment of import duties and taxes, on the basis that such goods are intended for manufacturing, processing or repair and subsequent exportation. Specific Annex F further defines that inward processing shall not be limited to goods imported directly from abroad, but shall also be granted for goods already placed under another Customs procedure and that it should not be refused solely on the grounds of the country of origin of the goods, the country from which they arrived or the country of destination.

Processing of goods for home use (Specific Annex F, Chapter 4)
"Processing of goods for home use" means the Customs procedure under which imported goods may be manufactured, processed or worked, before clearance for home use and under Customs control, to such an extent that the amount of the import duties and taxes applicable to the products thus obtained is lower than that which would be applicable to the imported goods. The granting of the procedure of processing of goods for home use shall be subject to the conditions that:

a.) the Customs are able to satisfy themselves that the products resulting from the processing of goods for home use have been obtained from the imported goods;

b.) the original state of the goods cannot be economically recovered after the manufacturing, processing or working.

2.   **Re-imports**

Re-importation in the same state (Specific Annex B, Chapter 2)
"Goods exported with notification of intended return" means goods specified by the declarant as intended for re-importation, in respect of which identification measures may be taken by the Customs to facilitate re-importation in the same state.

"Re-importation in the same state" means the Customs procedure under which goods which were exported may be taken into home use free of import duties and taxes, provided they have not undergone any manufacturing, processing or repairs abroad and provided that any sums chargeable as a result of repayment or remission of or conditional relief from duties and taxes or of any subsidies or other amounts granted in connection with exportation must be paid. The goods that are eligible for re-importation in the same state can be goods that were in free circulation or were compensating products.

3.   **Exports**

Outright exportation (Specific Annex C, Chapter 1)
Specific Annex C states that "outright exportation" means the Customs procedure applicable to goods which, being in free circulation, leave the Customs territory and are intended to remain permanently outside it. The Customs shall not require evidence of the arrival of the goods abroad as a matter of course.

Outward processing (Specific Annex F, Chapter 2)
"Outward processing" means the Customs procedure under which goods which are in free circulation in a Customs territory may be temporarily exported for manufacturing, processing or repair abroad and then re-imported with total or partial exemption from import duties and taxes.

Drawback (Specific Annex F, Chapter 3)
"Drawback" means the amount of import duties and taxes repaid under the drawback procedure. "Drawback procedure" means the Customs procedure which, when goods are exported,

provides for a repayment (total or partial) to be made in respect of the import duties and taxes charged on the goods, or on materials contained in them or consumed in their production.

Postal traffic (Specific Annex J, Chapter 2)
According to the RKC, clearance of goods in postal traffic "shall be carried out as rapidly as possible" and customs control shall be restricted to the minimum".[a]

a.   See the RKC, Specific Annex J, Chapter 2, Standard 3.

Relief consignments (Specific Annex J, Chapter 5)
The RKC stipulates that clearance of relief consignments for export, transit, temporary admission and import shall be carried out as a matter of priority. In the case of relief consignments the Customs shall provide for: (a) lodging of a simplified Goods declaration or of a provisional or incomplete Goods declaration subject to completion of the declaration within a specified period; (b) lodging and registering or checking of the Goods declaration and supporting documents prior to the arrival of the goods, and their release upon arrival; (c) clearance outside the designated hours of business or away from Customs offices and the waiver of any charges in this respect; and (d) examination and/or sampling of goods only in exceptional circumstances.[b]

b.   See the RKC, Specific Annex J, Chapter 5, Standards 2 and 3.

2.15.   *List of customs procedures under which goods are to be excluded from IMTS.* Box II.3 provides the list of customs procedures whose application should result in exclusion of the goods from the international merchandise trade statistics, as goods entering or leaving a country under any of those procedures do not add or subtract from the stock of goods of the country.

Box II.3

Customs procedures covering goods to be excluded from IMTS

Customs transit (Specific Annex E, Chapter 1)

"Customs transit" means the Customs procedure under which goods are transported under Customs control from one Customs office to another. The Customs shall allow goods to be transported under Customs transit in their territory:

(a.)   from an office of entry to an office of exit;

(b.)   from an office of entry to an inland Customs office;

(c.)   from an inland Customs office to an office of exit; and

(d.)   from one inland Customs office to another inland Customs office.

Goods being carried under Customs transit shall not be subject to the payment of duties and taxes. The Customs at the office of departure shall take all necessary action to enable the office of destination to identify the consignment and to detect any unauthorized interference.

Transshipment (Specific Annex E, Chapter 2)

"Transshipment" means the Customs procedure under which goods are transferred under Customs control from the importing means of transport to the exporting means of transport within the area of one Customs office which is the office of both importation and exportation. The Customs should accept as the Goods declaration for transshipment any commercial or transport document for the consignment concerned which meets all the Customs requirements. This acceptance should be noted on the document.

Temporary Admission (Specific Annex G, Chapter 1)

"Temporary admission" means the Customs procedure under which certain goods can be brought into a Customs territory conditionally relieved totally or partially from payment of import duties and taxes;

a. See also IMTS 2010, para. 1.43

such goods must be imported for a specific purpose and must be intended for re-exportation within a specified period[a] and without having undergone any change except normal depreciation due to the use made of them.

National legislation shall enumerate the cases in which temporary admission may be granted and temporary admission shall be subject to the condition that the Customs are satisfied that they will be able to identify the goods when the temporary admission is terminated. The Customs shall fix the time limit for temporary admission in each case.

b. Available from http://www.wcoomd.org/en/about-us/legal-instruments/~/media/2D53E23AA1A64EF68B9AC708C6281DC8.ashx

Temporary admission with total conditional relief from duties and taxes should be granted to the goods referred to in the Annexes to the Convention on Temporary Admission (Istanbul Convention) of 26 June 1990: [b]

(a.)   "Goods for display or use at exhibitions, fairs, meetings or similar events".

(b.)   "Professional equipment".

(c.)   "Containers, pallets, packings, samples and other goods imported in connection with a commercial operation".

(d.)   "Goods imported for educational, scientific or cultural purposes".

(e.)   "Travellers' personal effects and goods imported for sports purposes".

(f.)   "Tourist publicity material".

(g.)   "Goods imported as frontier traffic".

(h.)   "Goods imported for humanitarian purposes".

(i.)   "Means of transport".

(j.)   "Animals".

11. The RKC lists, inter alia, the most widely used regimes, such as clearance for home use and outright exportation (in some countries responsible for up to 90% of all declarations).

2.16.   *Cross-border movements of goods that might not be covered by specific customs procedures but that should be included in IMTS.* There are a number of cross-border movements of goods that might not be covered by specific customs procedures but that constitute significant trade and should be included in the international merchandise trade statistics. Examples of such movements of goods are provided in Box II.4.[11]

Box II.4

Examples of cross-border movements of goods that might not be covered by separate customs procedures but that should be included in IMTS

(a.)   Goods on consignment

(b.)   Border trade (trade between residents of adjacent areas of bordering countries as stipulated by national legislation)

(c.)   Barter trade

(d.)   International aid (aid or donations given gratis between Governments or by international organizations)

(e.)   Gifts and donations (to be included if to significant scale as defined by national law)

(f.)   Contracting projects (exports of equipment or materials to be used for construction projects carried out by country residents)

(g.)   Goods on lease (imports or exports under a financial lease arrangement) (see IMTS 2010, para.1.28)

(h.)   Equipment or materials invested by foreign-invested enterprises (the import of equipment, parts or other materials by a foreign-invested enterprise as part of its total initial investment)

(i.)   Duty-free shop (the duty-free import of commodities for sale in specific shops to specific individuals according to specific customs regulations)

(j.)   Seizure and subsequent resale by the State.

(k.)   National application of the drawback procedure. As indicated at the beginning of the present section, there might be differences in the application of specific customs procedures between countries, and trade statistician need to be aware of how certain procedures are defined and applied in detail in their country. Box II.5 provides two country examples of the application of the drawback procedure

2.17.   *National application of the drawback procedure.* As indicated at the beginning of the present section, there might be differences in the application of specific customs procedures between countries, and trade statistician need to be aware of how certain procedures are defined and applied in detail in their country. Box II.5 provides two country examples of the application of the drawback procedure.

Box II.5

Use of the drawback procedure: experiences of Brazil and Canada

Definition and application of the drawback procedure in Brazil

Drawback is a foreign trade policy in which manufacturers of Brazil are allowed to purchase, abroad or in the domestic market, raw materials and parts, without customs charges, to be used to manufacture goods that will be exported. The drawback enables companies of Brazil to be competitive, since they do not need to add on taxes to their exporting prices.

Excerpt from the Canadian Border Services Agency (CBSA) memorandum regarding the drawback programme

1.   This programme will be of benefit to persons who presently, or will (a) import goods into Canada, (b) receive goods imported into Canada, or (c) export the imported goods from Canada, and wish to file a claim for a drawback (refund) of the duties paid.

2.   When imported goods which are subsequently exported from Canada were (a) further processed, (b) displayed or demonstrated in Canada, (c) used for the development or production in Canada of goods for subsequent export, and (d) exported without having been used in Canada for any purpose other than for (a), (b), or (c), a drawback may be filed to claim the duties paid on the imported goods. This means a refund of the customs duties, anti-dumping and countervailing duties, or excise taxes, other than the Goods and Services Tax (GST)/Harmonized Sales Tax (HST), that were paid at the time of importation, may be claimed.

D.   Verification of the declared information

2.18.   *Role of customs in verification of the declared information.* The RKC recognizes the rights of the national customs administrations to ensure the accuracy of the information contained in the declarations by various means, including examination of the goods and any reference documents.

2.19.   *Examination of goods.* The detailed examination of goods is considered a prerogative of any country. The Convention recommends that "(a)ll goods, including means of transport, which enter or leave the Customs territory, regardless of whether they are liable to duties and taxes, shall be subject to Customs control". [12] Further, "in the application of Customs control, the Customs shall use risk management"[13] and "the Customs shall use risk analysis to determine which persons and which goods, including means of transport, should be examined and the extent of the examination".[14],[15] Risk assessment allows physical inspections to be significantly limited; in some countries, information about inspections is flagged in the data, while in other countries, no such information is available. It is a good practice for compilers of international merchandise trade statistics to cooperate with customs in reviewing the scope and organization of physical inspection procedures so as to ensure that statistical concerns relating to data quality, verification and validation are fully taken into account. For further information on quality assurance, see chapter IX.

2.20.   *Reference documents accompanying customs declarations.*   The RKC acknowledges the need for the customs to use reference documents to support or verify statements made in the declarations in order "to permit control of the operation and to ensure that all requirements relating to the application of Customs law have been complied with". [16] The most typical examples of such documents are import licences, documentary evidence of origin, health or phytopathological certificates, commercial invoices, and transport documents. It is advised that compilers make standing arrangements with the customs authorities to secure access, as permitted by law, to whichever of those documents are collected, and to use them as additional sources of information. It is recognized, however, that the use of such documents might be limited only to special cases justified by their economic or other significance.

E.   Lodgement of the customs declarations and related data-collection issues

2.21.   *Electronic declaration.* A declaration can exist not only as a printed document but also in electronic form. For example, many countries use electronic declarations for a significant proportion of imports. Many developing countries use the Automated System for Customs Data (ASYCUDA), a computerized system developed by The United Nations Conference on Trade and Development (UNCTAD).[17] The electronic declarations significantly facilitate the processing of data.

2.22.   *Statistical requirements.* The data requirements of customs may not always fulfill all statistical needs. In particular, for most customs procedures, the RKC leaves it to national legislation to decide what customs records are to be kept, whether or not a goods declaration should be lodged and what information it should contain. Compilers of trade statistics are advised to cooperate with customs to design such forms of customs records which, while not adding administrative or financial burden to customs and traders, contain all statistically significant data fields (see chap. VIII for details) and allow the collection of the data required for trade statistics. The statistical requirements should be addressed systematically with customs and included in a memorandum of understanding and should also be addressed in the joint work programme of customs and the agency responsible for compiling international trade statistics (see chap.V). In this connection, the statistical agencies could seek also greater access to such information as shipping manifests.

2.23.   *Time of lodgement and time of data recording.* The RKC does not provide strict standards regarding the timing of lodgement. It states only that national

legislation should lay down a time limit for lodgement that will enable the declarant to assemble the particulars needed for making the declaration and to obtain the required supporting documents.[18] Governments are free to select the beginning of the time limit, for examples, the time when goods are unloaded, presented at the customs office or released. It follows that the time of lodgement of the declaration and the actual time when goods cross the border of the economic territory of a country may, in some cases, vary significantly. However, since the time of lodgement generally approximates that of the crossing of the border of the economic territory of a country, it is recommended by IMTS 2010 to use the time of lodgement as the time of trade data recording in the case of customs-based systems of data collection (for further details regarding the time of recording, see chap.XII)

2.24.   *Lodgement of provisional or incomplete declarations.* If the declarant, at the time of lodgement of the declaration, is unable to provide all the required information, the customs authorities may accept a provisional or incomplete declaration and release the goods under condition that the declarant will provide the missing information afterwards within the specified period in an additional declaration.[19] The time of lodgement of the additional declaration and the time when goods cross the border of the customs territory may be far apart. However, both declarations refer to the same transaction and must be linked during the data processing. Compilers are advised to use (a) the provisional or incomplete declaration to identify the time of lodgement and collect provisional data and (b) the additional declaration to revise or complete trade data without the time of recording changing.

2.25.   *Release of the declaration after release of goods.* Compilers should take into account the use of a standing authority for release of goods before presentation of the declaration. Such authority is given to a growing number of traders in order to enable speedy release of the imported or exported goods without waiting for collection of the documents needed for completion of the declaration.[20] Compilers should include the data from such declarations in the monthly statistical reports corresponding to the months when the goods actually enter or leave the economic territory of a country.

2.26.   *Periodic lodgement of declaration.* When goods are imported or exported frequently by the same company or person, the RKC recommends that customs allow a single goods declaration to cover all importations or exportations by that person for a particular reference period.[21] That facilitation may be granted if the company or person keeps proper commercial records and if necessary control measures can be taken. The RKC recognizes the right of customs to require that the declarant produce, at the time the goods actually cross the border, a commercial or official document such as an invoice, waybill or dispatch note, etc., giving the main particulars of the concerned consignment. Compilers should periodically review such documents, if permitted by law, in order to be able to assign the trade to the appropriate month (based on time of crossing the border), especially in cases when trade is significant in value (quantity) and/ or the reference period of the reporting by the trader does not coincide with a period used for statistical reporting (normally the calendar month).

2.27.   *Absence of declarations.* In some cases, mostly when duties and taxes are not collected, national law may not require that declarations be lodged. Compilers are encouraged to collect from the customs any information that may help to identify shipments of undeclared goods, and to use non-customs data sources, including estimation, to ensure proper coverage of the international merchandise trade statistics.

2.28.   *Simplified declarations, customs and statistical thresholds and estimation.* Certain goods that are not strictly controlled can be declared in less detail or made exempt from reporting requirements; this can also apply when the value or quantity

18.   See RKC, General Annex, Chapter 3, Standard 3.23.

19.   Ibid., General Annex, Chapter 3, Standard 3.13 and the guidelines provided therin.

20.   Ibid., Standard 3.25 and the guidelines provided therein.

21.   Ibid., Transitional Standard 3.32, and the guidelines provided therein.

22.   For example, in the United States, most import transactions valued at less than $1,500 may be reported "informally", with only minimal information reported. See para. 19.17 for the explanation of customs and statistical threshold.

is below a certain customs-defined or statistical threshold.[22] Compilers should be aware of those transactions and decide whether and how to include them in the trade statistics so as to prevent unwarranted loss of coverage. If the value of the trade is considered significant it should be included in the statistics (see IMTS 2010, para. 1.3). Compilers should develop, in cooperation with the customs administration, adequate data-collection or estimation procedures for these transactions. Those procedures may rely on the use of commercial documents available to the customs or may be based on appropriate non-customs sources of data. Compilers may also establish a threshold for statistical purposes, i.e., set a value below which transactions might not be processed and included in the detailed international merchandise trade statistics, or included as an estimate based on a sampling approach or as an aggregate. Such an approach is useful where resources may not be sufficient to ensure processing of all the transactions on a timely basis. However, in those cases, clear explanatory notes should be included in the metadata. For further information, see section E of chapter XIX, which discusses simplified declarations and reporting thresholds.

23.   For example, in the United States, exporters or their agents must maintain copies of shipping documents for three years after exportation.

2.29.   *Retention of customs records.* National law usually requires that, for control purposes, copies of goods declarations, along with any supporting documentation, be kept for several years.[23] It is good practice for compilers to work together with customs in developing a retention policy for the documents that support statistical needs, including establishing an electronic database to facilitate storage, retrieval and processing of electronic copies of such documents.

F.   Information required to complete a goods declaration

2.30.   *Variety of declaration forms and names of goods declarations.*   Customs around the world use a variety of declaration forms, whose designations may vary from one country or customs union to another even if they are applied for similar customs procedures.   Such designations include "import/export declaration form", "cargo customs declaration", "electronic export information", "single administrative document", "entry/exit summary form", "warehouse entry/dispatch form" and "free zone entry/dispatch form. Annex II.A provides an example of a goods declaration form.

24.   Not all types of information are mandatory for many customs procedures.

2.31.   *Information required to complete a goods declaration.* The information items normally required in the custom declaration form and relevant for compilation of trade statistics (either for inclusion in the statistics or for verification purposes) are listed in table VIII.2.[24] The data items required for statistical purposes can be viewed as a subset of the information items required on the customs declaration. However, some items required for statistics might be missing or might not be mandatory.

2.32.   *Additional information available on the declaration.* Customs declarations may also contain information that can be used to analyse the structure of trade, not only by parameters recommended by IMTS 2010 but also by other parameters important for a given country or customs union (e.g., goods identified as being under export or import controls, province/State within the country from which the goods originate, etc.). Such practice is not in conflict with international recommendations: to the contrary, compilation of additional information needed for a country is encouraged.

2.33.   *Training on how to complete customs documents and advocacy.* The proper completion of customs declarations requires some specialized knowledge. To assist traders and to ensure faster processing, customs normally prepare detailed instructions regarding the completion of the declarations and conduct training for their own staff as well as for the business community. It is good practice for compilers of trade statistics to participate in those training efforts so as to acquire the ability to understand the

data entry process. Such efforts can sensitize customs officers, traders, brokers, etc., on the need to complete customs declaration forms and can be a means of stressing the importance and uses of the information derived therein. Such training can be properly seen as part of a broader range of trade statistics advocacy and quality assurance activities (see chaps. V and IX for details, for country experience see Box II.6).

Box II.6

Training and advocacy efforts – experience of the Philippines

In the case of the Philippines, the National Statistics Office (NSO), in collaboration with the Central Bank, the Department of Trade and Industry, the Export Development Council, the Bureau of Customs and the Philippine Export Zone Authority (PEZA), conducted a road show for exporters, brokers and traffic managers for PEZA locators. Data requirements of the NSO in generating IMTS 2010, mandatory full completion of the box on value of imported raw materials, insurance and freight value, as well as the importance and uses of IMTS 2010, were emphasized during the forums.

Annex II.A.

The single administrative document (SAD)

2.A.1.   The single administrative document (SAD) is the documentary basis for customs declarations in the European Union and in Iceland, Norway and Switzerland. The single administrative document comprises a set of eight copies. Figure II.A.1 below contains a representation of the first copy, which is the copy retained by the member State/country where the export or transit formalities are carried out. More information is available from the European Commission website   (http://ec.europa.eu/taxation_customs/customs/procedural_aspects/ general/sad/index_en.htm).

Figure II.A.1

Single administrative document: copy for the country of dispatch/export

Chapter III
Non-customs data sources

3.1.   *Introduction.* The present chapter refers to the recommendation contained in Chapter VIII of IMTS 2010 on data compilation strategies that non-customs data sources be used to supplement customs-based data so as to ensure full coverage of international merchandise trade statistics. This chapter discusses such non-customs data sources as parcel and letter post records, aircraft and ship registers, enterprise surveys (which are considered in more detail in chapter IV of this Manual), foreign shipping manifests, data exchanges between countries, etc. Several country examples are provided at the end of the chapter. The use of customs data sources was covered in chapter II. Challenges and good practices in merging data obtained from customs and non-customs sources are covered in chapter VII, which contains additional examples of the use of non-customs data sources.

A.   Overview

3.2.   *Country practices in the use of customs and non-customs data sources.* For the majority of countries, customs declarations remain the main source of data for the compilation of their international trade statistics (see annex III.A). However, there is a considerable difference in this regard between developed and developing and transitional countries.[25] According to a survey conducted by the United Nations Statistics Division in 2006, only 55 per cent of the developed countries that replied indicated that they use customs declarations as their main data source, compared with almost all (98 per cent) of developing and transitional countries. More developed countries use additional data sources, such as administrative records associated with taxation (58 per cent) and enterprise surveys (59 per cent), as compared with only 22 per cent and 21 per cent for developing and transitional countries, respectively. This is one of the consequences of the abolition of customs controls among countries of the European Union.

3.3.   *Use of non-customs data sources.* More active use of non-customs sources is also due to the fact that certain kinds of transactions do not pass through customs and therefore information about them needs to be obtained from other data sources maintained by other agencies. Table III.A.1 in annex III.A shows that besides customs declarations, countries also use postal records, tax records, currency exchange records, enterprise surveys, aircraft and ship registers, foreign shipping manifests and reports of commodity boards. All these additional data sources can be useful and maybe necessary in completing the coverage of international merchandise trade statistics. Non-customs sources may be used also for the verification and cross-checking of customs records.

3.4.   *Transactions frequently not covered by customs records.* Transactions of the following items may not appear in customs records:

(a).   Goods delivered through postal or courier services

(b).   Electricity

(c).   Petroleum, gas and water through pipelines

(d).   Border trade (*i.e., trade between residents of adjacent areas of bordering countries as stipulated by national legislation*)

25.   There is no established convention for the designation of countries or areas in the United Nations system "as developed" or "developing". In common practice, Japan in Asia, Canada and the United States of America in Northern America, Australia and New Zealand in Oceania, and Europe are considered developed regions (see http://mdgs.un.org/unsd/mdg/Host.aspx?Content=Data/RegionalGroupings.htm).

(e). Sales and purchases made by aircraft and ships in foreign ports

(f). Sales and purchases of aircraft, ships and other mobile equipment

(g). Transactions on the high seas

For these items, the compiling agency will have to use additional data sources to complete the country's merchandise trade statistics.

B.   Main types of non-customs data sources and their uses

3.5.   The main types of non-customs data sources and their most typical uses are described below. However, it should be noted that the importance and the use of particular data sources may vary from country to country depending on national circumstances and needs.

1.   Parcel post and letter post records

3.6.   *Universal Postal Union.* The treatment of parcel post and letter post shipments by customs offices is governed by the acts of the Universal Postal Union (UPU), which is currently composed of 192 member States. The acts, which consist of the Constitution of the Universal Postal Union, the General Regulations of the Postal Union, and the Universal Postal Convention (UPC), are binding for all member States.

3.7.   *Forms CN 22 and CN 23.* Among other matters, UPU deals with the issue of items (letter post, parcels) that are subject to customs control. It provides, for example, that items weighing less than two kilograms and with the value of their contents less than 300 special drawing rights (SDRs), should bear a special form (CN 22). All other items should be accompanied by form CN 23. Form CN 22 contains a description of content by separate articles, their net weight and value. Form CN 23, usually referred to as a customs declaration, requires additional information which should be provided by the sender and include such statistically important indicators as country of origin of goods, tariff number and customs value. The items and the respective forms are to be presented to customs, which then makes its decision regarding clearance based on the information provided on those forms.

3.8.   *Application of a threshold.* If the values declared on the CN 22, CN 23 or other postal forms exceed the threshold value adopted for trade statistics purposes, compilers should then include those goods in trade statistics in full detail (commodity classification, value, quantity, partner country, etc.). If the value of the individual transaction does not exceed the threshold, then the treatment of the transaction should be consistent with the policy for compiling statistics from other low-valued customs records. IMTS 2010 (para. 1.3) encourages countries to estimate and include such flows if they are economically significant as determined by the statistical authorities of the compiling country. The agency responsible for compilation of trade statistics should contact postal authorities in order to ensure that the necessary information is collected and passed on to that agency on a regular basis. Most of this information is now recorded electronically and exchanged between postal operators in the form of EDI (electronic data interchange) messages (see box III.1 below).

Box III.1

UPU/Customs EDI Messages

The Universal Postal Union has developed the UPU/Customs EDI message, known as postal CUSITM/ CUSRSP, for use between designated operators and customs, in line with WCO Data Model 3. At its meeting held in March 2011, the WCO Permanent Technical Committee endorsed the design and content of CUSITM/CUSRSP and agreed that these messages should be referred to as "WCO-UPU Post-Customs electronic messages". UPU is currently finalizing this updated customs declaration system, which will cover customs declaration treatment information from end to end (sender to recipient), and provide for sender entry of declaration data, electronic pre-advice of postal items to customs/ border control, routing of the electronic information, basic selectivity and rating functionality, and electronic response from customs to Post. System specifications were scheduled to be completed by the end of 2012 and it was planned that the first version of the UPU customs declaration system would be in place before September 2012. One of the key advantages of this system is that it is not only available electronically, but also in real time, which could substantially facilitate trade data collection by customs.

3.9.   *Private parcel delivery services.* The compilation of data with regard to items delivered by private parcel delivery services (e.g., couriers, express carriers, etc.) should follow a pattern similar to that for governmental postal services, utilizing all information available. The agency responsible for compiling the statistics should make special arrangements, either through customs or with the parcel carriers directly, to ensure that the necessary information is passed to them.

3.10.   *Increasing importance of parcel and letter post.* With the rapid expansion of electronic commerce, the international movement of goods by post and parcel delivery services (both government and privately operated) is becoming more and more important; the compiling agency should devise a strategy with the aim of developing a compilation procedure that ensures that those merchandise flows are adequately reflected in trade statistics.

2.   Aircraft and ships registers

3.11.   *Use of aircraft and ships registers.* When aircraft and ships cross the borders of countries as items of trade and the appropriate customs records are created, those records should be used as the main source of information. However, in some countries, international trade in aircraft and ships may not be recorded by customs even if they cross borders; also, customs records may be incomplete or non-existent if those items do not cross customs borders. Under such circumstances, countries may use national (or international) ship and aircraft registers for evidence of a trade transaction, using change of ownership as it may be indicated in the register as the basis for the compilation of trade statistics. In addition to the use of registers, documented financial leasing agreements may indicate whether a change of economic ownership has occurred. Chapter XXIII discusses in detail the compilation of data on the trade in ships and aircrafts.

3.   Enterprise surveys

3.12.   *Use of enterprise surveys.* Obtaining information on international transactions in electricity, petroleum, gas and water through pipelines or on sales and purchases made by aircraft and ships in foreign ports or on the high seas, can be achieved by contacting the relevant enterprises. If such transactions are highly concentrated in just a few enterprises, the compiling agency can conduct a regular census (monthly or

26.   A similar form of trade is shuttle trade. IMTS 2010 defines "shuttle trade" broadly as "goods acquired by all categories of travellers, including non-resident workers, to a significant scale as defined by national law" (see IMTS 2010, para. 1.16). However, para. 10.19 of the Balance of Payments and International Investment Position Manual, Sixth Edition (BPM6) (Washington D.C. 2009) defines shuttle trade as follows:

a.   Shuttle trade (sometimes called informal cross-border trade) covers transactions involving the purchase of goods in an economy by travelers (nonresidents) who then transport these goods back to their economy of residence where they are to be sold; goods purchased by travelers in their home country for resale abroad; and goods purchased by travellers abroad in one economy and sold abroad in a second economy.

b.   The OECD glossary of statistical terms defines shuttle trade as "the activity in which individual entrepreneurs buy goods abroad and import them for resale in street markets or small shops". Often the goods are imported without a full declaration so that import duties can be avoided (see Organization for Economic Cooperation and Development (OECD), "Glossary of statistical terms" (Paris, 2007), available from: http://stats.oecd.org/glossary/). Earlier discussions stress the informal character of this type of trade and its statistical underreporting (see "Shuttle trade", a paper presented at the Eleventh Meeting of the IMF Committee on Balance of Payments Statistics, Washington D.C., 21-23 October 1998 (BOPCOM98/1/3).

quarterly) of all involved enterprises to complete the international merchandise trade statistics. If for certain kinds of transactions, the number of involved enterprises is too large to make the holding a regular census feasible, then the compiling agency could conduct regular enterprise surveys of the specific sectors (i.e., airlines and/or shipping companies).

3.13.   *Surveys to capture border trade.* Border trade is generally understood as trade between residents of adjacent areas of bordering countries. Such trade is typified by low quantities and low value but high frequencies. Given the relatively low value of the individual transactions, this kind of trade is frequently below the customs threshold and not recorded by the customs administration. However, for certain countries, such cross-border trade is economically significant and it is good practice for trade statisticians to capture the value, quantity and commodity detail of these transactions on a quarterly or annual basis.[26] Chapter IV provides more detailed information about enterprise surveys and provides the example of the Informal Cross Border Trade Survey conducted by Uganda.

3.14.   *Integrated approach to data collection.* In the case of the use of non-customs data sources, such as enterprise surveys, it is recommended that countries follow an integrated approach to data collection and make use of business registers and enterprise identification numbers in order to obtain the required information with minimal costs and burden on enterprises. The integrated approach to data collection is of particular importance for the fulfilment of additional information requirements, such as for goods for processing (including obtaining information on change of ownership), intra-firm trade, etc., which often cannot be satisfied by the use of customs declarations only. For further information on the integrated approach to economic statistics, see chapter XI.

4.   Foreign shipping manifests

3.15.   *Use of foreign shipping manifests.* Foreign shipping manifests may contain some of the same information that is relevant to trade statistics as is found on customs declarations; they may be of use as a source in cross-checking and/or supplementing information gathered from customs declarations.[27] Quantities in weight and number are usually available, as is information on freight costs, general description of the commodities (although the commodity code may be missing), names and addresses of the parties to the transaction and country of shipment. Such other information as labour charges for packing, value of packages and fees for docking of cartage, marine insurance, inland freight and some other commissions may also be available. The main deficiency of foreign shipping manifests is that the value of the goods is frequently missing and if the value is provided, it may summarize a number of tariff lines, may be entered in the currency of the exporting country or may be on a free-on-board (FOB) basis.

3.16.   *Cooperation with port administrations.* In some countries, port administrations produce certain statistics from shipping manifests for port management purposes. Those statistics may also be used to cross-check the data collected from customs declarations. Ideally, there should be collaborative agreements between the statistical office, customs and port administrations, aimed at mutual assistance in the compilation of trade-related statistics.

5.   Currency exchange records and records of monetary authorities

3.17.   *Use of information from International Transactions Reporting Systems.* Under an international transactions reporting system (ITRS), banks and other financial

institutions are required to collect information on all transactions between residents and non-residents that have a corresponding financial flow and which are settled through them. That information is then supplied to the central bank for regulatory and/or statistical purposes. Those records may provide a supplementary source of information and information for cross-checking the customs-based trade statistics, as applicable.

3.18. *Limitations in the use of data from an ITRS.* An international transactions reporting system is set up to reflect financial flows that do not necessarily correspond to the physical movements of goods relevant to international merchandise trade statistics. Therefore, due care should be exercised to separate cross-border merchandise flows from service, income, transfers, and financial flows. Also, the partner-country attribution in ITRS would be based on the residence of the transactors rather than on the country of origin of the goods and their country of last known destination. Although ITRS may be used to provide an early broad estimate of total merchandise trade, commodity or country detail is invariably less detailed. Quantity data may not be covered at all.

3.19. *Further limitations.* There may be potential biases in the data if there are exchange controls that may encourage understatement of exports and overstatement of imports; those may be harder to identify because an ITRS does not provide the possibility of inspection. Timing issues also arise for an ITRS, since a financial transaction is measured at the time it is handled through the banking system. This may result in a recorded time different from that when the goods changed ownership (as required for balance-of-payments and national accounts statistics) or that when the goods crossed borders (as used in international merchandise trade statistics). Another disadvantage of ITRS is that it can combine two or more transactions in a single bank settlement. Especially in those cases where these transactions concern both imports and exports, the ITRS becomes less useful as a source of information.

3.20. *Advantages in the use of data from an ITRS.* The advantage of an ITRS is that sometimes it can provide more timely total trade data than a survey or customs system. For example, provision of data from an ITRS may be faster because customs declarations from some border posts may take longer to arrive, or the central bank and/or commercial banks may have fully computerized systems which operate faster than the systems used in the customs and/or statistical offices.

6.   Reports of commodity boards

3.21. *Use of reports from commodity boards.* Commodity boards are quasi-governmental or commercial organizations established in some countries that monitor the production and shipment of goods considered economically important for a country; they may also market the products internationally on behalf of the producers. Those boards often issue reports that show the volume of commodities exported during a particular period: monthly, quarterly or yearly. The reports may include details, such as quantity of products sold (e.g., in metric tons), the value of the sales, country of destination of the commodities, and (probably) the administrative costs expended. If commodity board reports are consistently available, they may serve as supplementary sources or for cross-checking of customs records, especially regarding the information on quantities. In such a case, compilers are advised to analyse data from these reports and to use them as appropriate. For an example of the use of information from commodity boards, see chapter VII.

27. A manifest is a transport document that serves as a tally-sheet, and gives a detailed summary of all bills of lading (or air waybills) issued by a carrier (or its agent) for a particular voyage of a particular vessel or vehicle. For cargo carrying vessels or vehicles, a manifest lists its consignor, consignee, number, origin, destination, value, and other such information primarily for use by the customs authorities (see http://www.businessdictionary.com).

28.   Data exchanges between countries are usually exchanges of customs data. In the context of this Manual, non-domestic customs data is considered a non-customs data source, as the term "customs data" is used to refer to domestic customs data only. Within a customs union, the term "customs data" refers to customs data of all member States.

29.   One form of data exchange entails the use of one country's imports data as a substitute or input into another country's exports data.

7.   Administrative records associated with taxation

3.22.   *Use of administrative records associated with taxation.* When customs records are not available or are incomplete, it may be possible for administrative records associated with taxation to be used in deriving trade statistics. This is particularly true where value added tax (VAT) systems are in place, as is the case in the European Union (see chapter X for more information).

8.   Data exchanges between countries

3.23.   *Use of data exchanges between countries.*[28] In some circumstances, particularly where non-reporting or errors in the collected data are prevalent, a data exchange[29] between partners can improve data quality and reduce the burden on traders and statistical compilers; exchanges could cover all transactions or only a subset of transactions thought to involve special problems. The exchange may be a permanent arrangement or may be limited to a specific time frame for dealing with a temporary situation. Given the confidentiality aspect of the data exchange, it may be necessary to have a signed agreement between the partners. Examples of country data exchanges are provided in chapter IX, section C, and chapter X, section D, discusses further possibilities for such exchanges. Chapter XXVI covers the issue of confidentiality in more detail.

3.24.   *Reconciliation studies.* Before undertaking a data exchange, it is important to conduct a detailed trade data reconciliation study (see chap. IX) to fully understand the differences between the two partners' statistics and the adjustments that will be needed, for example, to derive each partner's export data from counterpart import statistics (see chap. XVI on issues related to partner-country attribution). Because of the greater customs scrutiny to which imports are subjected by customs in most countries, it is usually more feasible to derive estimates of exports from counterpart imports.

3.25.   Advantages and disadvantages. Data exchange can substantially reduce reporter burden and improve data quality, particularly if certain trade flows with a partner country are underreported. It can also foster greater communication and cooperation between the customs and statistical agencies in the two countries. In the case where the partner's imports information is used as the country's exports information, the reporting burden on importers may increase if they have to report additional data elements to meet the exporting country's needs. Further, such exchange may reduce each partner's flexibility in modifying its classifications and processes. Because of the need to align classification and processing schedules, it would be difficult to implement data exchanges with multiple trading partners. It may also be difficult to implement a data exchange when there are significant amounts of trade transiting one partner en route from the other to a third country, or with distant partners where there may be large differences the time of recording.

C.   Country experiences

3.26.   *Example from the United States of America: obtaining information on goods transactions through postal and courier services.* In the United States international merchandise trade statistics program, value-based exemption levels have been established to help alleviate filer burden and reduce processing costs. As goods valued below these exemption levels do not require complete filing, import and export low-value estimates are calculated each month. Goods shipped by small package courier

companies have been identified as a major component of under-coverage, especially for exports. Therefore, the United States Census Bureau developed a methodology for using a sum of courier and non-courier estimates. Data on low-value shipments provided by major courier companies upon request served as a basis for the methodology.   The proportion of low-value trade to high-value trade was developed using data from the couriers over several months, and this proportion is used as a "courier factor".   The courier data received each month is multiplied by this factor to produce courier low-value estimates. The courier factors can be updated as needed by requesting more recent low-valued trade data from the courier companies.

3.27.   *Example from Mexico: administrative and company records as non-customs sources.* In principle, administrative and company records can be used to validate, supplement or replace the information provided by customs. In the case of Mexico, such non-customs records are used for two specific cases. In the first case, the Ministry of Communications and Transportation provides information on the volume of goods transported by air, sea, road and rail obtained from national and international airlines as well as from public bodies such the maritime ports. This information is used to supplement the information on mode of transport available from customs declarations. Second, in the case of oil, Mexico's Working Group on Foreign Trade Statistics agrees on the replacement of the customs records and the use of internal records from Petroleos Mexicanos, the company responsible in Mexico for producing and exporting oil.

3.28.   *Example from Norway: use of ships registers. In Norway, the external trade of ships, aircrafts and movable drilling rigs is not properly covered by data from customs.* Concerning ships, estimates based on change of ownership are used as an alternative. Statistics Norway regularly receives information from the Norway's shipping registers (NIS/NOR) about new registrations, cancelations and other changes in the registers. Based on this information, a letter and a form are sent to the registered owner, asking for additional information. The full details of this example is provided in chapter XXIII, annex B.

Annex III.A

Country practices in the use of different data sources

Results of a survey on national practices conducted in 2006 (Percentage)

<table>
<tr><td rowspan="2">Question</td><td colspan="3">All 132 countries or areas</td><td colspan="3">Developed economies [a]</td><td colspan="3">Developing and transitional economies [a]</td></tr>
<tr><td>Yes</td><td>No</td><td>..</td><td>Yes</td><td>No</td><td>..</td><td>Yes</td><td>No</td><td>..</td></tr>
<tr><td>Are customs declarations the main source of data?</td><td>87.9</td><td>9.8</td><td>2.3</td><td>54.8</td><td>41.9</td><td>3.2</td><td>98.0</td><td>0.0</td><td>2.0</td></tr>
<tr><td>Do you use the following as additional sources of data:</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Parcel and letter post records</td><td>31.1</td><td>62.1</td><td>6.8</td><td>9.7</td><td>87.1</td><td>3.2</td><td>37.6</td><td>54.5</td><td>7.9</td></tr>
<tr><td>Administrative records associated with taxation</td><td>30.3</td><td>60.6</td><td>9.1</td><td>58.1</td><td>38.7</td><td>3.2</td><td>21.8</td><td>67.3</td><td>10.9</td></tr>
<tr><td>Currency exchange records or other records of monetary authorities</td><td>28.0</td><td>65.2</td><td>6.8</td><td>22.6</td><td>74.2</td><td>3.2</td><td>29.7</td><td>62.4</td><td>7.9</td></tr>
<tr><td>Enterprise surveys</td><td>29.5</td><td>59.8</td><td>10.6</td><td>58.9</td><td>38.7</td><td>3.2</td><td>20.8</td><td>66.3</td><td>12.9</td></tr>
<tr><td>Aircraft and ship registers</td><td>25.0</td><td>66.7</td><td>8.3</td><td>41.9</td><td>54.8</td><td>3.2</td><td>19.8</td><td>70.3</td><td>9.9</td></tr>
<tr><td>Foreign shipping manifests</td><td>15.2</td><td>78.8</td><td>6.1</td><td>6.5</td><td>93.5</td><td>0.0</td><td>17.8</td><td>74.3</td><td>7.9</td></tr>
<tr><td>Reports of commodity boards</td><td>10.6</td><td>74.2</td><td>15.2</td><td>6.5</td><td>87.1</td><td>6.5</td><td>11.9</td><td>70.3</td><td>17.8</td></tr>
</table>

a. There is no established convention for the designation of countries or areas in the United Nations system "as developed" or "developing". In common practice, Japan in Asia, Canada and the United States of America in Northern America, Australia and New Zealand in Oceania, and Europe are considered developed regions (see http://mdgs.un.org/unsd/mdg/Host.aspx?Content=Data/RegionalGroupings.htm).

Source: International Merchandise Trade Statistics: Supplement to the Compilers Manual (United Nations publication, Sales No. E.08.XVII.9 and Corr.1), table 1.2.

Note: Two dots (..) signify that data are unavailable.

Chapter IV
Enterprise and other surveys

4.1.   *Introduction.* The present chapter provides details on enterprise surveys and other surveys, identified in chapter III as one of the main non-customs data sources for international merchandise trade statistics, and used for the compilation of trade transactions not covered by customs records or for the collection of additional information. This chapter focuses, in particular, on purposes and good practices in the organization of such surveys as well as on their advantages and disadvantages as a trade data source. The need to adopt an integrated approach is highlighted. This chapter also provides an overview of several typical surveys intended to collect missing data and surveys conducted to collect some additional relevant information. The use of enterprise surveys in the case of a customs union is discussed in chapter X.

A.   General description of enterprise and other surveys

4.2.   *Use of surveys.* Customs records are the main and usually preferred data source of trade information (see IMTS 2010, para. 8.2). Non-customs sources, such as surveys, are recommended to be used as substitutes for available customs records only if they provide a cost-effective means of improving the quality of trade statistics (see IMTS 2010, para. 8.9). Therefore, in most countries, enterprise surveys are not extensively applied for the compilation of merchandise trade statistics. Member states of customs unions can be an exception, as customs records might not exist for trade among the members of the union (see annex III.A). For example, in the case of the member States of the European Union, enterprise surveys are a main source of information for international merchandise trade statistics. Data compilation in the case of a customs union is discussed separately in chapter X.

4.3.   *Surveys designed to collect missing data.* Enterprise or other surveys, like border surveys or household surveys, can be useful in obtaining information on transactions that are not processed through customs. Specifically, the following items recommended in IMTS 2010 for inclusion as part of the international merchandise trade statistics may require surveys as the principal data source: (a) "goods acquired by all categories of travellers, including non-resident workers, to a significant scale as defined by national law" (IMTS 2010, para. 1.16), also referred to as "shuttle trade", (b) trade in electricity, gas, oil and water (ibid., para. 1.24), (c) goods dispatched or received through postal or courier services (ibid., para. 1.34); (d) fish catch, minerals from the seabed and salvage (ibid., para. 1.31) and (e) bunkers, stores, ballast and dunnage, acquired or landed by national aircraft and vessels outside the economic territory of the compiling economy (ibid., para. 1.32).

4.4.   *Requirements and integrated approach in data compilation.* Carrying out enterprise surveys entails the commitment of additional resources on the part of the national statistical authorities. Enterprise surveys require more time in planning, execution and follow-up than that required to obtain information from administrative sources. Moreover, a business register (or other sources of survey frame) should be in place to draw a representative sample of enterprises for the purpose of the surveys. The samples should be adequate for the concerned economic sectors and stratified

by enterprise size and geographical areas, as necessary and feasible. Considering the survey requirements and the high costs of conducting surveys, countries are advised to follow an integrated approach to economic statistics in order to make full use of existing statistical information and infrastructure for data compilation. Some information on the standardization of surveys is given in section B below. For further details on the integrated approach to economic statistics, see chapter XI.

4.5.   *Merging of data from enterprise and other surveys with data from other sources.* One major issue for data compilers is how to incorporate data from enterprise surveys with data obtained from other sources (predominantly from customs records) as the levels of detail, timing, etc., might differ significantly. Chapter VII discusses this issue in more detail and provides further guidance.

B.   Organization of the surveys

4.6.   *General guideline.* As a general guideline, it is good practice to ensure that the enterprise and other surveys that are conducted for IMTS-related purposes possess the following characteristics: (a) survey design (survey frame, target variables, etc.) is in compliance with the recommendations of IMTS 2010; (b) surveys are organized and conducted as an integral part of the national survey programme in order to reduce the resource requirements by eliminating the possibility of duplication of work and by using applicable common concepts, classifications, questionnaire designs and sampling techniques, and to achieve maximum possible consistency with other areas of economic statistics and; (c) the reporting burden of the respondents is minimized in view of their increasing reluctance to complete many separate questionnaires. In this connection, it should be emphasized that the success and sustainability of the trade statistics surveys can be ensured only on the basis of effective institutional arrangements (see chap.V).

4.7.   *Business registers and survey frames.* A business register is generally the main source of the sampling frame for enterprise surveys. The establishment of such a register is essential for the full coordination of source data that relate to the same business units. Countries with a high proportion of small and micro enterprises might complement the existing business register with listings of enterprises from other sources and with area frames based on agricultural, economic and population censuses. The central survey frame, consisting of a business register in combination with other enterprise listings and area frames, represents the backbone of the collection processes of source data that interface with businesses through direct profiling, surveys, feedbacks and use of administrative records. A good central frame should contain data about the businesses, including their names, addresses, economic activity, variables of size and potentially information about the life cycle of the firm. For operational reasons, a unique identifier could be assigned to each entity in the register and in the central survey frame. This unique identifier should be clearly mapped to the business number used by the administrative authorities so as to ensure that administrative data are correctly applied to the various entities in the register.

4.8.   *Consultation with respondents and selection of data-collection methods.* Consultation with potential respondents is an essential requirement before the finalization of the questionnaire design and decision-making on the data-collection method. Since statistical questionnaires are frequently filled-out by accountants, the participation of another person or other person(s) of the enterprise with a good knowledge of the survey questions should be encouraged. The choice of the survey data collection method (mail, telephone, electronic, personal interview, etc.) depends on the country's resources, preferences and characteristics of the respondents, and may

vary for different sectors of the economy. It is good practice to give the respondents an opportunity to assess the questionnaire as well as the selected data-collection method in order to facilitate the amendments needed to increase survey efficiency and to ensure better harmonization with other economic surveys.

4.9.   *Standardization of surveys.* Standardization of surveys and questions applied across different industries contributes to consistency of the collected information and facilitates an integrated statistical production process. Standardization should be comprehensive and encompass survey design, sample frame and questionnaire design. Survey design may need to compensate for a lack of willingness among data providers to complete many separate survey requests sent to them each year. A coordinated modular approach carried out through annual continuous data- collection instruments with intra-annual collection rounds, instead of separate specific-purpose surveys, offers the possibility of reducing response burden and cost while providing flexibility in case of changing information needs.

4.10.   *Survey forms.* Special data-collection forms or electronic data requests should be designed and sent to the selected enterprises on a regular basis at pre-announced dates. Such surveys could request information similar to that normally contained in customs declarations. For simplification, enterprises may be requested to report cumulative trade from the beginning of the year, with the last month's trade separately identified, and to keep documents confirming their export-import transactions for a certain period of time, for verification purposes. Those documents may include copies of contracts, invoices, certificates of origin of goods, etc.

4.11.   *Simplified survey forms.* It is advised that a simplified survey form be used for enterprises whose foreign trade turnover does not exceed an established minimum. Such a form may require that information be provided only on the statistical value of exports or imports for aggregated groups of commodities, by partner country.

4.12.   *Determining the adequate sample of enterprises for the survey.* The strategy for determining the adequate sample of enterprises for a survey depends on the specific population of enterprises in the concerned economic sector. Some economic sectors are dominated by only a few large companies. In such cases, all those companies should be surveyed. This is generally the case for the trade in electricity, gas, and oil, as well as for courier services, and for national aircraft operators acquiring and landing goods abroad. Other economic sectors have many enterprises participating in international trade, and adequate sampling should then be applied. This could for instance hold for the shipping sector, which generally consists of a few large and many medium-sized and small companies in the population of enterprises. Ideally, the information on shipping companies is available from the business register and sampling can be conducted using a stratified approach based (for instance) on enterprise size and location. It is generally advised that all large companies and an adequate proportion of the small and middle-sized ones be included in the sample.

4.13.   *In the case of fisheries, for example, while exports and imports are dominated by big companies in many countries, this might not be the case in others.* If there is a wide spectrum of small and medium-sized enterprises in a country, as well as significant activity in the informal sector (e.g. family owned), which together contribute noticeably to such trade, it might be necessary to survey them. Such surveys would require obtaining a sample frame using the information provided by economic and population censuses. This may also entail the need to supplement an enterprise survey with an adequate household survey (based on area frame sampling, since only coastal areas are of importance).

C.   Advantages and disadvantages of surveys

4.14.   *Advantages.* Once in place, enterprise surveys will have certain advantages. For example, survey forms are designed to conform to acceptable methodology, and satisfy the needs of various fields of statistics, and can be revised as frequently as necessary.[30] Also, established contacts at the enterprises may allow compilers to obtain prompt confirmations or corrections in the case of doubts about the reliability of the information submitted.

4.15.   *Challenges in the use of surveys.* Major challenges encountered in conducting a survey include: (a) frequent correction by enterprises of data previously submitted, leading to substantial revision in the preliminary data; (b) high cost of implementation; (c) additional reporting burden on enterprises; (d) difficulty of ensuring proper completion and submission of survey questionnaires; (e) difficulty of obtaining sufficiently detailed and reliable information (e.g., at the level of six-digit Harmonized Commodity Description and Coding System (HS) codes) on value and quantity of trade due to the limited sample sizes of surveys and; (f) the case where not all of the required information may be available to those completing the enterprise surveys. It may be helpful for countries at the initial stage of organizing such surveys to take advantage of the experience of other countries.

D.   Examples of enterprise surveys conducted to collect missing trade data

4.16.   *Survey of airline operators and of enterprises at airports.* Data on the acquisition or landing of bunkers, stores, ballast and dunnage by national aircraft outside the economic territory of the compiling economy are generally not available from customs. Also, goods supplied to foreign aircraft at national airports are frequently not covered by the regular customs recording. Therefore, national airline operators and enterprises active at airports may be requested to provide the information needed to include these transactions in the international merchandise trade statistics. Such operators and enterprise could either complete a monthly questionnaire of transactions involving bunkers, stores, ballast and dunnage, or send a predetermined set of data records every month. In either case, the required information could be submitted electronically. The requested data elements on these transactions would, ideally, be the same as for the data collected through the customs declarations. Necessary elements are the date of the transaction, the trade flow (imports, re-imports, exports or re-exports), the HS commodity code, the trading partner country and the value, net weight and supplementary quantity of the transaction.

4.17.   *Border surveys.* Information on shuttle trade, i.e., "goods acquired by all categories of travellers, including non-resident workers, to a significant degree as defined by national law", could be obtained through border surveys. Boxes IV.1 and IV.2 below presents the experiences of Uganda and Turkey in the conduct of such surveys.

30.   Compilers may find it practical to use the same survey form to collect data on a physical movement basis to ensure consistency with IMTS 2010, Rev.3 recommendations and on a change-of-ownership basis to obtain information needed for System for National Accounts (SNA)/balance of payments statistics.

Box IV.1

Experience of Uganda: Informal Cross Border Trade Surveys

Background. Uganda conducts monthly Informal Cross Border Trade (ICBT) Surveys to collect information on unrecorded trade transactions in goods with its neighbours. The baseline study carried out in 2003 revealed that informal trade was significant and involved both agricultural and industrial products. Therefore, the exclusion of informal trade in the compilation of merchandise trade statistics had understated the levels of intra-Common Market for Eastern and Southern Africa (COMESA)/ East African Community (EAC) trade and the overall international merchandise trade statistics in the balance-of-payments goods account.

Scope of the survey. Currently, 20 customs stations and 4 bus terminals where informal trade flows were found to be significant are being monitored on a regular basis. The selection of these stations was based on the volume of informal trade being transacted, availability of supporting Government institutions (e.g. customs offices, immigration and police), security and availability of good infrastructure among others. In conducting the Informal Cross Border Trade Survey (ICBT), the general trade system approach is used. During data collection, the following transactions are recorded as informal trade in merchandise: (a) goods not declared to customs authorities and, whether in small or large quantities, carried on vehicles, bicycles, the head, and wheelchairs; (b) goods partially declared to customs authorities, which could be identified and quantified by traders and data collectors. The goods excluded in the Survey recording are those in transit, and goods properly declared to customs authorities.

Data compilation. The direct observation technique used in collecting data entails the strategic positioning of enumerators at border posts to record all merchandise entering or leaving the country by observation. All traded goods that are not recorded by customs authorities are captured, at a point of the crossing of the customs stations in the counter books. Prices of these commodities are collected at the border on a daily basis to provide estimates for FOB and CIF values for exports and imports respectively. The data-collection instruments used include the following: the field instruction manual, counter books, summary form A, calculators, lists of units of measures and a weighing scale among others. The information collected is summarized in summary form A on the following variables: customs station, commodity name, quantity, price, unit of measure, country of origin/destination, mode of transport, date and day of the week. The data are processed and identified by international commodity codes and nomenclature before they are merged with customs data. Since the data-collection activities cover a period of two weeks in a month, estimates for entire months are derived using an uprating model.

Box IV.2

Example from Turkey: survey of the shuttle trade

Estimations by Turkey's shuttle trade are based on a Survey for the Shuttle Trade (see figure below) conducted quarterly by the Statistics Institute of Turkey at specific border crossings. To estimate the shuttle trade, the expenditures on the goods are expanded by the number of foreign visitors who are involved in the shuttle trade, which is estimated by using the ratio of the number of foreign visitors, who in the departing visitors survey are reported as having purchased products in bulk to be sold abroad, to the total number of foreign visitors who responded to this survey. The box IV.2 Survey for the Shuttle Trade has been conducted since 2003.

Form for the Shuttle Trade Survey

TÜİK

TCMB

T.R.
PRIME MINISTRY
TURKEY STATISTICS INSTITUTE

T.R.
CENTRAL BANK

SURVEY SHEET FOR SHUTTLE TRADE

ATTENTION:
With this survey conducted by TÜİK and Central Bank, it is intended to forecast the total value of the purchased goods to sell abroad by the foreigners, who visited our country. In accordance with the 5429 numbered and 10.11.2005 dated law, the information you will provide will be confidential and will not be given to any judicial, administrative or military organs, bodies, persons or authority; cannot be used for any other means than statistical and cannot be counted as evidence. The persons who will disclose any personal information obtained by these surveys will be punished as per the 53th and 54th Articles of the 5429 numbered law.
Thank you for your time.

1. Country of Residence? ....

2. The name of the Country in which the passport to be used during departure has been prepared?

....

3. How many nights did you stay in Turkey? *(If you did not stay in night please write zero)* .... Nights

4. What is the type value of the goods you have purchased from Turkey to sell in abroad? *(Please write the total you send by cargo or you carry off with yourself)*

	Type of the good	Value (US $)
1	Nutriment	
2	Apparel (outer, lingerie, tricot, sport, cloth)	
3	Leather wear	
4	Shoes, bags etc.	
5	Fabrics (Curtain, blanket, etc.)	
6	Other	
	Total	

5. What was the type of payment of the purchase?
1 ☐ Cash   2 ☐ By bank remittance   3 ☐ By credit card

İNGİLİZCE

6. What was the value of packaging, loading, shipping, etc. you have done for the purchased goods?

	Expenses	Value (US $)
1	Packaging	
2	Loading	
3	Shipping	
4	Other	
	Total	

7. To which country or countries you are carrying the goods that you have purchased to sell?

Transported Country   Transported Country

1.. ......   3..

2..   4..

8. What was the value of expenses you have done for private spending for the duration you stayed in Turkey?

	Type of Spending	Value of Spending (US $)
1	Eating and drinking	
2	Hotel	
3	Other	
	Total	

END OF SURVEY, THANK YOU

E. Examples of enterprise surveys conducted to obtain additional information

4.18.   *Survey on Insurance and Freight Costs for Import Trade.* The Census and Statistics Department of China, Hong Kong SAR, has been compiling a set of import statistics valued on a free on board (FOB) basis to facilitate analysis of the merchandise trade balance and comparison of trade statistics with those of other economies. The imports FOB valuation was derived from the imports CIF valuation based on data obtained from the Survey on Insurance and Freight Costs for Import Trade (IMS), which is a sample survey conducted since 1996 on a monthly basis. The main objective of IMS is to collect information on the insurance premium and freight cost incurred for imports of goods. Under the current sample design, trade items in import declarations are stratified by two variables, namely, Harmonized System (HS) section and mode of transport. Within each stratum, a proportionate random sample is drawn from the monthly import declarations, with the selection probability of each element proportional to its trade value. The total sample size determined on the basis of desired precision and resources availability is about 3,000 trade items per quarter. Data are collected by contacting the trader or company listed on the import declaration using the computer-assisted telephone interviewing (CATI) approach. Various measures, such as implementation of validation checks in the CATI system, online monitoring on the performance of individual field officers and verification of a sample of the enumerated cases by field supervisors, are adopted to safeguard the quality of the collected data.

4.19.   *Survey on Trade involving Outward Processing of China, Hong Kong SAR, in the Mainland of China.* The outward processing (OP) of China, Hong Kong SAR, in the mainland of China involves the exportation of all or part of the raw materials or semi-manufactures from or through Hong Kong to the mainland for processing, with a contractual arrangement for subsequent re-importation of the processed goods into Hong Kong. As trade of an OP nature cannot be delineated under the existing system of recording merchandise trade statistics, the Census and Statistics Department has been conducting the Survey on Trade involving Outward Processing in the Mainland of China (OPS) to assess the economic impact of OP activities. OPS is a monthly sample survey which has been conducted since the third quarter of 1988. All import and export declarations in respect of the trade of China, Hong Kong SAR, with the mainland and re-exports of goods of Mainland origin to other places are employed as the sample frame for the survey. Under the current sample design, the declarations are first categorized by trade flow and commodity groups. For re-exports of mainland origin, the declarations are further categorized by three markets, namely the United States of America, the European Union and other places. A stratified sampling method is adopted for the sample selection. The total sample size is about 28, 500 declarations per quarter. Data are collected from the traders and enterprises on the declarations using the computer-assisted telephone interviewing (CATI) approach.

PART TWO.

Data compilation

Chapter V
Institutional arrangements

5.1.   *Introduction.* The present chapter describes the purposes and characteristics of effective institutional arrangements, and the governance and mechanism of cooperation, as well as the activities required to ensure the improvement of such arrangements and their positive impact on data quality. This chapter is based on the recommendations contained in chapter VIII of IMTS 2010, on data compilation strategies and is linked to chapter I of IMTS 2010-CM regarding the legal framework for merchandise trade statistics. The annexes to the chapter provide examples of institutional arrangements under various country circumstances.[31]

A.   Purposes of institutional arrangements

5.2.   Institutional arrangements. Usually, several governmental bodies participate in the compilation of a country's official trade statistics. The most important governmental entities participating in IMTS compilation are national statistical offices, customs administrations, central banks, tax authorities, the ministry of trade and other specialized governmental bodies such as, e.g., commodity boards, trade development boards, etc. The institutional arrangements are understood as constituting a set of laws, regulations and agreements between the involved agencies on the division of the responsibilities in the collection, processing, compilation and dissemination of external trade statistics of a country. The mandates and the main areas of activity of those agencies are usually defined by national law which provides the foundation for the working out of detailed institutional arrangements.

5.3.   *Purpose of institutional arrangements and international recommendation.* The purpose of institutional arrangements is to ensure that high-quality national trade statistics are put at the disposal of national and international users in a timely and convenient manner, and that the statistical process is carried out with the maximum possible efficiency. In order that these goals may be achieved, the details of the responsibilities of the involved agencies should be elaborated, agreed upon and documented. IMTS 2010 (para. 8.17), recommends that countries consider the establishment of the institutional arrangements necessary to ensure the compilation of high-quality trade statistics as a matter of high priority and periodically review their effectiveness.[32]

5.4.   In particular, the establishment and maintenance of effective institutional arrangement is necessary to ensure that (a) the needs of all interested governmental agencies and the general public are taken into account, (b) the applicable international standards are followed by all involved agencies, (c) all available resources are used in the most effective way, (d) proper quality assurance procedures covering various aspects of data production and dissemination are developed and executed in a transparent manner and (e) public confidence in the disseminated data is assured, so that the statistics are used to the maximum extent possible.

31.   The scope of this chapter does not include institutional arrangements between international organizations active in compilation, dissemination and analysis of trade statistics. Information on this matter is available from the UNSD website, at http://unstats.un.org/unsd/trade/imts/cooperation.htm and the website of the Inter-agency Task Force on International Merchandise Trade Statistics at http://imts.wto.org/task_e.htm.

32.   When adopting the new recommendations for IMTS at its forty-first session in 2010, the Statistical Commission explicitly "requested that greater attention be given to the strengthening of institutional arrangements in countries to ensure that proper national coordination mechanisms exist for the compilation of high-quality international merchandise trade statistics; and also requested that cooperation with compilers of statistics on international trade in services, the balance of payments and national accounts be ensured". See Official Records of the Economic and Social Council, 2010, Supplement No. 4 (E/2010/24), chap. I, sect. B, decision 41/103, para. (d).

B.   Characteristics of effective institutional arrangements

5.5.   *Key characteristics of effective institutional arrangements.* Depending on the country's legal framework, the structure of its government, available resources and other considerations, various institutional arrangements might exist and result in acceptable trade statistics. At the same time not all types of such arrangements are equally effective. In this connection, IMTS 2010 (para. 8.16), identifies several key characteristics of effective institutional arrangements, namely:

(a). Designation of only one agency responsible for the dissemination of official trade statistics;

(b). A clear definition of the roles and responsibilities of all agencies involved;

(c). Establishment of formalized working arrangements between the involved agencies, including agreements on holding inter-agency working meetings, as needed, and on the access to microdata collected by those agencies.

5.6.   *The responsible agency.* It is good practice for the agency designated to be responsible for the compilation and dissemination of official trade statistics to be given the necessary authority and responsibility for monitoring and coordinating various aspects of the whole statistical process. The establishment of such an agency is also essential from the user perspective, as it reflects a clear designation of a single source of official data and contact point for any enquiries. This raises the confidence of users in the quality of the statistics and promotes its wide and effective use. In particular, it is good practice for this agency to be responsible for:

(a). The specification and implementation of the appropriate methodology for the compilation of the country's trade statistics in accordance with the internationally adopted standards and best practices;

(b). The development and the implementation of the appropriate inter-agency data compilation arrangements;

(c). The dissemination of the official trade statistics to users both domestically and internationally;

(d). Serving as focal point for consultation with trading partners on data reconciliation and data exchange and the representation of the country at various regional and international forums dealing with foreign trade statistics.

5.7.   *Rights and responsibilities of the involved agencies.* It is good practice to ensure that the collective responsibilities of the agencies involved in the compilation of trade statistics cover all elements of the statistical process and are distributed in a manner that leads to the most effective use of the available resources and to high-quality data. The definition of the rights and responsibilities of all involved agencies should be unambiguous in order to minimize misunderstandings that might lead to a duplication of work or lack of attention to certain tasks.

5.8.   *Formalized arrangements between the involved agencies (memorandum of understanding).* It is good practice to ensure that the establishment of formalized arrangements between the agencies involved in the compilation of international merchandise trade statistics is documented through appropriate means such as a memorandum of understanding (MoU), which would, inter alia, include provisions for holding inter-agency working meetings and for accessing microdata collected by those agencies. In this connection, it is recognized that the content of any MoU will have certain limitations imposed by the applicable national legislation (due, for example, to the stipulation that the rules of inter-agency cooperation should be written in such a way as not to risk the disclosure of confidential information). It is good practice for

the MoU to be worked out (under appropriate delegated authority) and signed by the appropriate units of the larger governmental agencies so as to facilitate their effective cooperation.[33] The formal arrangements should be complemented by the informal working agreements between the relevant units of the involved agencies to ensure the effective implementation of the agreements.

5.9.   *Contents of a memorandum of understanding (MoU).* In general, a good MoU would contain:

(a).   A preamble describing reasons for its establishment;

(b).   A mission statement defining the scope and overall purpose of the MoU;

(c).   An outline of a long-term work programme, a commitment to develop and implement midterm (*e.g., biannual or annual*) action plans designed to achieve the work programme's objectives (see sect. E for details) and a cost-sharing agreement;

(d).   A list of participating agencies together with a clear description of their rights and responsibilities in the context of the agreed work programme, covering data collection, data transmission, data compilation, treatment of confidentiality, data quality, metadata and dissemination as well as methodological improvements (*e.g., development of a national commodity classification, elaboration of methods of statistical valuation, etc.*);

(e).   The terms of reference and rules of procedure of the interagency body responsible for monitoring MoU implementation (*e.g., a permanent committee*);

(f).   The terms of the MoU, including its effective date.

C.   Main types of institutional arrangements

5.10.   *Different institutional arrangements.* The kinds of institutional arrangements in countries, and their governance and mechanism of cooperation, depend on many factors. The designation of the national statistical office as the agency responsible for the dissemination of official statistics and, the coordination of data collection and processing, is the most common practice in countries. Responding to the UNSD questionnaire in 2006, 78 per cent of countries confirmed that the compilation and dissemination of IMTS are normally the responsibility of national statistical offices.[34] However, in the remaining countries, the official international merchandise trade statistics are compiled and disseminated by other governmental agencies, such as statistical departments of the customs administrations, central banks or a dedicated unit in a ministry.

1.   The statistical office as the responsible agency

5.11.   *Typical arrangements.* The statistical office bears the overall responsibility for a country's official trade statistics, including issuance of methodological guidelines, raw data editing and processing, database maintenance and dissemination of official statistics. The customs administration bears responsibility for the collection of the basic records and for supplying the statistical office with these records on a regular basis: normally, customs would carry out some editing of records before passing them to the statistical office. Central banks and other governmental agencies provide additional information on trade flows not covered by customs records. The statistical office further edits all input data and merges them into a consistent data set.

33.   For example, the national statistical office might sign the MoU not with the national customs authority as a whole, but rather with its statistical unit which can result in the establishment of more effective working arrangements, as such a unit may be dependent, to some degree, on the national statistical office regarding statistical methodology and will benefit from the closer cooperation with the national statistical office.

34.   See International Merchandise Trade Statistics: Supplement to the Compilers Manual (United Nations publication, Sales No. E.08. XVII.9 NB E only and Corr. 1), para. 1.3.

5.12.   *Cooperation with other involved agencies.* The reliance by the statistical office on data from sources external to itself requires close cooperative relationships with all governmental departments and agencies that provide data. The statistical office and the statistical unit of customs - the largest data supplier - along with other source agencies, should establish memorandums of understanding so that the roles and responsibilities of each party with regard to all aspects of the production and distribution of official statistics are clearly defined and elaborated in sufficient detail. It is good practice to periodically review the memorandums of understanding and update them as needed (for country examples see Boxes V.1 and V.2).

Box V.1

Administrative agreement between the Federal Statistical Office (FSO) (the responsible agency) and the Federal Fiscal Authority (FFA) of Germany

The agreement between the FSO and the FFA of Germany describes the cooperation between both parties concerning the exchange of statistical customs data on external trade. It is not a legal act in a narrow sense but is nevertheless binding for both parties. One important feature of the agreement is that the main points and the legal basis are established in the main paper. Technical and other details, which may change frequently, are specified in the annex. Through this arrangement, change in these details is facilitated without changing the main agreement. The main topics covered by the administrative agreement include:

1.   **1. Transmission of the statistical customs data**

   a.)   *Scope:* The legal basis for the transmission and its scope is described here. The FFA commits to transmitting the relevant statistical data to the FSO after technical and methodical examination. The data are checked for formal validity (code checks) and if a mistake is detected, the responsible customs unit or the participant is obliged to correct the data. Only correct (plausible) data are transmitted to the FSO. Further details are specified in the annex.

   b.)   *Form of transmission:* Basic details for the transmission of the data (institutions involved in data transmission, and data format) are specified. Further details (e.g., a list of variables) are specified in the annex.

   c.)   *Time and deadline of data transmission:* The FSO retrieves the relevant data electronically on a daily basis.

2.   **Corrections**

   Corrections of already retrieved statistical data are made through a specific revision procedure.

3.   **Transmission of master data**

   The legal basis for the transmission of master data (e.g., identification number, name, address of the company, contact persons) is mentioned here. Master data are updated on a monthly basis. Details are specified in the annex.

4.   **Statistical confidentiality and tax secrecy**

   The FSO commits to obeying the legal obligations concerning statistical confidentiality and tax secrecy.

5.   **Contact persons**

   Both the FSO and the FFA commit to naming contact persons for clarification of methodical and technical issues, as specified in the annex.

6.   **Application and amendment**

   The administrative agreement can be updated or changed by mutual agreement.

Box V.2

Table of contents of the Statistics Canada/Canada Border Services Agency (CBSA) Memorandum of Understanding

The Memorandum of Understanding contains seven sections as follows:

Section I – General Roles and Responsibilities

Section II – Data Collection

Section III – Data Transmission

Section IV – Data Disclosure and Dissemination

Section V – Data Quality

Section VI – Harmonized System

Section VII – Costs

Each of the above sections is further subdivided into three subheadings, namely:

1.) CBSA's Roles and Responsibilities

2.) Statistics Canada's Roles and Responsibilities

3.) Joint CBSA/Statistics Canada Roles and Responsibilities

Finally, the MoU contains the following lists:

List 1 – Import CBSA Transmission Data Variables

List 2 – Canadian Automated Export Declaration (CAED) Record Layout

List 3 – Import HS Update Data Variables

2.   The customs administration as the responsible agency

5.13.   *Typical arrangements.* In this case, customs is responsible for all activities ranging from the collection of basic records to the dissemination of the official international merchandise trade statistics. The statistical office and the central bank may provide supplementary data and would normally make the adjustments necessary to publish aggregated trade data in accordance with the SNA/BOP requirements. It is good practice for customs to use additional data sources as required, and to implement an appropriate quality assurance programme in order to ensure that the detailed trade statistics disseminated by customs are of the necessary quality.

5.14.   *Cooperation with other involved agencies.* Two conflicting requirements that customs usually face are: (a) the need to diminish barriers to the flow of trade, which leads to the simplification and reduction of reporting requirements imposed on traders; and (b) increased the need of users (both government agencies and the business community) for the availability of trade data of enhanced quality and detail within a shorter time frame. To meet these requirements and to ensure that any necessary additional sources of data are being used and that compilation procedures comply with the recommended methodology, customs should closely cooperate with other agencies, particularly the statistical office.

3.   Central bank as the responsible agency

5.15.   In a small number of countries, the central bank is responsible for the compilation and dissemination of official international merchandise trade statistics. Under this arrangement, the bank receives the customs records on a regular basis, and

compiles and disseminates the trade statistics with an approach similar to that used in the statistical office-led compilation described above. Central banks functioning as the government agency responsible for trade statistics should ensure that these statistics are compiled and disseminated in accordance with the international recommendations for merchandise trade statistics. It is good practice for recompilation and dissemination of trade statistics on the BOP basis to be undertaken as a separate activity so as to allow a proper focus to be placed on the respective purposes and characteristics of IMTS and BOP statistics.

4.   Other governmental bodies as the responsible agency

5.16.   Other governmental bodies such as ministries of economy and ministries of trade can also be designated as the agencies responsible for official international merchandise trade statistics. Such arrangements may result in the production of high-quality trade statistics if the designated body follows the recommendations in IMTS 2010 and the good practices described in the present Manual.

D. Towards improved institutional arrangements

5.17.   *Improvement of institutional arrangements.* It is recommended that countries periodically review the effectiveness of their institutional arrangements (IMTS 2010, para. 8.17). Such reviews are particularly valuable for countries that face challenges in the provision of timely high-quality international merchandise trade statistics, as those difficulties can frequently be traced to ineffective institutional arrangements. The characteristics of effective institutional arrangements have been described in section B. To the extent that these institutional arrangements are established in national legislation or relevant administrative regulations, they usually cannot be changed in the short term, if at all. However, at the same time there exist a number of steps that interested countries can undertake in the short run, which can yield positive results in near the future. The following good practices should be taken into consideration, as applicable.

1.   Establishment of an inter-agency coordination committee and working groups

5.18.   *Tasks of the coordination committee.* A permanent coordination committee would usually consist of the representatives of the top management of the involved agencies (or units, as applicable) and would act as an "upper-level" body concerned with the formulation and monitoring of the implementation of a long-term strategy aimed at ensuring the high quality of official international merchandise trade statistics. Such a committee will promote systematic cooperation between the involved agencies in the identification and enactment of the measures that are within their prerogatives. To ensure that the work of such a committee is effective, it is good practice for its members to agree on and document the objectives and the rules of procedure of the committee.

5.19.   *Meeting procedures of the coordination committee.* It is good practice for the work programme of such a committee to be elaborated as soon as possible so as to facilitate the functioning of the committee; further, the agendas of the forthcoming meetings should be circulated well in advance and the meeting's minutes kept, so that the process is made transparent and the implementation of the reached decisions can be evaluated. Responsibilities for the logistics of the activities should be distributed

among the representatives of each participating agency so as not to overburden the responsible agency.

5.20.   *Establishment of technical working group(s)*. To ensure that the strategic and managerial decisions of the permanent committee are implemented, it is a good practice to establish a technical working group (or groups), which reports to the committee. These working groups would be dealing on the regular basis with the detailed technical issues such as the compliance of data-collection procedures with the adopted trade statistics methodology, organization of effective data processing and data exchange, including the use of compatible information technology (IT) platforms, coordination of outreach activities, etc. It is good practice for the working group to formulate its work programme and periodically report on its implementation to the committee.

2.   Activities of the coordination committee and working groups

5.21.   *Activities of the permanent committee and the technical working group*. It is advised that the following activities be included in the work programme of the committee and working group, as applicable, taking into account their respective mandates:

(a). *Formulation of a long- term strategy and actions for improving trade statistics*. A long-term strategy is based on the review of the existing institutional arrangements and formulates actions for their improvement, as required and appropriate. Further, it entails the establishment and implementation of a MoU between the responsible agency and other governmental bodies involved in the compilation of trade statistics (*see paras. 5.8 and 5.9 for details*). The strategy should foresee such activities as the identification of data gaps and existing inefficiencies (e.g., unused data sources, duplication of work, communication barriers, etc.) and include the formulation and timing of actions to remove them;

(b). *Discussion of changes in custom regulations and other relevant regulatory provisions*. The revision of the regulatory provisions may affect the availability and quality of information relevant for the compilation of international merchandise trade statistics. Therefore, the agencies involved in the preparation of such regulations and in the compilation of international merchandise trade statistics should discuss these changes in a timely manner in order to take into account the requirements for the compilation of trade statistics. In particular, the arrangements should allow for amending the rules on customs recording in order to maximize their usefulness for trade statistics;

(c). *Development of appropriate non-customs sources of data*. Non-customs data sources need to be developed as required to achieve the full coverage of trade statistics. The responsible agency, together with the other members of the coordination committee, should develop an action plan which would ensure that such data sources are identified and the necessary agreements with other governmental or non-governmental bodies are reached to allow access to use of their administrative data, or that additional data are collected through a national survey programme;

(d). *Adoption of an integrated approach*. The compilation and dissemination of international merchandise trade statistics should be seen as an integral part of the national statistical programme (*see chapt. XI for details*). Trade statisticians should cooperate with customs, other data providers and compilers of business statistics and statistics on international trade in services to make the best use of the available information and to realize efficiency gains in data compilation. Close cooperation with compilers of other statistics can both improve the international merchandise

trade statistics and be beneficial to other statistical domains. For example, in view of limited resources and to ensure that work is not duplicated, it is good practice not to initiate any additional surveys of traders without proper consultations with the compilers of enterprise statistics, as it might be possible to amend existing surveys so as to incorporate trade statistics requirements. On the other hand, compilers of international merchandise trade statistics can assist colleagues who are responsible for statistics on international trade in services by, for example, passing on to them any available information on cost of goods transportation and insurance. The necessary working arrangements have to be established and systematically implemented;

(e).   *Modernization of the IT infrastructure and inter-agency data exchange.* The arrangements between the involved agencies must ensure the permanent access to the relevant primary data and facilitate consultations and revisions that are made during the statistical production process. It is good practice for the responsible agency to, inter alia, (*i*) take into account the technical systems available at the source agencies, and in particular, work closely with the customs administrations to incorporate validation rules into the automated data- collection system(s); (ii) maximize the use of modern information technology for the exchange of data (e.g., virtual private networks (VPNs) and/or File Transfer Protocol (FTP) sites, as well as the implementation of the SDMX standard); and (iii) oversee data security through use of appropriate control mechanisms (e.g., defined submitters, reception and connectivity testing, setting dates and times of delivery, verification of data transfer, etc.);

(f).   *Establishment of informal arrangements.* Regardless of the formal framework for collaboration, it is good practice for the involved agencies to establish regular communication between their staff to address technical issues that might emerge on a daily basis, such as the verification of the source information, the clarification of the metadata and the possible impact on data compilation of various regulatory changes, among others. This communication does not replace meetings involving all agencies for joint decisions on the work programme;

(g).   *Organization of staff cross-training.* For example, the interpretation of customs records by statisticians working for the national statistical office or central bank is facilitated when statisticians have knowledge of the customs operation in situ. It is good practice to arrange for visits of the statisticians to the customs ports in order to allow them to better understand the procedures for different types of customs declarations and the limitations of the data. It is also important that customs administrations, with the help of statistical offices and central banks, organize training of their staff on the applicable statistical requirements and the importance of customs records for the compilation of high-quality trade statistics;

(h).   *Conduct of outreach activities.* In order to ensure that the compiled data meet user demand and to secure user support, it is good practice to conduct periodic meetings with various user groups to make them aware of what data are available and how to use the data effectively, as well as to collect information on their needs to be included in planning further improvements in data compilation and dissemination. It is good practice also to invite to the meetings of the coordination committee, as necessary, other institutions and agencies (*public, private and/or academic*) with the aim of ensuring their potential contribution to the statistical process. For example, there can be meetings with various business associations to explain the importance of the accurate completion of the relevant customs documents and survey forms. Regular meetings with other government agencies, which are important users of

the trade statistics, as well as with the compilers of national accounts and balance-of-payments statistics, are equally important, as these will help to achieve a better overall quality of national statistics.

E.   Institutional arrangements and data quality

5.22.   *The effectiveness of institutional arrangements is ultimately judged by the quality of the disseminated trade statistics.* Properly functioning institutional arrangements can significantly contribute to the enhancement of data quality.

5.23.   As described in chapter IX of IMTS 2010, the dimensions of data quality include prerequisites of quality, relevance, credibility, accuracy, timeliness, methodological soundness, coherence and accessibility. Achieving quality improvements is a complex and time-consuming task. The development and implementation of an effective data quality assurance programme would usually require the cooperation of all involved agencies. Therefore, appropriate institutional arrangements are important in allowing and fostering such cooperation and should clearly identify the roles of each agency in such a programme (for country examples see Boxes V.3–V.5).

Box V.3

Experience of Brazil in the division of work on trade data quality

In Brazil, there is a clear division of labour on foreign trade data quality assurance. The agency responsible for the quality of the export data is the Secretariat of Foreign Trade (SECEX) of the Ministry of Development, Industry and Foreign Trade (MDIC), while the agency responsible for the quality of import data is the Federal Revenue Service of Brazil (Customs) of the Ministry of Finance.

Export data quality is guaranteed by the validation system of SECEX/MDIC, as described in Annex IX.A of this Manual, while the quality of import data is guaranteed by the application of the Customs Valuation Agreement of the World Trade Organization (WTO) and by application of the parameterized customs system on the physical and documents supervision.

Box V.4

Responsibilities for quality assurance: experience of Canada

In the experience of Canada, there are a number of players involved in the quality assurance of merchandise trade data:

(a.)   Canada Border Services Agency (CBSA), which is the supplier of the administrative data for imports, performs basic validity editing to ensure that valid codes for all data elements are transmitted to Statistics Canada. In addition, there is a CBSA amendment programme which is used to correct errors detected by CBSA or the importer. All amendments are also transmitted to CBSA. However, there are no CBSA validity checks or an amendment programme for exports, although corrections from exporters are occasionally received;

(b.)   The International Trade Division of Statistics Canada performs a series of checks and reasonability edits and imputations on import and export data. Further, High-value transactions are routinely reviewed and corrected manually where necessary;

(c.)   Merchandise trade data are cross-checked against other data series for selected commodities so as to ensure consistency. Examples of such commodities are energy products, aircraft and agricultural products;

(d.)   Prior to dissemination, publically released information is presented to Statistics Canada Senior Management to ensure reasonableness and for further comparison with other data series.

Box V.5

Cooperation between the National Statistical Institute of Italy (ISTAT) and the National Customs Authority, in particular on data quality

Institutional arrangements – establishment of a committee. The National Statistical Institute of Italy (ISTAT), as responsible agency, has established and maintained long-lasting institutional cooperation with the National Customs Authority. From an operational point of view, a dedicated committee, composed of members of each organization and chaired by ISTAT, oversees all the technical, IT and methodological issues related to the successful data transmission of customs data. In addition, the Committee takes on board and examines any issues related to changes in national regulations, EU-level regulations and customs procedures as far as they may affect quality and timeliness in the production and dissemination of external trade figures. The Committee then informs the relevant superior bodies if some action is required in terms of changes in the national legislation or application procedures. In particular, ISTAT is continuously informed by the Customs Authorities of any changes in customs data structure and procedures.

Cooperation on data quality. The provision of high-quality customs data has always represented a key issue in the institutional and technical cooperation between ISTAT and the National Customs Authority. Up to now, the National Customs Authority has supported timeliness in data transmission while performing only formal quality checks on customs and statistical variables. On the other hand, ISTAT has developed a sound methodology for outlier detection and is regularly engaged in data quality checks performed automatically or under the direct supervision of trade experts at the product level. The National Customs Authority has recently expressed its strong interest in cooperating with ISTAT in order to improve the quality of customs data for statistical purposes, under the institutional umbrella of the National Statistical System. This initiative, which implies stronger cooperation on technical and methodological grounds with full respect for national confidentiality rules, was welcomed by ISTAT from both technical and cost-efficiency perspectives. Given the sharp decline in human resources devoted to the foreign trade statistics production process all over the world, such cooperation can be regarded as offering an opportunity to devote the limited amount of available human resources to more value-added quality checks by moving downward (to the level of the data collection and preliminary validation process) more standardized inconsistency and data quality checks.

Annex V.A

Institutional arrangements and the Automated Export System (AES): experience of the United States of America

5.A.1.   *Automated Export System of the United States of America.* The Automated Export System (AES) of the United States is the central point through which export shipment data required by multiple Government agencies is filed electronically, using the efficiencies of electronic data interchange. Export information is collected electronically from the export trade community and edited immediately, with errors being detected and corrected at the time of filing. The editing and validation processes of the AES reflect the requirements of various partnering Government agencies to ensure complete, timely and accurate reporting of export information. As the AES evolves, additional edits and validations are added to the system so as to continuously improve the quality of export data submitted.

5.A.2.   Entities that participate in the Automated Export System. The AES is a joint venture of the Foreign Trade Division of the United States Census Bureau, the United States Customs and Border Protection (CBP), the Department of Commerce (DOC), the Bureau of Industry and Security (BIS), the Department of State, the Directorate of Defense Trade Controls (DDTC), the Department of the Treasury, the Office of Foreign Assets Control (OFAC), the Department of Energy (DOE), the Office of Arms Control and Non-Proliferation, the United States Nuclear Regulatory Commission (NRC), and the export trade community. The AES mainframe resides with the CBP.

5.A.3.   In order to facilitate electronic filing of export information to the AES, the AESDirect system was developed by the United States Census Bureau through an outside contractor. AESDirect, which is an internet based system, became operational on 23 September 1999 at www.aesdirect.gov. It eliminates the need for export filers to establish direct telecommunications with CBP and provides an interactive interface through which filers submit the required export information about their shipments. AESDirect also includes the edits and validations incorporated in the AES, and evolves as new requirements are included in the AES. Partnering Government agencies wanting to add additional edits and validations to the AES and AESDirect system contact the Census Bureau and prepare the respective requirements, which are then forwarded by the Census Bureau to the CBP AES Developers and the AESDirect contractor for inclusion in the two systems.

5.A.4.   The AES also serves as a conduit through which required export information reaches appropriate Government agencies. The United States Census Bureau extracts AES data in order to compile and publish export trade statistics, while AES validates dual-use shipments against licences approved by the Bureau of Industry and Trade Security and forwards that information to the agency. Similarly, the Directorate of Defense Controls utilizes the AES partnership agency interface to validate outbound munitions shipments against previously approved licences and transmits the data to the agency. Partnering agencies will continue to work in cooperation as the AES goes through future phases.

Annex V.B.

Institutional arrangements for foreign trade statistics: experience of Mexico

5.B.1.   *Importance of the legal framework for the institutional arrangements.* The legal framework has been central to strengthening the institutional arrangements for the generation of statistical information in Mexico. In 2006, a provision in the Constitution established a National System of Statistical and Geographical Information (SNIEG), whose data is to be considered official. The SNIEG Law of 2008 designated the National Institute of Statistics and Geography (INEGI) as the independent coordinating entity of SNIEG. All of the Government agencies involved in the collection, treatment, generation and dissemination of national statistical and geographical information take part in the work of collegiate bodies of the SNIEG, called specialized technical committees. These committees are responsible for the development or revision of technical standards, and for the establishment of guidelines to define the conceptual framework of the processes involved in each subject area.

5.B.2.   *The Specialized Technical Committee on Foreign Trade Statistics.* For more than 20 years, the Working Group on Foreign Trade Statistics of Mexico, which includes the General Customs Administration, the Central Bank (Banco de Mexico), the Ministry of Economy and INEGI, has been responsible for defining criteria for the production and release of the international merchandise trade statistics of Mexico. Initially, these institutions worked mainly on the basis of official letters and meetings; however, changes in the law on Statistics now provide the legal framework supporting the work of a Specialized Technical Committee on Foreign Trade Statistics, which has assumed responsibility for conduct of the activities of the initial Working Group.[a] The roles of the various institutions that participate in the Committee are defined as follows:

(a). INEGI is responsible for the coordination of the group's activities and for the dissemination of official data ensuring the implementation of international recommendations;

(b). The Central Bank México is responsible for the statistical processing of custom records according to agreed criteria;

(c). The General Customs Administration provides the administrative records and their characteristics;

(d). The Ministry of Economy provides information about foreign trade rules and the nomenclature of imports and exports.

5.B.3.   *Work programme of the Committee.* The Committee establishes a three-year work programme and meets approximately once every quarter. The Committee agrees and follows up on an agenda for the issues to be addressed by the Committee. The programme is focused on the improvement of the procedures for the production of trade statistics and the analysis of users' needs (including those of balance-of-payments and national accounts statisticians). In addition to face-to-face meetings, the Committee members communicate through teleconferencing to address specific issues related to the daily process of the production of statistical results, such as the analysis and clarification of source data.

5.B.4.   *Main issues addressed by the Committee.* The main issues covered in the work programme are the periodic revision of customs records to enable a proper interpretation of the declarations according to international recommendations, and the content of metadata to enable a clear explanation of clearly the characteristics of the records and how they are processed to produce the statistics on international

a. The agreement on the creation of the Specialized Technical Committee on Foreign Trade Statistics of Mexico and the rules for the operation of this type of Committees are available from www.inegi.org.mx.

merchandise trade. The Committee agrees on the release calendar of preliminary and revised figures according to the current release policies.

5.B.5.   *Technical nature of the Committee.* The success of the Committee is based on the participation of knowledgeable representatives on behalf of their institutions. In all cases, the participants are technical staff, as opposed to senior management staff; however, each participant receives the support of the respective institution for reaching agreements. The main task of the Committee is to provide timely answers to technical questions in respect of the production of statistical results, taking into account the simplification of customs procedures.

Annex V.C.

Integrated Foreign Trade System of Brazil: institutional arrangements

5.C.1.   *Integrated Foreign Trade system (SISCOMEX) of Brazil.* In Brazil, the coordination of the work between the various agencies involved in foreign trade is based on the assumption that each agency maintains its independence and the ownership of its information. Within this framework, Brazil has developed a fully computerized system for the registration of exports and imports, the Integrated Foreign Trade System (SISCOMEX), which records all foreign trade transactions of the country and involves all the entities that participate in foreign trade, including governing and consenting agencies.

5.C.2.   *Governing agencies.* Governing agencies are those responsible for definitions, and include: the Customs of Brazil (Ministry of Finance, Federal Revenue Secretary), responsible for the tributary and tax police; the Central Bank of Brazil, responsible for the contracting exchange; and the Secretariat of Foreign Trade, responsible for the commercial operations of export and import (standard rules, trade remedies, trade promotion and statistics).

5.C.3.   *Consenting agencies.* The consenting agencies are entities involved in foreign trade (30 in total) which are responsible for inspections and special permits, such as certification of origin, phytosanitary issues, controlled products, military products, etc. The Ministry of Agriculture, the Ministry of Health, the environmental control agencies (IBAMA), the quality control agency (INMETRO), the Ministry of Defence and the Ministry of Justice are the main consenting bodies.

5.C.4.   *Institutional arrangements in respect of Brazil's foreign trade statistics.* In 1991, pursuant to a determination by the Presidency of Brazil, approved as law in the Congress, a technical and political accord was reached among the agencies involved. Based on this determination, a decision-making structure for foreign trade statistics was created, which consisted of a Managers Committee (composed of the ministers of the three Government agencies mentioned in para. 5.C.2 above), a Technical Committee (comprising technicians with extensive knowledge of foreign trade activities) and a set of subcommittees (made up of experts in each area and each body responsible for standards and rules), with each body clearly defined functions. This decision-making structure is also responsible for training users (both companies and individuals) and for infrastructure.

5.C.5.   *Working arrangements.* Decisions are taken by each subcommittee and when there is no agreement, the matter is referred to the Technical Committee or, if necessary, to a higher level, that of the Managers Committee (Ministers) for a final decision. All three governing bodies have full access to the system within their area of responsibility, without need of approval by the others. All access and permissions have been previously negotiated within the technical subcommittee and the Technical Committee. Simple questions such as on responsibility for the administration of tables of code and names and the implementation of data checks in the data entry system (e.g., regarding parameters for preventive validation) were also previously defined for each body. These arrangements have allowed a single data source and a single flow of information to exist, with prior validation of all the variables and interconnection with other existing databases (e.g. the national register of companies with foreign trade data), as well as the implementation of the recommendations of IMTS.

Annex V.D.

Inter-Agency Committee (IAC) on on Trade Statistics of the Philippines: institutional arrangements

5.D.1.   *Philippines Inter-Agency Committee (IAC) on Trade Statistics* . The Philippines has established an Inter-Agency Committee on Trade Statistics whose members belong to the following key agencies of the Government: the National Statistical Coordination Board (NSCB), the National Statistics Office, the National Economic and Development Authority, the Central Bank (Bangko Sentral ng Pilipinas), the Department of Trade and Industry, the Bureau of Customs and the Philippine Economic Zone Authority. There are two technical working groups under the Inter-Agency Committee, namely, the Inter-Agency Committee on Trade Statistics and the Technical Working Group on Trade in Services. The Inter-Agency Committee on Trade Statistics is tasked:

(a). To serve as a forum for the discussion of the issues raised by the stakeholders regarding the official statistics on trade in goods and services;

(b). To conduct an in-depth review of all issues relating to Philippine trade statistics, including foreign and domestic trade on goods and services;

(c). To conduct an in-depth assessment of available data on export of IT services and analyse possible improvements in data reporting, collection and consolidation;

(d). To review the concepts, techniques, and methodologies used in the collection, processing and reporting of trade statistics to ensure conformity with prescribed statistical standards;

(e). To recommend policies geared towards improved generation of trade statistics on goods and services;

(f). To conduct an in-depth review of export statistics and valuation practices of exporting companies and to identify important issues;

(g). To conduct an in-depth review of consigned imports;

(h). To present the results and recommendations to the NSCB Executive Board for appropriate action.

Annex V.E.

Experience of China: customs as the responsible agency

5.E.1.   T*he General Administration of Customs of China (GACC) is the responsible agency for the compilation of international merchandise trade statistics.* In China, customs is responsible for the collection, processing, compilation and dissemination of China's external merchandise trade statistics according to the customs law, the statistics law, and the regulation on customs statistics of China. The Statistical Department in the General Administration of Customs of China is responsible for the formulation of the methodology in accordance with the international standards that have been adopted, the organization of nationwide trade statistical operations, the development and implementation of data compilation arrangements, and the dissemination and analysis of merchandise trade statistics. For each of the 41 customs districts throughout China, a statistical office has been established which is responsible for the collection, verification, processing and transmission of its regional trade data to the General Administration of Customs of China.

5.E.2.   *Customs Automation Entry System.* The customs declaration is the exclusive source of data for international merchandise trade statistics. The declarations are made through the Customs Automation Entry System and are examined by customs officers. The data records for compiling trade statistics are extracted and verified by the statistician in relevant customs districts, and then transmitted online from all customs districts to the computer centre of the General Administration of Customs on a monthly basis. The General Administration of Customs publishes data on a monthly basis, through media, online and through regular publications.

5.E.3.   *Cooperation between the General Administration of Customs and other agencies.* An institutional cooperation mechanism has been set up between the General Administration of Customs and other agencies to respond to users' requirement in order to improve the quality of statistics. Memorandum of understanding and agreements on statistical information services have been established between the General Administration of Customs and the National Bureau of Statistics, the Central Bank, the Ministry of Commerce and the State Administration of Foreign Exchange, among other bodies, for the compilation of other economic statistics according to SNA/BOP requirements, or for the purpose of trade administration and analysis.

Chapter VI
Statistical territory and organization of data collection

6.1.   *Introduction.* The present chapter is based on chapter II of IMTS 2010, entitled "Trade system". It provides additional information on the definition of statistical territory and its territorial elements. It describes challenges and good practices in the organization of data collection with respect to those elements and in relationship to the general and special trade systems, taking into account the data sources described in chapters II to IV of this Manual, country practices in establishing the legal framework (chap. I) and institutional arrangements (chap. V).

A.   Statistical territory

6.2.   *Definition.* IMTS 2010 (para. 2.1) defines the statistical territory of a country as "the territory with respect to which trade data are being compiled", noting that the definition of the statistical territory adopted by any given country may or may not coincide with its economic territory, depending on the availability of data sources and other considerations. IMTS 2010 recommends that countries provide a detailed description of their statistical territory and make that description publicly available as a part of their metadata to ensure an unambiguous identification of the flows of goods recorded in their trade statistics.

6.3.   *Elements and parts of the statistical territory.* It is good practice to define the statistical territory by listing the various elements and territorial parts of its economic territory that belong to it. IMTS 2010 (para. 2.3) recommends that the descriptions of these territorial elements, when applicable, be based on the definitions of the customs terms as contained in the annexes to the revised Kyoto Convention (RKC).[35] It is also good practice to use the definitions provided in other relevant international conventions, such as the 1982 United Nations Convention on the Law of the Sea.[36]

6.4.   *In countries where data collection is based on customs records, the main element of the statistical territory is usually the free circulation area.* IMTS 2010 (para. 2.3) identifies the following additional territorial elements and recommends that countries make clear whether or not they exist in the country, and whether or not they are included in its statistical territory: islands; territorial waters; continental shelf; offshore and outer space installations and apparatus; commercial and industrial free zones; customs warehouses; premises for inward processing; territorial enclaves and exclaves, and overseas territories. Some elements of the statistical territory should not be viewed as defined exclusively in terms of specific geographical location, as they also can be defined on the enterprise level in terms of the specific operations that may be carried out (e.g., inward processing, customs warehousing, etc.).

35.   See chap. II for an introduction to the RKC.

36.   United Nations, Treaty Series, vol. 1833, No. 31363.

B.   Detailed description of the elements of the statistical territory

6.5.   *Free circulation area.* The concept of free circulation area is used by the RKC in the context of the definition of "clearance for home use". "Clearance for home use" is defined as "the Customs procedure which provides that imported goods enter into free circulation in the Customs territory upon the payment of any import duties and taxes chargeable and the accomplishment of all the necessary Customs formalities".[37] Goods in free circulation may be disposed of without Customs restriction.[38]

6.6.   *Islands.* Islands are generally defined as any piece of subcontinental land that is surrounded by water. Very small islands such as emergent land features on atolls can be called islets, cays or keys. A grouping of geographically or geologically related islands is called an archipelago. Continental islands are bodies of land that lie on the continental shelf of a continent. Oceanic islands are islands that do not sit on continental shelves. An island can be also a land surrounded by water in a river or lake.

6.7.   *Territorial waters.* In general, the term "territorial waters" is understood to have the same meaning as the term "territorial sea" which is used in the 1982 United Nations Convention on the Law of the Sea.[39] This term refers to the water area over which the sovereignty of a coastal state extends and is internationally recognized (see box VI.1 for details). However, in the statistical practice of some countries the term "territorial waters" may be used in a different or broader sense. It is advisable for countries to use terminology and definitions provided by the Convention as much as possible when referring to different territorial elements of their country that are relevant for their trade statistics and provide the detailed national definition of those elements in their trade statistics metadata. Further, it is good practice for countries to make clear whether a zone contiguous to its territorial sea, such as an exclusive economic zone, the continental shelf or any parts thereof, are included in its statistical territory (see box VI.1 for the definition of these terms). It is further advised that trade statistics compilers consult on this matter with appropriate legal authorities of their country, as well as with the SNA and BOP compilers, for necessary details and clarifications (for country experiences see Box VI.1 and Box VI.2).

37.   See RKC, Specific Annex B, chap. 1, E1/F2.

38.   See chap. II for information on the customs procedures defined in the RKC.

39.   The relevant part of the Convention in this regard is available from http://www.un.org/Depts/los/convention_agreements/texts/unclos/part2.htm.

Box VI.1

Excerpts from the United Nations Convention on the Law of the Sea a Territorial sea[a]

"The sovereignty of a coastal State extends, beyond its land territory and internal waters and, in the case of an archipelagic State, its archipelagic waters, to an adjacent belt of sea, described as the territorial sea" (article 2 (1). "Every State has the right to establish the breadth of its territorial sea up to a limit not exceeding 12 nautical miles, measured from baselines determined in accordance with this Convention" (article 3).

Contiguous zone

"1. In a zone contiguous to its territorial sea, described as the contiguous zone, the coastal State may exercise the control necessary to: (a) prevent infringement of its customs, fiscal, immigration or sanitary laws and regulations within its territory or territorial sea; (b) punish infringement of the above laws and regulations committed within its territory or territorial sea" (article 33 (1) "2. The contiguous zone may not extend beyond 24 nautical miles from the baselines from which the breadth of the territorial sea is measured" (article 33 (2).

Exclusive economic zone

The exclusive economic zone is an area beyond and adjacent to the territorial sea. "In the exclusive economic zone, the coastal State has: (a) sovereign rights for the purpose of exploring and exploiting,

a.   The full text of the Convention is available at http://www.un.org/depts/los/convention_agreements/texts/unclos/unclos_e.pdf

conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds; (b) jurisdiction as provided for in the relevant provisions of this Convention with regard to: (i) the establishment and use of artificial islands, installations and structures; (ii) marine scientific research; (iii) the protection and preservation of the marine environment; (c) other rights and duties provided for in this Convention" (article 56(1). "Breadth of the exclusive economic zone: The exclusive economic zone shall not extend beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured" (Article 57).

Continental shelf

"The continental shelf of a coastal State comprises the seabed and subsoil of the submarine areas that extend beyond its territorial sea throughout the natural prolongation of its land territory to the outer edge of the continental margin, or to a distance of 200 nautical miles from the baselines from which the breadth of the territorial sea is measured where the outer edge of the continental margin does not extend up to that distance" (article 76 (1). "The coastal State exercises over the continental shelf sovereign rights for the purpose of exploring it and exploiting its natural resources" (article 77 (1) "The rights referred to in paragraph 1 are exclusive in the sense that if the coastal State does not explore the continental shelf or exploit its natural resources, no one may undertake these activities without the express consent of the coastal State" (article 77 (2).

Box VI.2

European Union practices concerning specific territorial elements

According to European Union legislation, exclusive economic zones are not part of statistical territory because they are not part of the customs territory of a member State. Customs regulations provide that the customs territory of the Community shall comprise the listed member States' territories, "including their territorial waters, internal waters and airspace"(see Regulations (EC) No.450/2008 of the European Parliament and of the Council of 23 April 2008 laying down the Community Customs Code (Modernized Customs Code), title 1, chapter 1, article 3, para. 1).

However the exclusive economic zones are treated for the purpose of specific movements, namely offshore installation, as if they were part of statistical territory, since the member States have "sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the production of energy from the water, currents and winds" (United Nations Convention on the Law of the Sea, article 56 (1) (a).

The European Union legislation does not, however, cover the cases where an offshore installation is located outside of the exclusive economic zone, stationary on the continental shelf or even outside the shelf. The continental shelf can spread out beyond the exclusive economic zone of a country depending on the seabed topography.

Since "The coastal State shall have the exclusive right to authorize and regulate drilling on the continental shelf for all purposes" (article 81 of the United Nations Convention on the Law of the Sea), use of the same approach might be recommended for the continental shelf as for the exclusive economic zone.

If the installation is stationed beyond the continental shelf, there is no country that has the exclusive right, neither to exploit nor to authorize the drilling in this area. Recommendations contained in IMTS 2010 utilizes the residency of the (economic) owner and the country's jurisdiction to define statistical territory: "any installation or apparatus, mobile or not, located outside of the geographical territory of a country, owned by the country resident(s) and remaining under the country's jurisdiction, is treated as if it were a part of its economic territory" (para. 1.7).

40.   United Nations publication, Sales No. E.08.XVII.29.

41.   Offshoring understood as the movement of a business process to another country has per se no relationship with Offshore and outer space installations and apparatus.

42.   The Outer Space Treaty (formally the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies,) forms the basis of international space law. The treaty entered into force on 10 October 1967. See United Nations, Treaty Series, vol. 610, No.8843.

43.   See the RKC, Specific Annex D, Chapter 2, E1/F1.

44.   IMTS 2010 retains the terms "commercial free zone" and "industrial free zone" which were used in the original Kyoto Convention and which continue (as well as similar terms) to be applied in the commercial and legal practice of many countries. The RKC retains only the description of the allowed operations without referring to the zones where they might be used.

45.   RKC, Specific Annex D, Chapter 2, para. 11.

46.   Ibid, para. 12.

6.8.   *Offshore and outer space installations and apparatus.* Offshore installations in the IMTS 2010 context refer to any installation or apparatus, mobile or not, located outside the geographical territory of a country, under economic ownership of the country's resident(s) and remaining under the country's jurisdiction. Examples are drilling rigs in international waters for the purposes of oil and gas production. However, if the offshore installation operates in the economic territory of another country for more than one year and is treated as the resident unit of that country in accordance with the System of National Accounts 2008 (2008 SNA),[40] then that installation belongs to the economic and statistical territory of that other country (if that country applies the general trade system). However, if an installation periodically moves in and out of that economic territory, it can be treated in the same way as ships and seen as a part of the statistical territory of the country where the economic owner resides. In all such cases, it is advisable for the countries concerned to agree on a common treatment of such installations that is both operational and practical.[41]

6.9.   *Outer space installations and apparatus.* These are objects launched into outer space by countries and are subject to international law. Outer space is conventionally defined as space located at an altitude of 100 kilometres above sea level. The framework for international space law was established by the Outer Space Treaty, which was commended by the General Assembly of United Nations and in its resolutions 2222 (XXI) of 19 December 1966 entered into force in 1967.[42] However, "Outer space, including the Moon and other celestial bodies, is not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means"(article II). For the purposes of trade statistics, the launched space object is treated as belonging to the statistical territory of the country of residency of the economic owner, irrespective which of country carried out the launch.

6.10.   *Commercial free zones.* The term "free zone" (or "customs free zone") means a part of the territory of a State where any goods introduced are generally regarded, insofar as import duties and taxes are concerned, as being outside the customs territory. [43] Referring to two kinds of authorized operations specified in the RKC, a distinction may be made between commercial and industrial free zones.[44] For IMTS purposes, a commercial free zone is a zone where goods, if admitted, "shall be allowed to undergo operations necessary for their preservation and usual forms of handling to improve their packaging or marketable quality or to prepare them for shipment, such as breaking bulk, grouping of packages, sorting and grading, and repacking".[45]

6.11.   *Industrial free zones.* If the competent authorities allow processing or manufacturing operations in a free zone and specify the processing or manufacturing operations to which goods may be subjected in general terms and/or in detail in a regulation applicable throughout the free zone, or in the authority granted to the enterprise carrying out these operations, such a zone is referred to as an industrial free zone. [46]

6.12.   *Various forms of free zones.* It should be noted that customs free zones exist, inter alia, in such forms as investment promotion zones, export processing zones, foreign trade zones, commercial free zones and industrial free zones. In some cases, these zones are not delineated geographically but may involve only a different tax, subsidy or customs treatment of certain operations carried out by enterprises. A large and growing number of customs free zones are onshore manufacturing enclaves which have been created to attract foreign direct investment (FDI), stimulate local industry and provide employment to the local labour force. The legal status of these zones ranges from extraterritorial, whereby they are exempt from all customs laws, to one entailing varying degrees of customs control (for country experience see Box VI.3).

Box VI.3

The export processing zone: An example from Brazil

Brazil has adopted the concept of "export processing zone" (EPZ) as defined by the World Bank.[a] According to this definition, export processing zones cover various types of zones, e.g., free trade zones, duty-free zones, free-investment zones and offshore zones reflecting the various types of activities being performed therein. Those activities include bonded warehousing, export processing, assembling, trade through borders or by sea and financial services. EPZs are defined as "fenced-in industrial estates specializing in manufacturing for exports and offering their resident firms free-trade conditions and a liberal regulatory environment. They are territorial or economic enclaves in which goods may be imported and manufactured and reshipped with a reduction in duties and minimal intervention by customs officials."

In Brazil, the Executive Branch is authorized to create, according with Law 11.508/2007, article 1º, EPZs in less developed regions, aimed at reducing regional imbalances, strengthening the balance of payments, fostering technological transfer and improving the nation's economic and social development. EPZs are characterized as free-trade areas for the establishment of companies focused on production of goods to be exported.

a. World Bank, "Export processing zones", Policy and Research Series Paper 20 (Washington, D.C., 1992).

6.13.   *Customs warehouses.* A customs warehouse is a designated place where goods can be stored under the "customs warehousing procedure".[47] Usually, these goods are imported goods which are brought into the country under that procedure and are stored under customs control without payment of import duties and taxes. However, in some cases, domestic goods intended for export can be stored in such warehouses as well.[48] Warehoused goods can undergo usual forms of handling to improve their packaging or marketable quality or to prepare them for shipment, such as breaking bulk, grouping of packages, sorting and grading and repacking. They can provide specialized storage services such as deep freeze or bulk liquid storage. However, operations that may change the essential character of the goods are not normally allowed. After allowed operations have been performed, and within the warehousing period, the goods may be exported without the payment of duties, or they may be withdrawn for consumption upon payment of duties at the rate applicable to the goods in their manipulated condition at the time of withdrawal.

6.14.   *Premises for inward processing.* Inward processing is defined by the RKC as "the Customs procedure under which certain goods can be brought into a Customs territory conditionally relieved from payment of import duties and taxes, on the basis that such goods are intended for manufacturing, processing or repair and subsequent exportation."[49] It should be noted that inward processing shall not be limited to goods imported directly from abroad, but shall also be granted for goods already placed under another customs procedure. The Convention does not require that inward processing be carried out in premises or areas especially approved by customs. Such processing can be carried out in any suitable premises provided that other conditions for inward processing are complied with. Therefore, this element of the statistical territory should be defined not only in terms of geographical location, but also functionally, at the enterprise level, as applicable. However, country customs practices may differ and certain inward processing might be limited to specific locations.[50]

6.15.   *Territorial enclaves and exclaves.* For the purposes of IMTS 2010, enclaves are defined as clearly demarcated land areas (such as embassies, consulates, military bases, scientific stations, information or immigration offices, aid agencies, central bank representative offices with diplomatic immunity, etc.) physically located in other territories and used by Governments that own or rent them for diplomatic,

47. See the RKC, Specific Annex D, Chapter 1/ E1.

48. For example, according to customs regulation in China, a "customs warehouse for export goods" is a specific customs warehouse for storage of domestic goods intended for exportation when the customs procedure for exportation is completed.

49. See the RKC, Special Annex F, Chapter 1, E3./F2.

50. In China, such processing can be carried out either in the specific customs control areas, such as export processing zones, or outside of such areas, in processing factories or other premises approved by customs.

military, scientific or other purposes with the formal agreement of Governments of the territories where the land areas are physically located. An enclave of a given country is an exclave from the perspective of the country where that enclave is located. In certain cases, movements of goods between the host country and enclaves of other countries located on its territory might be significant. All such movements are out of scope of international merchandise trade statistics (see IMTS 2010, para. 1.49 (c).

6.16.   *Overseas territories.* Some countries exercise political and administrative control over certain territories outside of their own national boundary. Such territories might be considered separate statistical territories or part of the statistical territory of the mainland country.[51]

6.17.   *Special case: duty-free shops.* In many countries, travellers are allowed to buy certain goods such a cigarettes, alcohol, jewellery, etc., at certain locations at airports, on ships and aircraft or at borders, etc., without payment of duties and/or with a refund of all applicable taxes. Duty-free shops at airports and borders are part of the economic territory of a country. The same applies to aircraft and ships if the economic owner is a resident of the country. Following the applicable recommendations of IMTS 2010 on scope of trade statistics, goods acquired from abroad for sale at duty-free shops should be included in imports. The statistical treatment of goods sold at such shops is more complicated, as they may be sold to both residents and non- residents and for use in the compiling country as well as in other countries. Trade compilers are advised to cooperate with the BOP and SNA compilers with a view to adopting a consistent statistical treatment of goods sold at such shops.

C.   Organization of data collection with respect to different territorial elements

6.18.   *Data sources.* The organization of data collection with respect to different territorial elements requires a careful selection of the most appropriate data sources and depends on national circumstances and priorities. Table VI.1 presents an overview of the main data sources and approaches to the organization of data collection under the general and special trade systems. It should be reiterated that IMTS 2010 (para.2.20) recommends that countries apply the general trade system, as general imports provide the most comprehensive record of the goods entering the economic territory of a compiling country and increasing the stock of its material resources, while general exports provide the most comprehensive record of the goods leaving its territory and thus decreasing that stock. However, many countries continue to apply the special system for both imports and exports (or may even apply one system for imports and the other for exports). Details on the specific data sources and on the organization of data collection are provided throughout this Manual but, in particular, in chapters I to V and VII.

6.19.   *tMoving to the general trade system.* Owing to the lack of territorial coverage and the lack of uniformity in the application of the special trade system, countries using this system are encouraged to develop plans to introduce the general trade system, under which the statistical territory coincides with the economic territory (IMTS 2010, para. 2.28). When regular customs records are not available for certain territorial elements of the economic territory, additional data sources may be required (see table VI.1). Such sources could be surveys of free zone operators or enterprise surveys (see chaps. III and IV for details on non-customs sources). However, such surveys are, in general, costly and put a significant burden on respondents. Therefore, preference should be given to the use of administrative records of customs or other entities

51.   For example, French overseas departments and territories (Guadeloupe, Martinique, French Guiana, Réunion) are treated as part of the French statistical territory while most British overseas territories are treated as separate statistical territories (e.g., Anguilla, Bermuda, Cayman Islands, Montserrat, etc.). For details, see Statistical Territories of the World for Use in International Merchandise Trade Statistics, Studies in Methods, Series M, No. 30 Rev. 3 (United Nations publication, Sales No. E.01. XVII.8). Available from http://unstats.un.org/unsd/trade/stat_terr_e.pdf.

that monitor the trade related to these specific zones for security and other reasons. However, this information may not be of sufficient quality or it might be difficult to merge or reconcile that information with the trade data that are obtained from customs declarations (see chap. VII for further information on the compilation of international merchandise trade statistics from different sources). However, it is good practice for countries that follow the special trade system to explore the possibility of including in the statistical territory, territorial elements that are currently not included, if the trade related to these territorial elements is significant.

Table VI.1
An overview of data sources and the organization of data collection

Elements of statistical territory	Data sources and the organization of data collection	Trade system
Free circulation area	Customs records and non-customs data sources, e.g., enterprise surveys, in cases when customs records are not sufficient or are absent	General and special
Islands	When islands are part of the free circulation area: customs records and non-customs data sources, e.g., enterprise surveys, in cases when customs records are not sufficient or are absent; see also the entry for overseas territories below.	General and special
Territorial waters	Customs records and enterprise surveys in cases when customs records are not sufficient or are absent; enterprise surveys might be especially relevant for the collection of data on trade in fish catch and products extracted from the seabed (e.g., oil, gas and minerals)	General and special
Exclusive economic zones and continental shelf	Non-customs sources such as records of the appropriate regulatory bodies and enterprise surveys; enterprise surveys might be especially relevant for the collection of data on trade in fish catch and products extracted from the seabed (e.g., oil, gas and minerals); customs records whenever available	General (and special, depending on national definition)
Offshore and outer space installations and apparatus	Non-customs sources such as records of the appropriate regulatory bodies and enterprise surveys; enterprise surveys might be especially relevant for the collection of data on products extracted from the seabed (e.g., oil, gas and minerals); customs records whenever available	General (and special depending on national definition)
Commercial free zones	Mainly non-customs data source, e.g., records of governmental bodies overseeing operations in such zones and enterprise surveys; customs records, whenever available	General
Industrial free zones	Customs records whenever available and non-customs data source, e.g., records of governmental bodies overseeing operations in such zones and enterprise surveys	General and special
Customs warehouses	Customs records	General
Premises for inward processing	Customs records supplemented by enterprise surveys if customs records do not provide all statistically important information	General and special

a. See IMTS 2010, para. 1.49 (c). However, trade between a country's enclaves and countries different from the host country are to be included under the general and special trade systems (assuming that these enclaves are considered part of the elements included under the special system) if such trade is of significant scale, as determined by the compiling country's statistical authority.

Territorial enclaves and exclaves	Trade involving enclaves and exclaves and the host country are not in scope of IMTS 2010,[a] but IMTS compilers should assist compilers of trade in services and BOP, whenever possible	
Overseas territories	Records of local customs authorities and non-customs data sources available to the bodies responsible for the administration of such territories	General and special
Duty-free shops	Customs records and non-customs data sources, e.g., records of the tax administration, surveys of duty-free shop operators	General and special

Chapter VII
Integration of data from different sources

7.1.   *Introduction.* The present chapter builds on the discussion of the different data sources contained in IMTS 2010, chapter VIII, on data compilation strategies, and in chapters II to IV of this Manual. It describes challenges and good practices in the merging of customs and non-customs data, as well as of different pieces of information from the same source thereby linking the discussion on data sources (and the legal framework) as contained in part one of this Manual, with the discussion of data compilation as contained in part two. The scope of this chapter is limited to the compilation of international merchandise trade statistics. Its content is related to, but clearly different from that of chapter XI, which deals with the integration of trade and business statistics, aimed at generating additional and better information as well as efficiency gains in the compilation of economic statistics.

7.2.   *IMTS 2010 recommendations.* IMTS 2010 recommends the use of customs records as the main and normally preferred data source, but recognizes that full coverage cannot be achieved through the use of custom records only, either because the relevant transactions are not or are no longer subject to customs controls or surveillance, or because record-keeping may not be adequate from a statistical point of view. It is recommended that, in such cases, customs-based data be supplemented with information obtained from other sources, as necessary, to ensure full coverage of international merchandise trade statistics. Further, it is recommended that non-customs sources be used as substitutes for available customs records only if they provide a cost-effective means of improving the quality of trade statistics (IMTS 2010, paras. 8.2 and 8.9).

A.   Advantages and limitations of customs and non-customs data sources

7.3.   *Reconciliation and integration of customs and non-customs data.* The reconciliation and integration of customs and non-customs data constitute a complex and time-consuming activity which includes merging and cross-checking large amounts of collected data. Compilers need to be aware of the conceptual and practical difficulties involved in reconciling and integrating data from different sources, and users should be informed accordingly (IMTS 2010, para. 8.13).

7.4.   *Advantages and limitations of customs records.* Both customs and non-customs sources have their specific merits and shortcomings, of which compilers should be aware when deciding which data sources to use. Customs records reflect the physical movement of goods across borders, which international merchandise trade statistics aim to record, and are generally reliable, detailed and readily available in most countries. However, they may not provide full coverage of all transactions, or they may not be subject to adequate statistical quality control at customs or made available to statistics compilers in a comprehensive and unrestricted manner (IMTS 2010, paras. 8.2 and 8.12). Particular concerns regarding the use of customs data are related to the possible undervaluation and misclassification of commodities for the purposes of tax evasion, which may not, however, apply to all countries or may apply to varying degrees.

Also, customs records are not free from the reporting burden. In fact, the reporting burden of customs records is high. However, it is imposed for customs purposes and not for statistical purposes.

7.5.   *Advantages and limitations of non-customs data sources.* As described in chapter III, a variety of non-customs data sources can be used by compilers to obtain information that would otherwise not be available. Some of these additional data sources, such as surveys, can be used very *flexibly*, while others, such as parcel and letter post records, provide only a predefined information set. The use of non-customs data sources may increase the burden on data providers and compilers. Also, these sources may suffer from a lack of a consistent classification (e.g., of goods and countries), or from under-coverage (e.g., owing to the absence of an adequate survey frame and non-response), or may not follow recommended standards for valuation, time of recording and partner-country attribution. Trade statistics compilers should pay special attention to these issues in order to obtain information from customs and non-customs sources that fulfils the requirements of international merchandise trade statistics (IMTS 2010, para. 8.12).

7.6.   *Country practices in the use of additional data sources.* Results of a survey in 2006 show (see table III.A.1) that, besides customs declarations, countries also use, to varying degrees, postal records, tax records, currency exchange records, enterprise surveys, aircraft and ship registers, foreign shipping manifests and reports of commodity boards as additional data sources. All of these additional data sources can be useful or necessary in completing or verifying the international merchandise trade statistics.

7.7.   *Data sources for special categories of goods.* As transactions in certain categories of goods may not appear in customs records, the compiling agency may have to use additional data sources to achieve full coverage of the country's merchandise trade statistics. Relevant non-customs data sources for the compilation of those categories of goods are described in chapters III and IV. Those categories of goods include the following:

(a).   Goods delivere through postal or courier services

(b).   Electricity transmitted through fixed power lines

(c).   Petroleum, gas and water delivered through pipelines

(d).   Petroleum and gas produced outside the customs territory and shipped directly by vessel

(e).   Border trade (*i.e., trade between residents of adjacent areas of bordering countries as stipulated by national legislation*)

(f).   Sales and purchases made by aircraft and ships in foreign ports

(g).   Sales and purchases of aircraft, ships and other mobile equipment

(h).   Transactions on the high seas

(i).   Military goods

7.8.   *Data sources for trade information regarding specific territorial elements.* IMTS 2010 (see para 2.13 and chap. VI) recommends the implementation of the general trade system under which the statistical territory covers all applicable territorial elements. For certain territorial elements such as free zones, no or very limited information from customs declarations is available, and compilers need to use either other administrative information collected by customs (i.e., information required for security purposes) or non-customs data sources, in order to obtain information on the trade transactions involving these areas. The compilation of trade data for other territorial elements such as islands, territorial waters, etc., that are included in the statistical territory also requires

the use of non-customs data sources if customs records are insufficient or absent (see chap. VI, table VI.1, for details).

B. Issues encountered when merging data from different sources

7.9. *Integration of different data sources.* To achieve full coverage of the international merchandise trade statistics, data compilers often have to merge and cross-check data collected from customs and non-customs sources, which is a highly complex and time-consuming activity. Merging customs and non-customs data includes adding non-customs data to the customs data and substituting non-customs data for the customs data. For the purpose of quality control and/or for the information of the users, compilers might wish to differentiate data based on customs data sources and data based on non-customs data sources.[52]

7.10. *Issues encountered when merging data from different sources.* Compilers should need to be aware that the following issues need to be addressed when merging data from different sources:

(a). Different sources may provide different data elements or levels of detail, e.g: parcel and letter post records might not contain any commodity detail; cross-border surveys might provide data only at the higher HS levels (*e.g., that of HS chapters*); and commodities that are difficult to classify might be allocated to a few broad categories in non-customs sources, making it difficult to merge them with the more detailed customs data (see the example of Uganda's Informal Cross Border Trade Survey below);

(b). Some transactions might be subject to simplified reporting requirements at customs;

(c). There may be conceptual differences between sources: e.g., enterprise records might contain the country of purchase and sale but not the country of origin or last known destination;

(d). There may be delays in data forwarding by some source agencies or these agencies may use different release calendars, which may lead to unsynchronized provision of data;

(e). There may be a risk of double counting due to overlaps in the information provided by different sources: e.g., between data on goods on consignment supplied by customs, and data on sales of the same goods reported by the controlling governmental agency;

(f). It may be difficult to organize data processing in an efficient manner, since source agencies may use different data submission media (*hard copies, portable storage, electronic transmission, e-mail, etc.*) or incompatible computer data files (the integration of different hardware and software systems is a problem in numerous cases);

(g). Data entry from certain sources (*e.g., postal forms, passenger manifests*) may involve the use of a disproportionate amount of time and resources;

(h). There is a need to cross-check data from complementary sources (*e.g., customs and commodity boards*) and to determine which sets are of greater reliability;

(i). Survey results that apply to a period longer than the reference period used for the compilation of trade statistics cannot be easily added to the customs data;

52. For example, in extra-EU trade statistics, member States are obliged to use statistical procedure 9 if the customs declaration is not the source of information on imports or exports.

(j). It is not always possible to identify partner countries in detail and some rest categories will need to be used at times;

(k). The statistical value is made up of several components, some of which may not be available in some cases;

(l). In enterprise surveys, quantity information is frequently not collected, or cannot be provided at a level of sufficient detail.

C.   Possible approaches and solutions when merging data from different sources

7.11.   *General considerations for the use of additional data sources.* Compilers need to be aware of the different sources that might be available to provide required information about certain trade transactions that otherwise would not be available. Further, compilers need to gain a thorough understanding of the contents and limitations and the quality of the additional data sources, and obtain adequate access to these data sources. Appropriate institutional arrangements between the compiling agency and the agency responsible for the additional data source need to be in place (see chap. V for details).

7.12.   *Merging microlevel data from different sources.* The following steps might be applicable when merging microlevel data from different sources:

(a). Transform, to the best possible extent, the data from non-customs sources into a standard format that can be readily handled by the IMTS compilation systems;

(b). Assess the data from non-customs sources, e.g., by comparing it with data from other sources;

(c). Apply data editing operations, such as re-scaling or estimation of particular data items;

(d). Add new records to an existing data set or combine records from different sources, including the elimination or correction of existing records, as needed, to avoid any double counting;

(e). Validate and finalize the combined data set, including, e.g., imputation/estimation of missing quantities.

7.13.   *Merging and reconciling data from different sources on the aggregate level.* The additional data sources might not provide sufficient detail to generate data records on the microlevel or might provide only macrolevel information which could be used to establish certain totals (i.e., for commodities or partners). In this case, so-called dummy records, which would represent only a certain value without full commodity or partner detail, could be generated. However, countries might encounter many different situations and might adopt different practices.

7.14.   *Supportive measures.* Country experience indicates that certain measures can be taken to facilitate the merging of data from different sources. Compilers may consider:

(a). Establishing effective controls in the compiling agency to ensure timely replacement of preliminary data from one source by final data obtained from another source (*e.g., partner data on a country-of-consignment basis received from customs may be replaced by data on a country-of-last-known-destination basis (for the same goods*) received from other governmental agencies, if the latter are judged to be of better quality);

(b). Developing estimation and imputation procedures to deal with the missing data fields (*e.g., estimates of quantities for the current month can be based on current values and on the unit value of the previous month*);

(c). Conducting an ongoing campaign to sensitize customs officers and employees of other source agencies regarding the importance of trade statistics for various purposes;

(d). Establishing a system-wide terminology-management strategy to ensure the use by all agencies of a consistent terminology in questionnaires. Further, the same classifications for commodities, partner countries, quantity units and modes of transport should be used;

(e). Running training programmes for staff involved in data compilation (*both those of the compiling agency and those of the source agencies, particularly on statistical standards and requirements, conceptual standards and the use of appropriate software*) in order to improve staff skills in compiling and merging data from different sources;

(f). Conducting regular meetings between staff of compiling agencies and staff of source organizations (*including staff of large importing and exporting enterprises*) to establish stable and efficient working arrangements and complementing such meetings by periodic follow-up phone calls and visits;

(g). Establishing, to the extent possible, a direct computer link with data suppliers to facilitate data transmission and allow for better and faster verification of incoming data; and using standard classifications and appropriate correlation tables to identify and link the various sets of data;

(h). Coordinating the installation of computer hardware and software in the compiling and source agencies to ensure their compatibility;

D. Examples of the merging of data from other administrative sources with customs data

7.15.   *Uganda: use of data of the commodity authority.* In Uganda, the commodity authorities submit monthly reports to the Uganda Bureau of Statistics (UBOS) for coffee, tea, tobacco and cotton to complement customs data. The data provided contain variables like commodity name, quantity, value, month, country of destination and, sometimes, the name of the company. The customs data is then compared with the commodity authority's data to determine the accuracy and reliability of the data for each commodity. Normally, the Uganda Bureau of Statistics adopts the commodity authority's data which appear to be reliable and are based on actual flows realized in a month. The data structure of the commodity authority's data is then aligned to the customs structure, by coding the above variables and creating more relevant variables before data merging. Merging is carried out once the structures of the two data sets are aligned.

7.16.   *Norway: use of ship registers.* In Norway, the external trade of ships, aircrafts and movable drilling rigs is not properly covered by data from customs. Statistics Norway regularly receives information from Norway's shipping registers (NIS and NOR) about new registrations, cancellations and other changes in the registers. Based on this information, a letter and a form are sent to the registered owner, asking for additional information (see chap. III and annex XXIII.B for details).

E.   Examples of the merging of data from enterprise surveys with customs data

7.17.   *Uganda: Informal Cross Border Trade Survey.* The Uganda Bureau of Statistics conducts an Informal Cross Border Trade Survey on a monthly basis (see chap IV, box IV.1 for details). The data are collected by trained enumerators under the supervision of the informal cross border trade technical team at various border crossings around the country. The following data elements are captured: customs station, item/commodity name, quantity, price, unit of measure, country of origin/destination, mode of transport, date and day of the week. After processing the data, the information is assigned to international and national codes for commodity, country, mode of transport and border post among others. The Trade Survey data structure is aligned to the customs structure before merging is carried out.

7.18.   *Challenges in commodity classification.* In Uganda, a number of challenges are encountered when transforming (coding) the cross-border data for incorporation into the HS. Most of the commodity names cannot be easily traced in the HS system, thus making the classification of commodities difficult. Moreover, various units of measure are assigned to the same commodity, which requires harmonization before integration with data from other sources.

7.19.   *Turkey: Survey for the shuttle trade.* The Statistics Institute of Turkey conducts a quarterly survey for the shuttle trade at specific border crossings. As shown in figure IV.1, the following data elements are captured: country of residency, country of citizenship, nights of stay in Turkey, type of goods and value of those goods, type of payment, cost of packaging, loading and shipping, countries of exports, and cost of private spending in Turkey. These data items are combined with the customs records (see chap. IV, Box IV.2 for details)

7.20.   *Further examples.* Chapters III and IV contain additional examples of the use of non-customs data sources.

F.   Integrated approach to economic statistics

7.21.   *Integrated approach to economic statistics.* An integrated approach to economic statistics calls for the use of common concepts, definitions, data-collection and estimation methods, and data sources to produce consistent data across various statistical domains. The issues relevant to the implementation of an integrated approach in trade statistics are discussed in chapter XI of the Manual. In the context of this chapter, it should be stressed that in designing data collection (in particular surveys), an important objective is to achieve consistency with statistics of the different industries and sectors in order to allow and facilitate the merging and sharing of information. Consistency between different surveys is facilitated by the use of a common business register, statistical units and variables. For further information on the organization and standardization of surveys, see chapter IV.

Chapter VIII
Data processing and database management

8.1.   *Introduction.* The present chapter describes data processing and database management at customs and at the statistical agency responsible for the overall compilation of international merchandise trade statistics (the responsible agency). It describes the characteristics and functions of these systems, giving the Automated System for Customs Data (ASYCUDA), Eurotrace and national systems as examples. Further, it describes the data fields necessary for statistical purposes and how to obtain these data from the customs records. This chapter logically follows chapter VII which discusses the integration of data from different sources, and precedes chapter IX, which discusses quality assurance, measurement and reporting.

A.   Basic concepts

8.2.   *Statistical data processing and statistical information systems.* As in other domains of official statistics, the compilation of international merchandise trade statistics involves collecting, processing, storing, retrieving, analysing and disseminating statistical data. In practice, these processes are structured according to particular institutional arrangements in countries and are mostly carried out with the help of information systems infrastructure (including database management systems). The resulting organizational and information systems architecture provides the framework within which different statistical compilation and dissemination processes and subsystems play their respective roles and interact with one another. While the architecture of a statistical data processing system will respond to the specific needs and constraints faced by each country, there are various general frameworks available which provide guidance and best practices, including the Generic Statistical Business Process Model (GSBPM) proposed by the joint Economic Commission for Europe (ECE)/ Eurostat / Organization for Economic Cooperation and Development (OECD) work sessions on statistical metadata (METIS).[53]

8.3.   *Database management systems.* The basic functions of a statistical database management system are to create, retrieve, update and delete (CRUD) specified data during the various stages of the statistical data processing cycle. These operations are performed by the database management system on data stored in a database according to a particular data model, such as the relational data model, which is the de facto standard for a wide variety of database management systems and database-related applications.[54] The Structured Query Language (SQL) is a widely accepted interface between relational database management systems and database-related applications.

53.   The Generic Statistical Business Process Model (GSBPM) provides standard terminology to describe and define the set of business processes needed to produce official statistics. The model can also be used in harmonizing statistical computing infrastructures, facilitating the sharing of software components, providing a framework for process quality assessment and improvement, etc. Further details are available from http://www1.unece.org/stat/ platform/display/metis/ METIS-wiki. See also United Nations Statistical Commission and Economic Commission for Europe, "Information systems architecture for national and international statistical offices: guidelines and recommendations", Conference of European Statisticians Statistical Standards and Studies, No. 51 (Geneva, 1999). Available from http://www.unece. org/fileadmin/DAM/stats/ documents/information_ systems_architecture/1.e.pdf.

54.   Other models are the hierarchical model and the network model

B.   Data processing and database management at customs

1.   Requirements for automation at customs

8.4.   *Need for automation at customs.* Customs administrations around the world are facing the challenging tasks of simultaneously ensuring the protection of society fighting transnational organized crime (enforcement), facilitating trade and collecting revenue, as well as providing trade statistics.[55] To support national customs administrations in increasing their efficiency and effectiveness, the World Customs Organization (WCO) develops and provides standards and guidelines (instruments) for the customs operations, many of which call for and deal with the automation of procedures and processes. Customs administrations that are contracting parties are obliged to comply with those standards.

8.5.   *Revised Kyoto Convention.* The WCO Council adopted the revised Kyoto Convention (RKC) in June 1999 as the blueprint for modern and efficient Customs procedures in the twenty-first century. The General Annex of the RKC recommends that the following standards be implemented by a modern customs administration: standard, simplified procedures, continuous development and improvement of customs control techniques, maximum use of information technology, and a partnership approach between customs and trade. Among the key elements within the RKC to be applied by modern customs administrations is the maximum use of automated systems. The revised Kyoto Convention entered into force on 3 February 2006.[56] For further information on the RKC, please see chapter II, section B.

8.6.   *Single window environment.* The establishment of the single window environment for border control procedures as recommended by United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) is considered by customs administrations as the solution for the complex problems of border automation and information management involving multiple cross border regulatory agencies. "Single window" means that trade related information and/or documents need be submitted only once at a single entry point and that this information is shared across governmental systems. An important element in the establishment of a single window is the harmonization of data requirements and formats (see http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window.aspx).

8.7.   *WCO Data Model.* Governments and customs administrations realize that the increasing demand for free and secure trade, in particular in an e-commerce environment, requires data standardization in order for Governments to accomplish their missions. The WCO Data Model provides a maximum framework of standard and harmonized sets of data and standard electronic messages to be submitted by trade for customs and other regulatory purposes to accomplish formalities for the arrival, departure, transit and clearance of goods in international cross-border trade. Standardized data sets and electronic messages using international code standards are key for effective and efficient exchange and sharing of information between businesses and government. The Data Model has aligned export and import data requirements and created a single electronic structure, which enables a more effective exchange of information between export and import and allows export information to being reused at import. The WCO Data Model also includes data requirements of other governmental regulatory authorities enabling a single window environment, allowing the traders to submit information only once to a single official body, preferably customs, to fulfil all regulatory requirements related to an import or and export.[57]

55.   The main instrument of WCO for facilitating the collection, comparison and analysis of statistics is the International Convention on the Harmonized Commodity Description and Coding System, popularly known as the Harmonized System or the HS, which provides for the systematic and uniform classification of goods. With 141 contracting parties (as of 1 December 2011), the HS Convention is one of the most successful instruments developed by WCO, with its international goods nomenclature now being used by more than 200 countries, territories and customs or economic unions as a basis for the collection of trade statistics. Under the HS Convention, contracting parties are obliged to make their import and export trade statistics publicly available in conformity with the six-digit HS codes or beyond that level if they wish, thereby promoting a predictable global trading system. WCO also recommends that its member customs administrations, as well as contracting parties to the HS Convention, report their import and export trade statistics to UNSD as the world's premier depositary for global statistics. (See WCO recommendation concerning the reporting of trade data to UNSD (19 June 1997). Available from http://www.wcoomd.org/EN/topics/nomenclature/instrument-and-tools.aspx

56.   See "Kyoto 2000: the International Convention on the Simplification and Harmonization of Customs Procedures (Revised) - pathway to efficiency and effectiveness in the customs environment".

57.   See "WCO Data Model: cross-border transactions on the fast track" (2009). Available from http://www.wcoomd.org/en/topics/facilitation/resources/resources.aspx.

8.8.   *Seamless integrated data pipeline.* The above initiatives for automation at customs are addressed to countries. However, the information-sharing and the information requirements need to viewed and analysed not only from a national but also from an international perspective, as, by definition, trade transactions extend over multiple countries. The agent or trader completing the customs declaration might have only partial information about the underlying transaction, logistics and earlier or subsequent transactions. This situation has a negative impact on the quality of information provided by trade statistics, as, for example, users would prefer to obtain partner information for exports in terms of final destination, rather than and not only in terms of the last known destination which is what is frequently provided. Therefore, experts call for the construction and establishment of a web-based, seamless, electronic data pipeline linking the seller/consignor and the buyer/consignee and the interested economic operators in-between. This is the goal of the European Union-funded Cassandra pilot project.[58] Besides the technical solution, an adequate international legal framework has to be established to ensure the accuracy of the data. It is expected that statistics would gain from such an integrated data pipeline in terms of quality, timeliness and availability of data. However, it has been pointed out that, this would require trade statisticians to identify the real data requirements, become involved in customs developments and pursue a combined data legislative framework for customs and statistics.[59]

2.   Characteristics of data processing at customs

8.9.   *Characteristics of data processing at customs.* The characteristics of data processing at customs encompass the electronic submission of customs declarations (and/or provision of paper declarations) and the provision of additional documentation at geographically dispersed locations and the application of uniform but complex processing procedures leading to the clearance of the goods and the sharing of information with the parties involved. These tasks are greatly facilitated by the establishment of a single-window environment which provides the benchmark for modern data management at customs. The implementation of a single window generally entails the harmonization and alignment of the relevant trade documents and data sets.

8.10.   *Models of the single window.*[60] There are three basic models for the single window:

(a).   A single authority which receives information, either on paper or electronically, disseminates this information to all relevant governmental authorities, and coordinates controls so as to prevent undue hindrances in the logistic chain. For example, in Sweden's single window, customs performs selected tasks on behalf of some authorities (*primarily for the National Tax Administration (import value added tax*), Statistics Sweden (trade statistics), Sweden's Board of Agriculture and the national Board of Trade (import licensing);

(b).   A single automated system for the collection and dissemination of information (*either public or private*) which integrates the electronic collection, use and dissemination (and storage) of data related to trade that crosses the border. For example, the United States of America has established a programme that allows traders to submit standard data only once; the system processes and distributes the data to the agencies that have an interest in the transaction. There are various possible means of implementation:

(i).   Integrated system: data are processed through the system;

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58.   David Hesketh and Sandra Tudor, "Trade statistics data gathering – a concept for the future, paper prepared for the Global Forum on Trade Statistics, Geneva, 2-4 February 2011.

59.   Ibid., p.9.

60.   Economic Commission for Europe, United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT), Recommendation and Guidelines on establishing a Single Window to enhance the efficient exchange of information between trade and government, Recommendation No. 33 (ECE/TRADE/352) (United Nations publication, Sales No. E.05.II.E.9), pp. 6-8. Available from http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec33/rec33_trd352e.pdf.

(ii).   Interfaced system (*decentralized*): data are sent to the agency for processing;

(iii).   A combination of (*i*) and (ii);

(c).   An automated information transaction system through which a trader can submit electronic trade declarations to the various authorities for processing and approval in a single application. Under this approach, approvals are transmitted electronically from governmental authorities to the trader's computer. Such a system is in use in Singapore and Mauritius. Moreover, in Singapore's system, fees, taxes and duties are computed automatically and deducted from the traders' bank accounts. When establishing such a system, consideration could be given to the use of a master data set, comprising of specific identities, which are pre-identified and pre-validated, in advance, for all relevant transactions.

8.11.   *Technical infrastructure.* The electronic submission of customs declarations and the automation at customs require the establishment of an adequate technical infrastructure for data transmission, data storage, data processing, etc. Costs for hardware and software have declined significantly and telecommunications technology has advanced in recent years. Nevertheless, the levels of investment and human resources required to establish an adequate technical infrastructure for customs automation and the implementation of a single window environment are high and constitute an obstacle for further automation in many countries.

3.   Examples of automated systems at customs and its interface with statistical data

8.12.   *Existing single window in Sweden.* Sweden's present single window system, known as "The virtual customs office" (VCO), allows the submission, by electronic means, of customs declarations and of applications for import and export licences, for licences for strategic products and for both import and export licences. It can be further integrated into the business system of traders and can then automatically update changes in exchange rates, tariff codes and duty rates. Import and export declarations can be processed through both the Internet and the United Nations Rules for Electronic Data Interchange for Administration, Commerce and Transport (UN/EDIFACT). The system currently involves Sweden's Customs (lead agency), Sweden's Board of Agriculture, the National Board of Trade, the National Inspectorate of Strategic Products, the Police, the National Tax Administration and Statistics Sweden.[61]

8.13.   *Customs modernization in the United States of America.* The International Trade Data System (ITDS) is a project designed to build an electronic single window for reporting imports and exports to the Government. Currently, traders must make redundant reports to multiple agencies (often on paper). ITDS will allow traders to make a single electronic report with the relevant data being distributed to the appropriate agencies. Costs will be reduced for business and government; and agencies will obtain data more quickly, be able to process cargo more expeditiously, and be better able to identify unsafe, dangerous or prohibited shipments. ITDS is not a separate computer system: ITDS functions are being built into the trade processing systems of United States Customs and Border Protection (CBP), as part of the Automated Commercial Environment (ACE) project.[62]

8.14.   *Experience of the Philippines: Electronic-to-Mobile (e2m) Customs Project.* The e2m Customs Project is one of the mission-critical and high-impact Information and Communications Technologies (ICT) projects of the national Government. It seeks to streamline the core processes of the Bureau of Customs (imports and exports) and improve trade facilitation between the Bureau of Customs and its stakeholders,

61.   Ibid., p. 19. Additional examples are provided on Mauritius, the Netherlands and the United States of America.

62.   Report to Congress on the International Trade Data System (ITDS), December 2010 available from http://www.itds.gov.

including other government agencies, through the development and integration of various systems allowing Internet-enabled and, later, SMS-enabled transactions, thus fewer face-to-face transactions, towards the realization of the national and (ASEAN) single window. Launched in January 2005, this project was financed through a multimillion dollar grant from the government's e–Government Fund of the President, which was specifically created to finance strategic ICT projects of government agencies. This e-customs system allows customs officers and traders to handle most of their transactions from customs declarations to cargo manifest and transit documents through the Internet. It makes use of advanced technology, including electronic signatures, to provide government officials, specifically customs administrators, with new tools that will enable them to make dramatic improvements in security, trade efficiency and the fight against corruption. The e2m system for the formal entry of imports was fully implemented in the major ports of the Philippines in August 2010. E2m-customs offers the following enhancements to the current system:

(a).   Online submission of declarations

(b).   Automatic advice on declaration status

(c).   Engagement of value added service providers (*VASPs*)

(d).   Online submission of manifests by airlines and shipping lines, including de/consolidators

(e).   Automated process for other types of import transactions such as informal (*including the passenger baggage system*), warehousing and transshipment entries

(f).   Automated process of liquidation of raw materials

(g).   Centralized management of bonds transactions

(h).   Links with relevant government agencies

(i).   Online resource access through the Bureau of Customs website on issuances, processes, policies, guidelines and other related information

8.15.   *Experience of Brazil: Sistema Integrado de Comercio Exterior (SISCOMEX).* Brazil processes its foreign trade data through a computerized system (SISCOMEX) which collects and records, in a single flow, information and procedures concerning foreign trade operations in the country. The collected data are reported by various governmental and private agents and standardized, creating a single document at the end of the process. All recorded information is stored in the system for retrieval by users at any time.

(a).   The philosophy of SISCOMEX is based on:

(i).   Harmonization of concepts, standardization of codes and nomenclatures

(ii).   Elimination of controls and parallel systems of data collection

(iii).   Simplification (and avoiding bureaucracy) of foreign trade operations

(iv).   Generation of a single document at the end of the process

(v).   Preservation of the basic functions of managers

(vi).   Reduced administrative costs for all involved in the system

(vii).   Critical parameter data

(viii).   Preparation of timely trade statistics

(b).   The advantages of SISCOMEX are:

(i).   Online system

(ii).   Simplification and acceleration of the process

(iii).   Information provided only once

(iv).   Automatic granting of permits

(v).   Ease of access/free from use by intermediaries

(vi).   Cost reduction with dispatch and storage of documents

(vii).   Availability 24 hours a day, 7 days a week

(viii).   Transparency of administrative controls

(ix).   News SISCOMEX: timely information about changes in the administrative processing of Brazil's foreign trade

(x).   Enabling legal representation by the company itself, directly through the system

(xi).   Security and integrity in processing operations

8.16.   *Automated System for Customs Data (ASYCUDA).* ASYCUDA is a computerized customs management system that covers most foreign trade procedures and has been implemented in many countries.[63] The system handles manifests and customs declarations, accounting procedures, and transit and suspense procedures. It generates trade data that can be used for statistical and economic analysis. The ASYCUDA software has been developed by United Nations Conference on Trade and Development (UNCTAD) in Geneva and operates on microcomputers in a client server environment. ASYCUDA is fully compliant with international codes and standards developed by the International Organization for Standardization (ISO), WCO and the United Nations. ASYCUDA can be configured to suit the national characteristics of individual customs regimes, national tariffs and legislation. The system also provides for electronic data interchange (EDI) between traders and customs using UN/EDIFACT (United Nations rules for Electronic Data Interchange for Administration, Commerce and Transport). The most recent Web-based version of ASYCUDA will allow customs administrators and traders to handle most of their transactions through the Internet.[64]

8.17.   *Interface to statistical data: examples of ASYCUDA.* A group of predefined statistical reports which are produced on the server can be obtained as either a server printout or electronic files. However, most statistics from ASYCUDA++ are obtained through SQL, which is used to create reports or database extractions not covered by the standard reporting formats. Writing SQL queries requires specialist technical skills, and access to the database to run them is normally restricted, for both security and performance reasons. ASYCUDA++ has an interface which allows for the extraction of declaration and reference data from the ASYCUDA database in a format compatible with Eurotrace.[65],[66] Work is currently under way (as of July 2011) to add in ASYCUDA a statistics data extraction module which complies, to the extent possible, with the requirements of IMTS 2010 (see table VIII.1) below, specifically for international reporting in detailed trade statistics. A predefined data extraction module will facilitate the trade data flow from customs to compilers.

C.   Data processing and database management at the responsible agency

1.   Characteristics of data processing, data flow and data transformations

8.18.   *Characteristics of data processing at the responsible agency in contrast with other statistical activities:* The statistical processing of merchandise trade data involves dealing with large numbers of data sets of relatively simple structure. These data sets

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63.   According to UNCTAD, it is used or being implemented in more than 90 countries. See UNCTAD Trust Fund for Trade Facilitation Negotiations, "Automated System for Customs Data ASYCUDA", Rev. 1, Technical Note No. 21, January 2008.

64.   See Recommendation and Guidelines on establishing a Single Window to enhance the efficient exchange of information between trade and government, pp. 31-32. See also footnote 59.

65.   Eurotrace is a computer system that manages external trade statistics, allowing input of declaration and reference data into a number of different "statistical data banks". These data banks are used to pull together figures in order to provide statistics on foreign trade, transport, financial details and taxes.

66.   For user technical information on ASYCUDA, see http://www.asycuda.org. The Central Statistical Office of Trinidad and Tobago provides an example of data extraction from ASYCUDA and importation into Eurotrace (para. 8.22 below).

are in general obtained from customs declarations and received from customs. Further characteristics are the use of extensive and usually automated validation and quality checking procedures, the storing of processed data and metadata in well-maintained databases capable of performing customized data queries, and timely provision to users of large data sets in various formats. All these activities imply the intensive use of information technology which frequently requires that significant IT resources be specifically dedicated to trade statistics. Particular challenges for statistical data processing can arise when revisions or corrections need to be coordinated and agreed between customs and the responsible agency. A further potential difficulty is the integration of data from other sources, as those data, for example, might not follow the required standard format.

8.19.   *Data transformations.* The following data transformations are often executed at the responsible agency: suppression or removal of certain information (due to issues of confidentiality or quality), correction of existing data and supplementation of existing data through estimation or other means (i.e., if certain characteristics are not provided) (for country examples see Box VIII.1).

8.20.   *The role of customs.* Custom declarations are the main and usually preferred data source for merchandise trade statistics. Not only are customs authorities providing this information to the responsible agency, but, they have a very strong influence on the quality of the information provided (see chapter IX for details, in particular para. 9.5 on data processing and validation). In this context, it is critical that customs work with the traders or brokers who enter the information to ensure that the data required for statistical purposes are adequately captured in the customs declarations. At the same time, the responsible agency needs to make customs aware of these requirements (see chap.V for details).

Box VIII.1

The statistical production process: example from Italy

The production process carried out by ISTAT encompasses a number of tasks/production stages which ranges from the upload of raw customs data to the release of official data on external trade statistics. In particular, they include:

(a.)   Automatic upload or manual data entry of customs data;

(b.)   Exclusion of trade flows not relevant for the compilation of external trade statistics;

(c.)   Standardization of customs data according to statistical standards, including both classification and analytical variables;

(d.)   Rapid detection and revision of major outliers, having significant impact on the aggregate trade figures published as flash estimates or preliminary data;

(e.)   Thorough analysis and revision of outliers at the product/country level, including mis-classification problems at the product, country or other statistical variables level;

(f.)   Estimation of a possible random item or unit (non-response problems);

(g.)   Estimation procedures related to "structural biases" in customs data, such as systematic delays in data transmission, under coverage due to the adoption of exemption thresholds, etc.;

(h.)   Estimation of peculiar external trade flows not covered, or poorly covered, by custom data.

These activities require relevant efforts in terms of both hardware and software. The hardware component includes the presence of relevant data storage capability and an appropriate stock of human resources devoted to each stage of the production process. The software component is more intangible but nevertheless crucial for the production of high-quality trade figures. It refers to the stock of knowledge and technical capabilities on data management, data classification and data analysis which is only partially codified in standard IT and statistical procedures; rather, it is mainly

embodied in the human capital devoted to the production of trade statistics. It concerns, for example, knowledge on the best way to check, revise and classify specific trade flows, based on an extensive knowledge of product characteristics and feedback from trade operators and external experts.

(a.)   As a result, the successful management of trade statistics by ISTAT requires the setting up of an appropriate division of labour which takes into account not only the hardware but also the software components of the external trade statistics production process. In particular, it is recommended that:

(b.)   An efficient IT framework for the upload and management of customs data be designed, with a dedicated pool of IT technicians;

(c.)   A sound methodological approach to outliers detection be designed and implemented;

(d.)   A limited pool of specialized clerks with an extensive knowledge of product characteristics needed to manage data-quality problems be established and maintained. In particular, the criteria adopted for assigning a given group of products to each expert should be consistent with human resources constraints and in line with national trade characteristics;

(e.)   A risk management approach be adopted to clearly identify critical bottlenecks in the production process which may represent a relevant threat in terms of data quality or timeliness in published trade figures.

67.   Eurotrace is implemented by countries in Africa but also in some countries in Asia and the Caribbean. It is supported by Eurostat as part of the European Union development cooperation in the Africa, the Caribbean and Pacific Group of States (ACP) (see http://circa.europa.eu/irc/dsis/eurotracegroup/info/data/en/users.html).

68.   The information provided is taken directly and derived from the following document: Central Statistical Office,"EUROTRACE applied to Trinidad and Tobago trade statistics: overview document", Ministry of Planning, Economic and Social Restructuring and Gender Affairs, Trinidad and Tobago, 12 October 2010.

69.   Further information on the management, technical requirements, lessons learned during implementation and possible future improvements is provided in the above-cited document as well as in the following document: Central Statistical Office, "Technical brief: 2nd Regional Award for Innovation in Statistics - EUROTRACE applied to Trinidad and Tobago trade statistics", Ministry of Planning, Economic and Social Restructuring and Gender Affairs, Trinidad and Tobago, 20 August 2010.

2.   Examples of data processing systems at the responsible agency

8.21.   *Eurotrace software:* data- processing software for external trade statistics. The Eurotrace software, distributed free of charge by Eurostat and implemented in many developing countries,[67] allows (a) the importation and management of the data necessary to the development of the external trade statistics (in particular the customs data), (b) the treatment of these data, in particular through carrying out quality controls and the application of standards, (c) the working out and calculatation of a certain number of aggregates, in particular indices of foreign trade and (d) their export for dissemination and publication. Eurotrace consists of the following separate applications that work together: Eurotrace DBMS, the Eurotrace Data Editor and the Comext Standalone Data Browser.

8.22.   *Eurotrace applied in Trinidad and Tobago.*[68] The Central Statistical Office (CSO) of Trinidad and Tobago has developed a Eurotrace application which has transformed its trade statistics data dissemination. As a result of the implementation of the Eurotrace Trade Statistics application, the time taken to respond to a wide array of ad hoc data requests from international, regional and local data users has been significantly reduced.[69]Further improvements depend largely on the implementation at customs of ASYCUDA which would replace the current system of manual data capture based on copies of declaration forms. The proposed future data flow will be greatly simplified and will consist of data reception from ASYCUDA, importation to Eurotrace, validation in Eurotrace, upload of validated data and data extraction/direct data download through the Comext Browser.

D.   Data fields required for statistical purposes

8.23.   *Minimum requirements.* The statistical information needs require the provision of the data fields shown in table VIII.1.

Table VIII.1
Required data fields

Field name	Recommended field content
Reference year	Gregorian calendar (January through December)) : in YYYY format (e.g., 2011, 2012, …)
Period	Annual, monthly or quarterly period identification (e.g., M01, M02, …, Q1, Q2, …, A00)
Trade flow[a]	"Imports", "Re-imports", "Exports" and "Re-exports"
Commodity code	According to the Harmonized System (HS) at the most detailed commodity level available (six-digit HS)
Partner country or area	In national nomenclature; country of origin (for imports) and country of last known destination (for exports)
Value	Monetary value (in national currency or United States dollars); CIF for imports and FOB for exports
Net weight[b]	Physical quantity (in kilograms)
Supplementary quantity	Physical quantity (in the WCO recommended standard units of quantity)
Supplementary quantity unit	Description of units of quantity employed for supplementary quantity data (e.g., "Number of items")
New data fields following the adoption of IMTS 2010 (include if already available)	
Second partner country or area	In national nomenclature; country of consignment for imports and country of consignment (destination) for exports
Second value for imports[c]	Monetary value (in national currency or US dollars); FOB for imports
Mode of transport	Means of transport used when goods enter or leave the economic territory (in the nomenclature encouraged and provided by IMTS 2010, para. 7.2, or national nomenclature)
Customs procedure code (or applicable transaction code)[d]	Code of the customs procedure applied to individual transactions by customs; any applied procedure or transaction code if customs procedure codes are not available or if additional codes are used

a. Some countries are able to identify the trade flow through the customs procedure code; however, it is advised that, for the time being, all countries provide the field trade flow in their data.

b. It is recommended that net weight be provided (see IMTS 2010, para. 5.5). However, some countries are able to provide only gross weight.

c. According to IMTS 2010 (para 4.9), countries that compile only CIF-type value for imported goods are encouraged to compile separate data for freight and insurance, at the most detailed commodity and partner level possible. This would apply to countries that compile only FOB-type values.

d. This information is requested to obtain additional information about certain trade transactions for statistical purposes such as re-exports, reimports, goods for processing and intra-firm trade. However, national practices in the use of customs procedures vary considerably and it might not always possible to derive the desired information.

8.24.   *Experience of the Philippines.* In 2003, the National Statistics Office of the Philippines entered into a memorandum of agreement with the Bureau of Customs, for the latter to provide the National Statistics Office with an electronic copy of the data obtained from customs documents and generated using the electronic system. The information items contained in the extracted data files shall contain the following variables:

(a). For exports, from the Automated Export Declaration System, this will include customs control number, country of destination, commodity description, gross weight (*in kilograms*), quantity, preferential treatment, FOB value, insurance cost, freight cost, local port of unloading, local port of destination, importer's TIN, feeder/direct carrier's name, type of handling/packing, and registry number.

(b). For imports, from the Automated Cargo Operating System, this will include customs control number, country of origin, commodity description, gross weight (*in kilograms*), quantity, preferential treatment, value of imported raw materials, FOB value, insurance cost, freight cost, local port of loading, local port of origin,

exporter's TIN, feeder/direct carrier's name, type of handling/packing, and registry number.

8.25.   *Information relevant or required for the completion of the customs declaration.* The information normally required for the completion of customs declaration forms that is relevant for compilation of trade statistics (either for inclusion into statistics or for verification purposes) includes that shown in table VIII.2. It should be noted, however, that not all information items listed in the table are required in all countries.

a. However, not all types of information are mandatory for many customs procedures.
b. For an example, please see annex II.A.

Table VIII.2
Information relevant or required to complete a goods declaration a,b

Point of import/export: the point at which the goods actually enter or leave the customs territory of a country
Date of importation/exportation: for imports, the date on which the carrier transporting the goods arrives at the customs territory; for exports, the date of departure or date of clearance
Date of lodgement: the date on which the customs accepts the declarations submitted by importers, exporters or their agent
Importer/exporter: in general, refers to the party in the customs territory who signed the contract of purchase/sale and/or who is responsible for executing the contract (i.e., the agent responsible for effecting import into or export from a country). Each importer or exporter is usually assigned a unique identification number c
Nature of transaction (e.g., purchase/sale, processing, barter, lease, gift)
Mode of transportation: the type of carrier which transports the goods into or out of the customs territory (e.g., sea and water, rail, road (truck), air, postal, other)
Carrier identification: the name and the voyage/flight/wagon/vehicle number of the carrier actually transporting the goods into or out of the customs territory
Bill of lading/airway bill: the importing or exporting carrier's bill of lading, airway bill number, rail receipt number, post office number
Consignee/consignor: the party to whom goods are consigned/the party who consigns the goods
Country of consignment: the country from which goods were dispatched to the importing country (to which goods were dispatched from the exporting country), without any commercial transactions or other operations that change the legal status of the goods taking place in any intermediate country
Customs procedure (regime): the type of customs procedure under which imported or exported goods are cleared from customs
Licence number: validated import or export licence number, for goods subject to import or export licence
Related party transaction (i.e., one between parent company or sister company)d
Location of domestic consumer/producer: location of domestic consumer refers to the location in the customs territory for which imported goods are destined or where they will be ultimately consumed or utilized. Location of domestic producer refers to the location in the customs territory where the exported goods are produced or manufactured or from which the goods actually start their journey to the point of export, if the origin of production is unknown
Port of loading/destination: "port of loading" means the last foreign port where the imported goods were loaded on the carrier that brought them to the compiling country; "port of destination" means the ultimate foreign port for which the exported goods will be designated;
Terms of delivery: the transaction terms of delivery is required to be reported, usually the Incoterms 2000 rules
Freight: the freight charges

c. For example, China uses a 10-digit ID number structured as follows: first 5 digits: location of the importer or exporter (city, province, special economic zone, bonded area, high-tech industrial development area, etc.); sixth digit: category of importer or exporter (State-owned enterprise, Sino-foreign contractual joint venture, Sino-foreign equity joint venture, foreign-owned enterprise, collective enterprise, private enterprise, other); last 4 digits: serial number.

d. Many countries do not include this requirement; countries have different criteria for determining whether parties are related. See chap. XXI for further details.

Insurance: the insurance charges
Unit value: the price actually paid for one unit (by quantity unit) of the given commodity when sold for exportation to the compiling country or purchased for importation from it, or the cost of one unit of the commodity if not sold or purchased
Total value: the price actually paid for all units (by quantity unit) of the given commodity (unit price multiplied by quantity), or the cost of the commodity if not sold or purchased
Customs value: the value of goods established in accordance with the customs law of a country
Type of financial transaction: an indication of payment method
Unit of account: the currency in which it is required that the transaction that has occurred be reported
Statistical value: the value assigned to goods by a compiler of trade statistics, according to the rules adopted by the compiling country
Number and kind of packages: the number and kinds of packages (bulk, boxes, barrels, baskets, etc.)
Marks: marks or other identification shown on the packages and the numbers and kinds of packages (boxes, barrels, baskets, etc.)
Commodity code: usually the HS-based code, where the first six digits are the HS codes and the others are national extensions
Commodity description and specification: a description of the commodity sufficient to permit verification of the classification code or the description and specification, as shown on the validated import or export licence
Gross weight (kilograms): the gross weight of shipments, including the weight of moisture content, packings and containers (other than containers, such as cargo vans and similar substantial outer containers used for containerized cargo)
Net weight (kilograms): the net shipping weight, excluding the weight of packages or containers
Domestic or foreign goods: specification of whether the good is of domestic or foreign origin
Quantity and quantity unit: the amount reported in terms of the unit(s) adopted by national legislation; in many cases, they are based on the standard units of quantity recommended by WCO. It is also required that the unit of quantity specified in the transaction be reported, if it is other than the customs standard units
Country of origin: as established in accordance with the country's rules of origin;
Country of destination (also called country of final or ultimate destination): the country in which the merchandise is to be consumed, further processed or manufactured; the final country of destination as known to the exporter at the time of shipment or the country of ultimate destination as shown on the validated export license. Two- or three-digit (alpha character) International Organization for Standardization (ISO) codes or other codes may also be used
Tariff preference, if any
Producing/importing State or province
Form of payment
Agent's commission
*Date of shipment or dis*charge
Country of purchase

Chapter IX
Data quality: assurance, measurement and reporting

9.1.   *Introduction.* The present chapter is based on IMTS 2010, chapter IX (on data quality and metadata). It provides an overview of quality assurance at customs and the responsible agency. Major quality issues are identified and discussed, including issues related to the editing of data and the responsibilities of each agency. Further, the chapter describes the process of producing quality reports and the measurement of quality, and provides examples and best practices. A special section is dedicated to reconciliation studies, cross-country comparability and bilateral data exchanges. Data quality assurance and reporting are essential for producing and disseminating trade statistics that are of the highest possible quality. This chapter aims to provide relevant information and to describe good practices so as to guide countries in making quality assurance, measurement and reporting operational. Data quality is a cross-cutting task and is touched upon throughout the Manual. This chapter is linked, in particular, with chapter V on institutional arrangements.

9.2.   *Quality management system.* Data quality assurance, measurement and reporting must be viewed as parts of a quality management system, often called a quality management framework (QMF). A QMF often contains the following elements: (a) a quality policy which affirms the commitment to quality management, (b) a quality model which provides a definition of quality, often formulated in terms of the components of data quality, (c) quality objectives, standards and guidelines, (d) quality assurance procedures which are often part of the production process, (e) quality assessment procedures, (f) quality measurement procedures and (g) quality improvement procedures.[70]

A.   Quality assurance

1.   An Overview of the main elements of national quality assurance frameworks

9.3.   *Systematic approach to quality assurance.* IMTS 2010 promotes a systematic approach to data quality. This means that all aspects of the entire trade statistics program are to be examined and evaluated against certain principles and standards in order to more effectively identify and implement appropriate action to further improve data quality (see IMTS 2010, para. 9.4). The treatment of quality assurance in the present section entails a narrower focus, on data quality, as the section examines only some of the specific issues considered and actions commonly taken, by customs and the compiling agency to assure the accuracy of the statistical information within the existing setting of data compilation.

9.4.   *Methodological soundness.* Quality assurance requires the adoption, application and enforcement of a conceptual framework for foreign trade statistics, preferable in line with the international recommendations. Decisions in respect of treatment of transactions in specific categories of goods (scope of trade statistics), and of

70.   See Eurostat, ESS Handbook for Quality Reports, 2009 edition, Eurostat Methodologies and Working Papers, (Luxembourg, Office for the Official Publications of the European Community, 2009), p.15.

transactions destined for or originating in certain territorial elements, their classification and valuation, quantity measurement and attribution of partner country are part of the daily work of customs officers and trade statistician and require the existence of a clear methodological framework. Any automated quality assurance and data validation must be based on and derived from the conceptual framework adopted by a country.

9.5.   *Data processing and validation: types of checks and tools.* Statistical data processing requires the capture of individual trade transactions, the creation of trade records, and their validation and integration into data sets encompassing all the records of a specific period. Validation checks are commonly used for: completeness, validity of codes, range check of values, internal consistency and aggregate consistency. Often, the estimation and insertion of missing values and codes are integrated into the completeness check. Tools for validation include validation at data entry ("in dialog"), batch validation with the creation of error lists, generation of error statistics, flagging of significant transactions, classification of errors into certain versus possible errors and automated versus manual error correction. The inclusion of additional sources of information usually requires manual corrections as such information is external to the system. In some offices, manual corrections will always require that additional and/or external sources be used (e.g., by contacting the declarant). However, it might not always be possible to obtain the additional information in the time available, and manual corrections might be made without the use of such additional sources.

9.6.   *The information problem at data entry.* The starting point of the statistical quality assurance process is the point at which the information is provided.[71] This usually occurs when the customs declaration is completed, as customs records are the main, and normally the preferred, data source for merchandise trade statistics. Customs declarations are themselves administrative records containing selected information about commercial (or non-commercial) transactions and the logistics of moving the goods from the seller to the buyer (or from the sender to the receiver). Usually, the information on the customs declaration is entered separately and is not, for example, derived electronically from existing information; hence, those completing the customs declarations (commonly the shipping agent or trader) might not have complete information about the transaction, logistics and subsequent transactions.

9.7.   *Data entry.* The most important stage of quality assurance for trade statistics occurs when the required information is entered into the customs declaration, as the agent or the person completing the customs declaration should have available all the required information to the best possible extent. Electronic data entry systems allow the implementation of comprehensive validation rules which can prevent certain types of typing errors, entry of invalid or implausible codes, and entry of values outside a certain range, as well as invalid or implausible combinations of entries. The development and implementation of such rules require significant knowledge and investment in the IT system. Also, the validation systems need to be carefully designed so as not to obstruct the entry of accurate information or invite "gaming with" or circumventing the validation system, thereby leading to a deterioration of data quality.

2.   Quality assurance at customs

9.8.   *Priorities.* Security and safety and the collection of revenue are the core functions of customs and can be viewed as the prime objectives of data quality assurance at customs. Therefore, the customs information on imports is in many countries considered as being of higher quality than the data for exports, as customs duties usually apply only to imports and not to exports. However, this traditional view is not an adequate description of the situation in many countries. Many customs offices

71.   In fact, quality assurance starts even before, when data providers and, in particular, agents at customs are informed and trained regarding the statistical (customs) requirements regarding the information provided.

have statistical units that aim to ensure comprehensively the quality of statistical information. Quality assurance, seen as a comprehensive concept and supported by the automation at customs, will lead to an improvement in quality of all elements of the data. Further, the concept of an integrated data pipeline extending from the buyer to the seller (see para. 8.8 above) demonstrates than an emphasis solely on import information is outdated, since in a possible future global customs system, the information for export and imports will be integrated and treated as two sides of one transaction.

3.   Quality assurance at the responsible agency

9.9.   *Characteristics.* The responsible agency is expected to conduct a systematic quality assurance programme covering all elements of the statistical information, using the full range of validation checks and tools as specified in paragraph 9.5 above and ensuring the timeliness of the information provided to users. A special focus is often given to the aggregated data and the final results which are compared with the ones from previous periods. However, frequently, special attention is also given to certain transactions that might be of particular importance or of high value, or might be potentially outside the scope of IMTS (e.g., goods for repairs and transactions in ships and aircraft). Often, the responsible agency has or can gain access to the original record and its accompanying information at customs. In many ways, the quality assurance at the responsible agency depends on data provision by and cooperation with customs, unless, of course, customs itself is the responsible agency.

4.   Major quality issues and how to approach them

9.10.   *Main quality issues from the user's perspective.* Gaps in coverage, asymmetries in partner information, unreliable quantity information and insufficient timeliness are often perceived as the major quality issues associated with international merchandise trade data. The issues raised are discussed briefly below. However, certain country practices, discussed further on this publication, address some of these issues in more detail.

9.11.   *Coverage.* Some major coverage issues such as the application of the special trade system or the need for confidentiality of certain transactions are beyond the scope of the regular quality assurance at the responsible agency. However, in many countries, transactions in certain commodities, such as oil, gas, electricity, raw materials, ships and aircraft, are not or not adequately captured by customs or by the responsible agency. In other countries, border or shuttle trade maybe important but is not fully recorded by the responsible agency. Lack of coverage can also arise in the case of the applications of various thresholds for simplification purposes at customs (see chap. XIX, sect. E). Possible approaches to these issues of coverage entail use of additional data sources and, if necessary and appropriate, addressing them with the relevant governmental authorities, which, for example, can mandate that information be made available to statistical authorities. In the case of trade below certain reporting thresholds, appropriate estimation methods might need to be developed.

9.12.   *Asymmetries in partner data.* Asymmetries in partner data, that is, differences between the compiling country's own data on exports and imports and the partner country's data on imports and exports, can have multiple causes, including differences in the time of recording, differences in the classification of commodities, partner-country attribution, trade system, confidentiality, etc., and many bilateral studies have been conducted to examine this issue and to reduce these asymmetries. However, an important factor in these asymmetries is trading partner information which may be

72.   For imports, it is recommended that the country of origin be recorded. However, there is no uniform definition of "country of origin". Further, it might become more difficult to determine the country of origin if a country belongs to a customs union, as more and more countries do. For exports, it is recommended the county of last known destination be recorded, although the objective is to obtain the country of last or final destination. As indicated in para. 9.6 above, those completing the customs declaration might not have full information about the transactions to which the goods have been subjected, nor about future transactions.

73.   In the European Union Intrastat system, it is not mandatory to provide net weight if the supplementary quantity (WCO standard units of quantity) is different from net weight; however, member States are obliged to estimate net weight when not collected.

74.   The information presented is derived from the information note entitled "Effect of mandatory electronic filing on export data" 14 January 2009. Available from: http://www. census.gov/foreign-trade/aip/ mandatoryelectronicfiling. html.

impossible to align owing to conceptual as well as practical factors,[72] in particular in the case of global value and supply chains. In order to improve the situation, IMTS 2010 strengthened the recommendation to provide the country of consignment as second partner with information not only for imports but also for exports (see IMTS 2010, para. 6.26). As indicated, one way to examine and address these asymmetries is to conduct reconciliation studies (see sect. C).

9.13.   *Quality of quantity information.* Many users and producers of trade statistics agree that quantity information (quantity in WCO standard units of quantity and net weight, where the standard unit is different from net weight) is the weakest data element in the core data set for trade statistics. In some countries, the provision of quantity or net weight is not mandatory,[73] and often the information is not complete for other reasons. Information on quantity is internationally comparable only when reported by countries in a uniform manner. However, often quantities are reported in units different from the ones recommended by WCO for each specific commodity. An important quality problem is the incorrect reporting of the quantity or net weight, which might be difficult or impossible to determine. There are several possible means of improving the quantity information. For example, as part of a standardized quality assurance procedure, suspicious high-quantity values could be identified and the data provider contacted to verify them; or suspicious or missing quantities could be replaced with estimates based on the data provided by the same firm or other reporters. A further option is to use additional data sources such as shipping documents to verify the quantity information. Yet another possibility is to allow data providers to estimate missing information using empirical values or to allow the provision of quantities in quantity units from which standard units of quantity or net weight could be derived using appropriate conversion factors. Whatever the method used, it should be documented in the metadata that are made available to users.

9.14.   *Quantity aggregation.* The quantity and net weight information provided by countries at the six-digit level of HS is frequently an aggregation of multiple trade transactions. Usually each transaction has a trade value, but the same is not true for net weight and quantity values, which can be missing. Further, quantity data for various transactions within the same six-digit commodity code might be reported in different quantity units. Hence, countries generally need to apply estimations for any missing net weight and quantity data and conversions or estimations for any non-standard quantity units in order to provide information on net weight and quantity at different levels of aggregation, or to refrain from providing aggregations that are not of sufficient quality. The difficulties in quantity and net weight aggregation constitute a quality issue on their own which has to be carefully addressed in view of the multiple and growing uses of these data, including for health and environmental policymaking. It is good practice for the responsible agency to work closely with customs on this issue.

9.15.   *Timeliness.* The relevance of trade statistics is greatly increased if the data are provided in a timely manner. However, in many countries, the information is provided much later than suggested (see IMTS 2010, para 10.7) requiring data users to make their own estimates. One means of improving the timeliness of information is to review the data production process in light of existing best practices and to publish preliminary data (ibid., para. 10.8).

5.   Country examples and best practices

9.16.   *Effect of mandatory electronic filing on export data: experience of the United States of America.*[74] Effective 2 July 2008, the United States Census Bureau began requiring mandatory filing of export information through the Automated Export

System (AES) for all shipments where a Shipper's Export Declaration (SED) was required. The implementation of the regulations and subsequent move to an all automated data collection process had an overall positive impact on the quality, coverage and timeliness of export data. These improvements have been achieved through more complete and timely data collection through the AES system, upfront validation checks of data, and reduced reporting and keying errors. Most errors involve missing or invalid commodity classification codes and missing or incorrect quantities or shipping weights. The AES contains online validation checks which immediately detect reporting errors and refer those errors back to the filer for correction before the data can be submitted. This has resulted in a significant decrease in reporting error rates on export transactions. The timeliness of the data has also eliminated the need for estimation of data that were received too late. Risks associated with electronic filing include unresolved edit failures which could result in undercoverage and underestimations by filers. The AES Report Card provides a tool for the monitoring of filers and for identifying thereby further actions to improve quality.

9.17.   *Statistical quality assurance in the case of Brazil.* Brazil publishes its international merchandise trade statistics one day after the end of the reference period (monthly and weekly), which is made possible mainly because of the use of a "preventive validation" methodology in Brazil's SISCOMEX system. SISCOMEX is a computerized system which integrates customs, commercial and foreign-exchange information.[75] Annex IX.A explains its mains functions.

9.18.   *ASYCUDA: data quality assurance, measurement and reporting.* In any computer system, the quality of the data entered for processing or storage is of paramount importance, as wrong data can jeopardize all of data processing and can yield incorrect results. In this regard, the Automated System for Customs Data (ASYCUDA) ensures the highest quality of the keyed- in or imported data by performing several types of data validation and control. Some of them are set to be mandatory and others are configurable (to be mandatory or remain optional) depending on specific needs and national circumstances. The following types of data validation and control are integrated into ASYCUDA: (a) existence controls, (b) data format controls, (c) referential and validity controls, and (d) consistency controls; in addition, ASYCUDA provides a statistical reporting module that can also be used for validation purposes (see annex IX.B for details).

9.19.   *Harmonized framework for data validation: Eurostat.*[76] Eurostat proposed for utilization by European Union member States a harmonized framework for data validation in external trade statistics which covers the trade in goods not only between countries of the European Union (intra-EU trade statistics) but also of members countries with countries outside the European Union (extra-EU trade statistics). Regarding extra-EU trade statistics the following is covered: (a) validation of the input data by the customs offices, (b) validation of the input data by the competent national authorities (responsible statistical authority), (c) validation of the output data by the competent national authorities and (d) validation of the output data by Eurostat.

9.20.   *Validation rules.* The validation rules specify acceptable values for the different variables, the appropriate controls and checking rules, metadata, possible errors and actions in case of errors. The fields (or variables) of a record (single administrative document (SAD) are checked for whether the values (codes) comply with the permitted entries (i.e., 1: imports; and 2: exports), whether the combination of values (codes) of two or more fields are permitted (e.g., commodity code against mode of transport), whether numerical values or combinations of numerical values (e.g., statistical value against quantity expressed in net mass) are within a certain range,

75.   The Government control of Brazil's foreign trade, which is decentralized, consists of three elements: commercial, customs and foreign-exchange controls. The administrative (commercial) control determines what goods can or cannot enter or leave the country, and is under the responsibility of the Secretariat of Foreign Trade of the Ministry of Development, Industry and Foreign Trade and other consenting agencies. The customs control covers the verification of documents and the examination of goods under the regular tax by Brazil's customs (Ministry of Finance). The exchange control is performed by the Central Bank of Brazil on the delivery or receipt of foreign exchange related to goods imported and exported. SISCOMEX is the administrative tool that integrates the activities of registration, monitoring and controlling foreign trade operations by a computerized single flow of information. Exports are controlled by two registers in SISCOMEX: export registration (RE) and credit registration (RC). Export registration confers the "authorization to export" and must be requested before the goods are shipped abroad. The export processing begins with export registration and the provision of commercial, financial, fiscal and exchange-rate information. Currently, the agency of Brazil responsible for producing foreign trade statistics, Foreign/Trade Secretariat Foreign Trade Planning and Development Department (SECEX/DEPLA), is responsible for the validation of specific fields of export registration.

76.   See Eurostat, "Proposal for a harmonized framework for data validation in external trade statistics: 2010 version".

and whether aggregated numerical values (e.g., aggregated statistical value by flow and commodity code) are within a certain range.

9.21.   *Application of the validation rules.* These validations referring to individual SADs are expected to be performed through automated systems at customs, while the responsible agency would perform at the input data stage only a few additional checks on the aggregated data. However, in respect of the output data, the responsible agency would perform similar validation checks of all output fields (sections) to ensure correct values. The output data validation at Eurostat would not repeat the previous checks but would mainly check for outliers, in particular as Eurostat would strive to harmonize settings (calibration) of validation limits and thresholds for automatic correction in the validation rules for numerical fields (variables). The annex to harmonized framework presents in summary the statistical methods proposed for the validation and correction of numerical variables, as well as the methodological procedure to be followed for the editing of combinations of categorical variables.

9.22.   *Validation rules of the Eurotrace DBMS.*[77] The Eurotrace DBMS allows the definition of validation rules to control and maintain the quality of data within a data set. The rules are established as so-called tests and usually take the form of combinations of logical or numerical queries ranging from simple to complex. The test language supported by Eurotrace is SQL[78]. The validation rules are based on the concept that a record is made up of codes and values. The codes can be checked against "dictionary" lists of valid codes, while values can be validated against ranges of acceptable values. A very simple check would consist of verifying whether a record has important values missing. However, much more complex tests can be defined and various tools for doing so are provided. A set of validation rules (called an algorithm) can be applied when importing data into a data set from a file, when exporting data out to the Eurotrace editor, and when importing data back into a data set from the Eurotrace editor after an editing session. Errors are best corrected by using the Eurotrace Editor program which has been designed to edit Eurotrace data easily.[79]

B.   Quality measurement and reporting

1.   Steps and guidelines for producing data quality reports

9.23.   *Steps to be considered.* Some information about data quality is available in all offices involved in the compilation and dissemination of official trade statistics and its compilation often provides the starting point for a quality report or might already be considered to be a quality report. The following considerations (or steps) that are suggested for the production of a data quality report for merchandise trade statistics also appear to be relevant when a quality report already exists but is being reviewed:

(a).   Collection and review of existing standards, guidelines, requirements, practices, examples or past quality reports within the same office or other offices within the same country or in other countries, including regional and international organizations, as appropriate, in order to ensure that standards and best practices are followed;

(b).   Discussion and decision on the scope and type (*purpose*) and frequency of the quality report under consideration and on the available resources;

(c).   Assembly of a team and allocation of resources;

(d).   Elaboration and discussion of the detailed structure of the quality report;

77.   See Eurostat, "Eurotrace DBMS, version 2.2: user guide" (European Commission, 2003), pp. 220-275.

78.   More specifically, SQL for the Microsoft Access Jet Database Engine.

79.   See, "Eurotrace Editor: user guide" (European Commission, 2003).

(e). Compilation of the required information: quality assessment and measurement;

(f). Drafting of report;

(g). Review of report;

(h). Dissemination and communication of the report and its results.

9.24. *Guidelines for the production of quality reports in the ESS.* Within the European Statistical System (ESS), very strong efforts have been undertaken to develop a concept of quality and to implement it comprehensively. A central achievement was the adoption of the European Statistics Code of Practice, which provides a broad conceptual framework for viewing quality and sets standards for the institutional environment, statistical processes and statistical outputs. The ESS Standard for Quality Reports issued by Eurostat[80] provides recommendations for preparing comprehensive quality reports for the full range of statistical processes and their outputs. The ESS Handbook for Quality Reports[81] provides much more detailed guidelines and examples of quality reporting practices.

9.25. *Specific objectives of the ESS guidelines.* The specific objectives of the ESS guidelines contained in the ESS Standard for Quality Reports are; (a) to promote harmonized quality reporting across statistical processes and their outputs within a country and hence to facilitate comparisons across processes and outputs; (b) to promote harmonized quality reporting for similar statistical processes and outputs across countries and hence to facilitate comparisons across countries; and (c) to ensure that reports include all of the information required to facilitate identification of statistical process and output quality problems and potential improvements.

9.26. *Structure of the ESS guidelines.* The guidelines are organized by statistical output and process quality components, with the primary section headings being:

(a). Introduction to the statistical process and its outputs (*an overview to provide context*)

(b). Relevance (*an output quality component*)

(c). Accuracy (*an output quality component*)

(d). Timeliness and punctuality (*output quality components*)

(e). Accessibility and clarity (*output quality components*)

(f). Coherence and comparability (*output quality components*)

(g). Trade-offs between output quality components

(h). Assessment of user needs and perceptions (*covering all aspects of output quality*)

(i). Performance, cost and respondent burden (*process quality components*)

(j). Confidentiality, transparency and security (*process quality components*)

(k). Conclusions (*summary of principal quality problems and proposed improvements*)

9.27. *ESS standard quality reports.* The ESS standard quality reports are producer-oriented, as they have been primarily designed to assist EU member States in internal self-assessment and reporting to Eurostat. Nevertheless, as considerable emphasis is put on output quality, they include as well all the information necessary for user-oriented quality reporting.

2.   User-oriented quality reports: contents and examples

9.28. *Characteristics.* User-oriented quality reports are keeping users informed about the methodology of the statistical process and the quality of statistical output. Many statistical agencies have adopted principles and standards for data quality and a

80. See ESS Standard for Quality Reports: 2009 edition, Eurostat Methodologies and Working Papers (Luxembourg, Office for Official Publications of the European Communities, 2009).

81. See footnote 70.

data quality assessment framework which outlines the different dimensions of quality and their measurement. The quality assessment framework provides a general layout for the quality report; however, not all dimensions are equally relevant for users. User-oriented quality reports are often provided on an on-going basis as part of the metadata provided to users, and are updated regularly.

9.29. *Quality report of Germany.*[82] The quality report for the foreign trade statistics of Germany consists of (a) general information about the statistics, such as name of statistics, reporting period, subject, respondents, legal framework and confidentiality; (b) purpose, as defined by data variables, its justification and users; (c) compilation methods, describing how the data are obtained and the burden on respondents; (d) accuracy describing coverage, customs and statistical threshold and estimations and revisions; (e) timeliness; (f) comparability with data of others and over time; (g) coherency, describing the relationship to related statistics; and (h) references to additional information.

9.30. *United States merchandise trade statistics quality report.*[83] The report entitled, "U.S. merchandise trade statistics: a quality profile" provides information on the quality of the statistical program, and is intended to aid data users in their understanding and appropriate use of the data. It addresses issues affecting the quality of statistics, and some known limitations. For example, undocumented export shipments were identified through comparisons with trade data of major trading partners, audits of trade documentation, and other measures. Implementing the data exchange with Canada (see para. 9.47 below) and mandatory electronic filing (see para. 9.16 above) has reduced these errors and improved data coverage.

9.31. *Eurostat merchandise trade statistics quality report.* The report of Eurostat entitled Quality Report on International Trade Statistics provides data users with quality indicators and information regarding the practices of EU member States. It summarizes the main outcomes of the national quality reports that member States must provide to Eurostat each year within a fixed deadline. Its structure and contents follow the ESS guidelines for quality reports.

9.32. *European Statistical System: Euro-SDMX Metadata Structure.* Applicable within the European Statistical System, the Euro SDMX Metadata Structure (ESMS) contains the description of statistical metadata concepts for documenting statistical data and for assessing data quality and the production process in general. With regard to its data quality components, the ESMS follow quality criteria in line with the European Statistical Law: relevance, accuracy, timeliness, punctuality, comparability, coherence, accessibility and clarity. Special attention is given to a set of quality and performance indicators aiming at quantifying the various quality criteria and at providing a common standard across the ESS. The ESMS documentation should accompany data dissemination of Eurostat and the EU member States.

9.33. *IMF SDDS on international merchandise trade.*[84] Countries that subscribe to the International Monetary Fund (IMF) Special Data Dissemination Standard (SDDS) make a commitment to observe the Standard and to provide information about their data and data dissemination practices (metadata) on the IMF Dissemination Standards Bulletin Board (DSBB). One of the areas covered by the IMF SDDS is international merchandise trade statistics. The SDDS metadata are available in two presentations: the current SDDS format and the Data Quality Assessment Framework (DQAF) format which covers six dimensions: 0. Prerequisites of quality; 1. Assurances of integrity; 2. Methodological soundness; 3. Accuracy and reliability; 4. Serviceability; 5. Accessibility. The SDDS was established to guide members that have, or that might seek, access to

82. The information is derived from the following publication: "Qualitaetsberich Aussenhandel" (Wiesbaden, Germany, Statistisches Bundesamt, January 2011).

83. Washington, D.C., Bureau of the Census, Foreign Trade Division, Methods Research and Quality Assurance Branch, 19 December 2002.

84. See http://dsbb.imf.org/Pages/SDDS/Home.aspx.

international capital markets in the provision of their economic and financial data to the public. To date, there have been 68 subscriptions to the SDDS.

3.   Producer-oriented quality reports – contents and examples

9.34.   *Characteristics.* Producer-oriented quality reports aim at identifying strengths and weaknesses of the statistical process and lead to, or contain the definition of, quality improvement actions. Producer-oriented quality reports can be either motivated by internal interest or externally mandated. They can take the form of, for example, internal review, benchmarking (comparison with others) and audits. By their nature, producer-oriented quality reports are often produced for particular reasons, for example, to fulfill a specific external requirement or to deal with specific issues or problems.

9.35.   *Individual assessment reports for EU member States.*[85] An assessment is prepared annually by Eurostat for all EU member States based on their responses to a quality report, with the overall goal of achieving quality improvements. The assessment is structured according to the following quality dimensions: relevance, accuracy, timeliness and punctuality, accessibility and clarity, comparability and coherence, some of which are further subdivided. Under each of these dimensions, a set of items is listed along with the specification of their requirements. For example, under accuracy–coverage, the item "statistical threshold in value" should be below or equal to 1,000 euros in value and 1,000 kilograms in net mass. If an item is a legal requirement, it is evaluated according to a four-point rating scheme which ranges from 1 ("serious persistent infringement") to 4 ("compliance"). If an item refers to a recommendation, the assessment can be: A ("fully applied"), B ("partially applied") or C ("not applied"). Some items are not evaluated if they are not, or not yet, requirements.

9.36.   *Mission reports of international and regional organizations.* International or regional organizations can be requested by countries to conduct an assessment of the statistical programme in a particular area such as merchandise trade. Such requests have often the purpose of creating guidance on and the impetus to address institutional or general data compilation issues and will focus on the particular areas concerned. In other cases, assessments have been conducted as a part of technical assistance activities which aim at the overall application of the international recommendations for international merchandise trade statistics and accordingly focus on these concerns. As regards the United Nations Statistics Divisions, such assessments were always provided on the basis of the concepts and definitions for international merchandise trade statistics. The updated recommendations (IMTS 2010) provide a much better basis for such assessments than the previous recommendations, since, in contrast with the previous recommendations, the entire data compilation process is covered.

4.   Measuring data quality

9.37.   *Use of quality measures and indicators.* The measurement of the quality of any statistical data, including international merchandise trade statistics data, is not a simple task. Problems arise from the difficulties involved in quantifying the levels of individual quality dimensions and in aggregating the levels of all dimensions. Under these circumstances, deriving a single quantitative measure of quality is not possible. In the absence of such a single measure, countries are encouraged to use a system of quality measures and indicators (see IMTS 2010, para. 9.13).

9.38.   *Quality measures and indicators.* Quality measures directly reflect a particular aspect of quality. For example, the time lag from the end of the reference

85.   See European Commission and Eurostat, "United Kingdom: 2009 Individual assessment report—final version".

period to the release of international merchandise trade statistics is a direct quality measure. However, in practice, the calculation of quality measures can be difficult or costly. Instead, quality indicators may be used for the quality assessment. Quality indicators provide summarized quantitative or qualitative evidence of the quality of the data. They are generally defined with respect to some reference point and can assist in making different types of comparisons (ibid., paras. 9.14-9.15).

9.39.   *Methods and tools for measuring data quality*. Methods for measuring quality encompass documentation and reporting, the calculation of indicators, auditing procedures, self-assessment and questioning the users. The Eurostat "Handbook on data quality assessment methods and tools"[86] aims at facilitating a systematic implementation of data quality assessment in the European Statistical System. It presents the most important assessment methods: quality reports, quality indicators, measurement of process variables, user surveys, self-assessment and auditing, as well as the approaches of labelling and certification. The Handbook provides a concise description of the data quality assessment methods currently in use. Furthermore, it offers recommendations on how these methods and tools should be implemented and how they should reasonably be combined. The methods and tools presented in the handbook facilitate an assessment of statistical products, and statistics production processes, as well as the user perception of statistical products. Annex A of the handbook includes a background paper on the position of data quality assessment in the general framework of quality management and annex B presents examples of good practice in greater detail. The Handbook is primarily targeted towards quality managers.

9.40.   *Information on quality measurement:* United Kingdom of Great Britain and Northern Ireland. The following metadata on quality are provided to users of United Kingdom trade statistics: (a) quality standards against which the quality is measured and (b) Assessment (including self-assessment) against some of these quality standards, including (i) quantitative assessment against indicators for the six output quality dimensions, (ii) qualitative assessment of own methods and adherence to EU legislation and (iii) channels for and results of post-publication quality assurance.

C.   Reconciliation studies, cross-country comparability and bilateral data exchanges

9.41.   *Goals of bilateral reconciliation studies*. Often, it is assumed that exports of country A to country B should be equal to imports of country B from country A. This, however, is rarely the case. Reconciliation studies aim towards explaining these discrepancies between the bilateral imports and exports statistics of trading partners, i.e., by identifying conceptual and methodological differences in their respective types of data collection. However, even if both countries compile their data using the same methodological principles and international guidelines, their bilateral merchandise trade data will usually not match owing to multiple factors (see para. 9.46 below). The purpose of a reconciliation study may be limited to the identification of major differences in the statistics of two countries and the results will help each partner to better understand the bilateral trade flows. However, the reconciliation process may reveal systematic measurement errors and gaps, which should be corrected. Therefore, the goal of reconciliations studies might include assessing the causes of differences and making adjustments to various data components. Another, even more ambitious objective could be the harmonization of the conceptual framework of the two sets of statistics, which could lead to the revision of certain procedures and definitions and, in some cases, could suggest the use of alternative data sources, all of which is expected

86.   Manfred Ehling and Thomas Körner, eds. (Wiesbaden, Germany, European Commission, 2007)

to improve the overall quality of foreign trade data. At the policy level, a reconciliation exercise will yield a common perception of the facts and can thus facilitate the development of bilateral economic negotiations and international cooperation.

9.42.   *Limitations of the reconciled data.* Reconciliation studies might entail the creation of a reconciled data set. However, the reconciled data do not reflect any changes in the officially published trade figures of either partner country. Reconciliation adjustments normally include a series of estimates, which are not sufficiently precise to permit modifications to officially published data. For example, many countries' import data are valued on a CIF-type basis, that is, including insurance and freight charges, which must be removed during reconciliation, since the partner country's exports are usually valued on an FOB-type basis; however, estimates of insurance and freight charges are usually derived indirectly and do not necessarily reflect their true amount.

9.43.   *Basic procedures for bilateral reconciliation studies.* In general, reconciliation may include the following activities: (a) setting the objectives for the project and reaching agreement on the basic procedures; (b) establishing a common conceptual framework for reconciliation purposes; (c) converting officially published data to the common framework; (d) examining the differences in data and methodology; (e) making necessary data adjustments to achieve mutually agreed sets of trade figures; and (f) formulation of conclusions of the reconciliation study. An individual study could be limited to the activities described in (a), (b) and (c) above. It is advised that a reconciliation study cover trade for at least a full year, and that a reconciliation table (which identifies all the additions and subtractions that need to be performed in order for the trade data of one partner to correspond to the trade data reported by the other) be prepared as one of the outputs.

9.44.   *Cooperation between trading partners.* The success of reconciliation is dependent on the full cooperation of trading partners from the very beginning and on clear identification of procedures to be followed at all stages of the process, from the initial exchange of the required information to the mutual agreement on the final results. The agencies conducting the reconciliation study should examine not only the various organizational aspects of the proposed study but also its legal implications (for example, in certain cases, an exchange of data at the level of transactions may involve the issue of confidentiality). At the beginning of a reconciliation exercise, both parties have to agree on which data should be used as the benchmark for a specific category of goods. For example, in the past, import data were normally used as a benchmark for the comparison of most commodities. Import data were, in general, considered to be of better quality than export data because imports are reported in sufficient detail to allow customs to apply duties, taxes or other regulatory controls. However, for certain commodities and in some countries, export data were viewed as being more accurate for the same reasons.

9.45.   *A common conceptual framework and conversion of data to that framework.* Establishing the common conceptual framework involves an exchange and comparison of methodologies and compiling practices, and adoption of the same definitions and classifications for use in the reconciliation study. Issues to be considered are, among others: what are the major conceptual differences; whether information is available on a country of origin/last known destination or on some other basis; whether there are significant differences in compilation procedures (such as suppression of confidential or low-value trade) which will affect bilateral comparability; and whether there are certain transactions (such as processing trade) for which streamlined reporting provisions exist that could affect comparability. The common framework serves as a practical working tool with which to facilitate comparison of data between the two countries: it does not

87.   The term "indirect trade" refers to the situation when exports of country A are sent to country B, from which the goods are re-exported to country C. The term "triangular trade" is usually used to refer to the case of trade within the European Union where goods are sold by a company in member State A to a company in member State B, which in turn sells them to a company in member State C, although the goods are physically moved only once, from A to C. In such cases, there is the risk that B will be recorded as partner country, or that B itself will report a trade transaction.

89.   The United Nations Statistics Division plans to establish a reference website for materials on the topic of reconciliation.

88.   Almost half of the countries that responded to a 2006 survey carried out by the United Nations Statistics Division indicated that they had conducted or were planning to conduct bilateral or multilateral reconciliation studies with their trading partners (see http://unstats.un.org/unsd/tradereport/introduction_MM.asp).

90.   See International Merchandise Trade Statistics: Compilers Manual (United Nations publication, Sales No. E.02.XVII.17), part I, annex D.4.

91.   See Department of Commerce and Office of the United States Trade Representative, United States of America, and Ministry of Commerce, People's Republic of China, "Report on the statistical discrepancy of merchandise trade between the United States and China", October 2009. For examples of additional research that has been conducted, see Zhi Wang, Mark Gehlhar and Shunli Yao, "Reconciling trade statistics from China, Hong Kong and their major trading partners: a mathematical programming approach", GTAP Technical Paper No. 27 (Weif Lafayette, Indiana, Center for Global Trade Analysis, Purdue University, September 2007).

replace official methodologies of the countries involved. The partners must also decide on such issues as the working currency for the study, and whether currency conversion should be carried out on a monthly or an annual basis (if exchange rates are fluctuating significantly, annual conversion could create additional discrepancies).

9.46.   *Reasons for differences in data.* Even where both partners fully comply with United Nations guidelines for trade statistics, there can be differences between partner data. In fact, some of the discrepancies are a direct result of following those guidelines. In order to identify reasons of a conceptual nature for discrepancies, the following areas should be reviewed: (a) coverage; (b) trade system applied; (c) time of recording; (d) interpretation and application of the commodity classification; (e) valuation; (f) partner country attribution (i.e., in the case of indirect trade or triangular trade);[87] (g) confidentiality; and (h) other sources of discrepancy. The trading partner attribution is considered, in terms of value, the most frequent and most important reason for asymmetries, such as in the case of trade between the United States and China (see below for details). Other common reasons for discrepancies in total trade and detailed trade level relate to the valuation of goods (imports valued on a CIF-type basis and exports valued on a FOB-type basis; treatment of taxes and duties, markups applied after export, currency conversion, etc.), the timing of recording, coverage (trade system, different treatments of trade in special categories of goods, thresholds, underreporting of transactions above threshold), classification and confidentiality. Some of these differences are based on conceptual factors; however, many are not. For a detailed discussion of these data items, please see annex IX.C.

9.47.   *Reconciliations studies: a few examples.* The conduct of a bilateral reconciliation study requires an agreement of the two partner countries which usually, would specify the responsible agency and the other involved national agencies, the purpose, the scope, the years covered, the methodology used and any other arrangements that are required for the conduct of the study, such as the sharing of data and information. Reconciliation studies are conducted by many countries[88] and a few examples are provided below:[89]

(a).   *The experience of Canada-Mexico-United States:* The reconciliation studies between Canada and Mexico, and between Mexico and the United States, allowed the sources of significant differences in the 1996 and 1997 official trade statistics to be identified. The studies have been useful to the three countries involved in evaluating their trade statistics and identifying areas for further improvement.[90]

(b).   *United States and China:* Both countries established a statistical working group to examine bilateral merchandise trade owing to the unusually large and growing statistical discrepancies in their respective officially published data. The working group examined the years 2000, 2004 and 2006, focusing on trade flows from China to the United States owing to the larger discrepancies in that direction. The distinction was made between trade moving directly from China to the United States, and trade moving indirectly through intermediary countries. The working group identified factors that explained the majority of the bilateral statistical discrepancies.[91]

(c).   *Sweden and Denmark:* asymmetry exchange project. The goal of this project was to reduce the asymmetries in the trade data of both countries. The available documentation provides useful information on how to conduct such a project (*e.g., it includes the draft agreement between Statistics Sweden and Statistics Denmark*) and illustrates the problems that arise from concerns over confidentiality, which is in itself a major contributor to asymmetries on the disaggregated commodity level.

The work on asymmetries at Statistics Sweden entailed examination of data at the enterprise level.[92]

(d). European Union: Asymmetries in the intra-European Union trade flows. Eurostat, together with the member States of the European Union, has been undertaking major efforts in examining asymmetries in the intra-EU trade flows. Reconciliation exercises are carried out with the aim of identifying the causes of asymmetry and to reconcile the mirror figures wherever possible.[93]

(e). Brazil. In Brazil, the statistical harmonization (*reconciliation*) of trade data has two objectives: (a) to improve the quality of statistical data for national purposes and (b) to submit to the trade negotiators figures that are accepted by both countries. For further details, see annex IX.D.

9.48.   *Cross-country comparability.* The issue of cross-country comparability, i.e., whether the data on exports of one country is comparable with the data on exports of other countries represents an important quality dimension and the main objective of international recommendations. Cross-country comparability is the basic working assumption when comparing data from two or more countries and depends on the extent to which the international concepts and definitions for international merchandise trade statistics are applied by countries, and on the impact of the various deviations on the data. The United Nations Statistics Division has conducted multiple studies in which countries were asked about their compliance with the international recommendations.[94] IMTS 2010 (para. 9.23 (a), recommends that countries provide in their metadata information on their practices and on any deviations from the international standards.

9.49.   *Bilateral data exchange: example of the United States and Canada.* As an outcome of bilateral reconciliation studies between the United States and Canada, both countries agreed to derive their exports statistics from the partner country's statistics on imports. The agreement was implemented January 1990, and each country consequently eliminated the requirement of filing export documents for goods destined to the other. Under the agreement to exchange data, the reporting burden on exporters is greatly reduced and data quality is improved. From the perspective of the United States, this eliminated undocumented shipments to Canada, increased the accuracy of the data, and increased inclusion of data in the correct statistical month. However, since the data exchange was implemented when both partners primarily used paper export declarations, the benefits may now be relatively less significant, as the capability of collecting export declarations electronically has improved.

9.50.   *Additional challenges.* Although in general they do not outweigh the benefits, there are additional challenges stemming from the data exchange between the United States and Canada. One such challenge is the increased response burden on importers, as they have to report additional data elements to meet the exporting partner's needs. When it is not possible to collect these additional data elements, one partner country or both may have a gap in data. For example, Canada does not collect containerization information on imports from the United States; hence, containerized value and shipping weights are excluded from United States data on exports to Canada. Further, the case of trade transiting one partner en route from the other to a third country has not been handled well through data exchange. This leads to possible errors in coverage and in attribution of country of destination. These and other problems have been identified and efforts are made to measure them and minimize their impact on statistics. A joint report prepared by the United States Census Bureau and Statistics Canada which discusses the effects of the data exchange has been made available by both agencies.

92.   See Establish an Asymmetry Exchange Project between Sweden and Denmark, Background Facts: Economic Statistics 2008: 10 (Stockholm, Statistics Sweden, 2008).

93.   See Eurostat, Quality Report on International Trade Statistics, 2010 ed., Eurostat Methodologies and Working Papers (Luxembourg, European Union, 2010), pp.26-27. Available from http://ec.europa.eu/eurostat/documents/3888793/5848021/KS-RA-10-026-EN.PDF/1d0590b5-03e5-48d1-a686-d906f393810c?version=1.0.

94.   The results are available from the UNSD website, at http://unstats.un.org/unsd/tradereport/introduction_MM.asp.

D.   Inter-agency collaboration on data quality

95.   See http://imts.wto.org/
     common_dataset_e.htm.

9.51.   *World Trade Organization Common Data Set.*[95] The Common Data Set (CDS) constitutes a joint effort by Eurostat, Organization for Economic Cooperation and Development (OECD), UNSD, UNCTAD and the World Trade Organization to reconcile their time series on merchandise trade statistics, using international standards as a benchmark. Each agency is in charge of supplying figures for a predefined set of reporting economies. Reconciliations, coordinated by the WTO, consist of scrutinizing significant differences between the agencies' data to determine the best value. In many instances, this results in finding an agreement on substitution of values, with the objective for each participating agency being to review and correct its own data. The CDS database, which gives access to statistics and documentation on both officially reported and reconciled series, covers annual total merchandise export and import values of over 200 economies, whose series are updated annually and presented back to the year 1995.[96]

96.   See para. 10.14 for an
     additional example on
     the harmonization of
     trade statistics within the
     Association of South East
     Asian Nations (ASEAN) region.

9.52.   *Cooperation on methodology, data compilation and dissemination.* The international organizations active in the area of merchandise trade statistics are part of the Task Force on International Merchandise Trade Statistics (TF-IMTS) in which issues and developments on methodology and databases, including quality issues and the use of SDMX, are discussed on a regular basis. Members of the Task Force regularly participate in the Expert-Group on International Merchandise Trade Statistics which assists UNSD in the update of the international recommendations and this Manual. OECD and UNSD implemented the coordinated collection of annual data which avoids duplication of efforts and ensures that both organizations use exactly the same data for OECD countries. Indeed, both organizations went much further: they agreed on processing standards for annual trade statistics and implemented a joint processing system. All international organizations have full access to the UNSD UN Comtrade database, which allows the use of exactly the same data by all organizations and fosters a continuing commitment by international organizations to ensuring that highest quality standards are followed and that the issues that arise are addressed.

Annex IX.A.

Statistical data validation system of Brazil (example for exports)

9.A.1.   The statistical validation system for Brazil's exports is applied in three different contexts: (a) at date of entry (through dialogue) before the export register (declaration) has been actually produced (preventive validation) (b) continuously, during the operations (involving export registers with significant values and other criteria) and (c) posteriori (post-validation), after the export operations have been completed.

1.   Preventive validation

9.A.2.   The ultimate goal of the system is to validate specific fields of the export record that are of statistical concern, in order to achieve the highest possible level of accuracy in Brazil's statistics of foreign trade. To reach this goal, the system sets parameters for FOB-type unit values (both in kilograms and in supplementary quantity units) of the Southern Common Market (MERCOSUR) Common Nomenclature (NCM) codes. These parameters are set using data for at least six months and a statistical model that: (a) takes into account the number of observations, (b) eliminates peak and bottom distortions, (c) establishes middle values (by kilogram and supplementary quantity unit), (d) establishes the standard deviation and maximum and minimum quantity thresholds (by kilogram and supplementary quantity unit) and (e) creates a table of parameters by commodity (NCM and HS code).

9.A.3.   The FOB-type value in United States dollars, the net weight in kilograms and the supplementary quantity are used to calculate the average value. In order to avert a slowing down of operations or the creation of difficulties for the exporter, there is a tolerance for minimum and maximum values of one decimal (-90 per cent and +900 per cent). If the operation is within these margins, the exporter is informed that there may be an error, but the operation is not stopped. Outside these margins, however, the export record is forwarded (centralized) for analysis to the appropriate department in the Secretariat of Foreign Trade (SECEX). The Secretariat can communicate through the system with the exporter, who then needs to ratify or justify the data presented in his Export Register.

9.A.4.   When the exporter enters data into Brazil's Integrated System of Foreign Trade (SISCOMEX), the system analyses and compares them to the middle value by commodity. This preventive validation stage leads to various possible scenarios, as illustrated in box A9.1.

9.A.5.   Most of the reasons for forwarding (centralizing) an export record for statistical analysis involve errors in the following information: (a) FOB value in United States dollars, (b) net weight (in kilograms), (c) supplementary quantity, (d) commodity code (NCM–HS) or, (e) currency unit or, (f) the INCOTERMS rule applied. The centralized review of export records constitutes approximately 1 per cent of 20,000 daily operations for exports. More than 99 per cent of these centralized records have typing errors.

Box IX.A.1

Detailed operation of SISCOMEX

Between the minimum and maximum parameters for the specific merchandise: operation pass through.

MINIMUM   MIDDLE   MAXIMUM

BLUE-PASS THROUGH
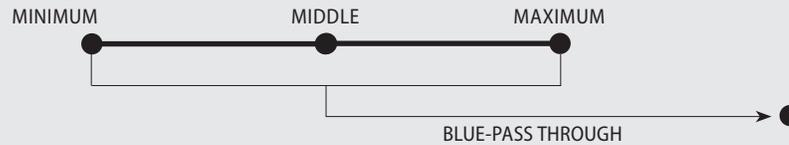
Outside the minimum and maximum parameters for the specific merchandise, BUT within the tolerance margin: the system informs the exporter about the possibility of error, allowing him to rectify or confirm the information. If he confirms it, the operation proceeds regularly and the export register is flagged for posterior analysis.
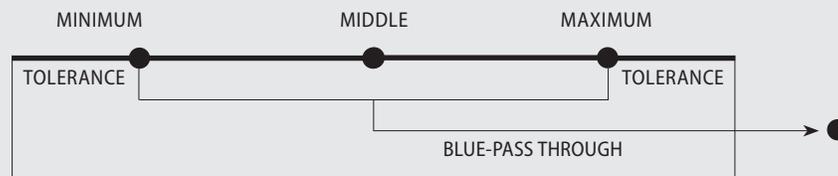
MINIMUM   MIDDLE   MAXIMUM

TOLERANCE   TOLERANCE

BLUE-PASS THROUGH

YELLOW = warns exporter at the moment of typing data in the system. Allows the operation to proceed and flags it for posterior analysis.

Outside the minimum and maximum parameters for the specific merchandise AND outside of the tolerance margin: the export register is centralized in the Secretariat of Foreign Trade (SECEX) for analysis within 24 hours. If it has errors, the exporter receives a message by system containing the instructions for rectifying them.

MINIMUM   MIDDLE   MAXIMUM

TOLERANCE   TOLERANCE

BLUE-PASS THROUGH

YELLOW = warns exporter at the moment of typing data in the system. Allows the operation to proceed and flags it for posterior analysis.
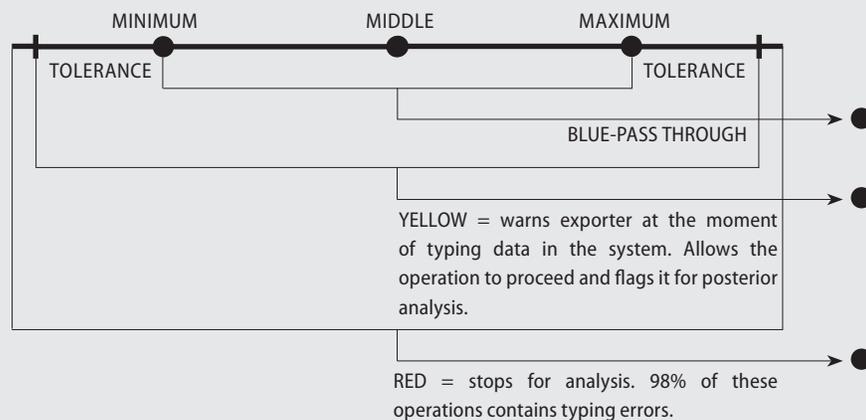
RED = stops for analysis. 98% of these operations contains typing errors.

The exporter may receive the following alert codes:

(a.)   M95 (inside tolerance – posterior analysis) or R95 (previous analysis): occurrence of low price related to quantity. Quantity may be higher than correct or value may be lower than correct;

(b.)   M96 (inside tolerance – posterior analysis) or R96 (previous analysis): occurrence of high price related to quantity. Quantity may be lower than correct or value may be higher than correct;

(c.)   M97 (inside tolerance – posterior analysis) or R97 (previous analysis): occurrence of low price related to net weight. Net weight may be higher than correct or value may be lower than correct;

(d.)   M98 (inside tolerance – posterior analysis) or R98 (previous analysis): occurrence of high price related to net weight. Net weight may be lower than correct or value may be higher than correct;

(e.)   M99 (posterior analysis only): operations with FOB value over one million dollars which receive check and confirmation of values.

Box IX.A.2

Operation of the centralized review of export records

The basic methodology is comparative. Most errors occur when the fields of value and quantity (net weight and supplsementary quantity) are filled in with the wrong shift of the decimal point, provided, in most cases, by the United States punctuation criteria adopted by the Central Bank of Brazil (decimal point, comma for separating thousands).

The following fields should be checked in sequence:

(a.)   Framework: the identification of the administrative procedures on exports, especially those with very low average price, such as operations on used material, contributes to the solution in some cases.

(b.)   Incoterms: the most used INCOTERMS rule in exports is free on board (FOB). When this is not the case, it can mean either a higher or a lower price. In any case, the system reports the value and unit price at the loading place.

(c.)   Value (place of shipment and/or operation): this problem may be due mostly to typing (decimal).

(d.)   Currency code: incorrect reporting can occur. For example, for an export to Italy, all values are in euros and the exporter used the dollar code.

(e.)   Classification of goods (NCM = MERCOSUR Common Nomenclature, composed of the HS six-digit codes plus two additional digits): some cases involve by the wrong classification of the product, i.e., all information is correct, but the NCM code was entered incorrectly. As the parameter table is directly related to the NCM, the analysis ends up being made for a product other than the one the exporter wishes to export.

(f.)   Net weight in kilograms: the field net weight in kilograms is responsible for most errors, caused by the misplacement of the decimal point. In some cases, the exporter repeats the same number as that for quantity, although sometimes it is not equal to the net weight in kilograms.

(g.)   Supplementary quantity: for most of the NCM commodities, this field does not require completion as the supplementary unit is kilograms. The error that occurs with some frequency is the same as that for net weight, i.e., a typing error caused by moving the decimal place or repetition of the same entry as that for net weight when the supplementary quantity is different.

2.   Continuous and post-validation

9.B.1.   Continuous validation is executed using management reports, which cover the main daily operations. It is based on the "significant value principle" and the use of comparative statistics.

9.B.2.   Post-validation is executed after the conclusion of the export operation (shipment), based on validation reports entailing, e.g.:

9.B.3.   Comparison between net weight and value;

9.B.4.   Checking of the relation between merchandise by country for past periods;

9.B.5.   Analysis of the export registers flagged by yellow and red occurrences.

Annex IX.B.

Automated System for Customs Data (ASYCUDA) data quality assurance, measurement and reporting: controls and reports

1.   Existence controls

9.A.1.   This type of controls checks whether the data element that has been declared as mandatory is really entered. A data element can be declared as mandatory by programming or through the configuration module. The configuration module allows the ASYCUDA user countries to adapt the data capture of any document to their specific requirements and circumstances (e.g., a data element could be declared as mandatory in country A and prohibited in country B).

2.   Data Format controls

9.A.2.   This type of controls verifies that the format of the entered data element corresponds to the format that has been declared during the implementation (e.g., the data element must be a numeric with three decimals, or a date format). ASYCUDA supports various data formats (or data types): numeric (with or without decimals), characters and date.

3.   Referential and validity controls

9.A.3.   This type of controls verifies whether the data element is correct according to the reference table to which it is related. This means that the data element must exist in the reference table and is valid for the respective time period (date of validity). A simple example is the list of (partner) countries, which also includes its validity.

9.A.4.   There are more than 40 reference tables on, for example (this list is not exhaustive): importers or exporters, declarants, countries, customs procedure codes, terms of delivery (INCOTERMS), places of loading/discharge, terms of payments, mode of transport, etc.

9.A.5.   The customs integrated tariff consists in a specific and complex reference table allowing the checking of the customs commodity code and other related elements (e.g., quantity units associated with a specific tariff).

4.   Consistency controls

9.A.6.   This validation ensures that:

(a). The use of several data elements is consistent, depending on the content of one or more control tables. This means that a specific data element must be valid not only per se (*as indicated in the above para.*) but also in combination with one data element controlled in another table (e.g., not only must the mode of transport at the border exist in the table of the modes of transport but it must also be authorized for the declared customs office of entry/exit);

(b). The existence of a specific data element depends on the value of the other data element (*e.g., the quantity unit "number of items" is not mandatory in all cases but if requested by the tariff commodity code then it becomes mandatory*).

5.   ASYCUDA statistical reports

9.A.7.   In addition to the checks explained above, which are mainly performed during data entry, ASYCUDA also provides a statistical reporting module. These reports are intended to provide a summary or overview in a specific time period; however, they can also be used for validation purposes. Box IX.B.1 provides an example of a summary report by commodity.

Box IX.B.1

Summary report by commodity

Commodity code	Import			Export		
	Quantity (in kilograms)	CIF value (national currency)	Number of statistical units	Quantity (in kilograms)	FOB value (national currency)	Number of statistical units

Annex IX.C.

Data reconciliation: reasons for differences and further guidance

9.C.1. *Coverage.* Specific goods or types of transactions may be defined differently by trading partners, and may be included in the trade statistics by one partner but excluded by the other (e.g., leased goods, military goods, goods imported or exported for or after repair). Further, countries usually have different provisions for the treatment of low-value shipments, which may be excluded from statistics, reported in less detail, or estimated instead of being compiled.

9.C.2. *Trade systems.* If one partner uses the special system of trade and the other uses the general system, goods moving between premises for customs warehousing and customs free zones of those countries will not be accounted for by the country using the special system. Where both countries use the special system of trade, goods moving between customs free zones will not be recorded by either country and will not affect their export and import totals. To facilitate reconciliation, countries should clearly define their statistical territories, specifying any particular inclusions and exclusions. For example, Puerto Rico and the United States Virgin Islands are part of the statistical territory of the United States; therefore, exports to/imports from those territories should be recorded as trade with the United States in any reconciliation study involving the United States.

9.C.3. *Timing of recording.* Many factors contribute to timing differences, including the time needed for the transportation from the exporting to the importing country, the time needed for the completion of the customs procedures and warehousing operations. Further, the filing and recording of various documents at different stages and their statistical recording might follow different practices. For example, in one country, a trade flow may be attributed to the time period in which the invoice is received in the importing country, while another country may attribute the transaction to the time period in which the amounts owed to the customs administration are paid. Also, the deadline for reporting statistical information, the use of summary reporting, the definition of the reporting period and the procedures for handling late or incorrect records might be different in countries and therefore affect the time of recording. Such timing differences can be significant, particularly in the case of monthly data or where the level of trade in a given commodity has changed extensively (so that effects of timing differences between the study period and the preceding and succeeding periods are not equivalent).

9.C.4. *Interpretation and application of the commodity classification.* All trading countries have adopted the Harmonized System (HS) for commodity classification. Despite that significant achievement, there are differences in interpreting and applying the HS, both within the same country and among different countries. In order to reconcile trade in particular commodities, an analysis of uniformity of the HS application might be required. Differences and errors in classification normally affect only the distribution of the goods among different classes; however, they may sometimes lead to differences in total trade, which would be the case, for example, if different recording thresholds were applied to different commodities.

9.C.5. *Valuation.* IMTS 2010 (para 4.4) recommends that countries adopt the World Trade Organization Agreement on Customs Valuation as the basis for valuation of their international merchandise trade for statistical purposes (whether the country is a World Trade Organization member or not) for both imports and exports. Further, it is recommended that imports be recorded on a CIF-type basis and exports on a FOB-type basis. Therefore, CIF imports would exceed the counterpart export value by the value of international insurance and freight charges even if there were no other sources of difference. Where such charges have been included, a negative adjustment is made

a. See Legal Instruments Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, done at Marrakesh on 15 April 1994 (GATT secretariat publication, Sales No. GATT/1994-7).

to remove them, for comparison with FOB export values. If the actual freight charges are not known, estimates may be derived from unit value differences or through other approaches, such as the application of general CIF/FOB ratios. The determination of the customs value of imported goods is regulated by the WTO Agreement on Customs Valuation.

9.C.6.   However, there can be a multiplicity of other reasons for valuation differences, including undetected under and over-declaration of values, different value estimates for transactions without valuation such as charitable/relief shipments, barter trade or related party transactions and different views on the exclusion or inclusions of services. In all of these cases, compensating adjustments are needed if the differences are significant.

9.C.7.   *Currency conversion.* Currency conversion practices for goods invoiced in foreign currencies may also cause discrepancies between one country's import value and the counterpart export value, particularly when the exchange rate between the partners fluctuates rapidly. Further, the procedures used in the reconciliation for expressing both sets of statistics in the same currency for comparison purposes can also create discrepancies.

9.C.8.   *Partner-country attribution.* It is recommended that imports be attributed to the country of origin and exports to the country of last known destination (see IMTS 2010, para. 6.25). This partner-country attribution can explain many differences between the statistics of trading partners in cases when goods move from the country of origin to the country of destination through third countries. For example, in the case where goods are produced in country A, sold and shipped to country B and afterwards resold and dispatched to country C, the trade statistics of country B will show exports to country C, but the statistics of country C will not attribute its imports to country B: they will indicate that goods were imported from country A.

9.C.9.   *Different application of rules of origin.* If countries have different rules of origin, the trade flows will also be recorded differently. Consider the following example. Goods are produced in country C, imported by country A, undergo certain processing and are exported to country B. If countries A and B have different rules of origin, the processed goods dispatched from country A to country B may be considered (in country A) as a domestic export to country B but as an import from country C in country B (if the rules of origin adopted by country B do not recognize the processing in country A as origin-conferring). This example illustrates the necessity of developing harmonized rules of origin.

9.C.10.   *Partner attribution in the case of re-exports and re-imports.* Consider the case of goods originating in country A, exported, and returning to country A from country B without having been substantially transformed while abroad. Some countries record such goods as re-imports from country B, while others treat them as imports from themselves, following the recording of country of origin. In the latter case, there would be a discrepancy between exports of country B to country A, which would include those goods, and imports of country A from country B, which would not.

9.C.11.   *"Through trade" operations.* With the lowering of tariffs, "through trade" operations are increasingly taking place. Consider the following example. Goods are exported from country A to country B but are shipped through country C. Instead of being declared in transit, they are declared for home use in country C and then re-exported to country B. If the exporter in country A has properly reported the country of final destination (country B), such a practice will create a discrepancy between the export data of country A and the import data of country C, as well as between the export data of country C and the import data of country B. As more and more tariffs are reduced or eliminated, this reason for discrepancy in trade statistics is likely to increase.

9.C.12.   *Unknown final destination.* In some cases, the country of destination may not be known at the time of export. For some products shipped by vessel, such as petroleum and some chemicals, the ship may sail before the goods are sold and be directed to the final destination en route. In reconciliation, those kinds of transactions should be identified and attributed to the appropriate partner country.

9.C.13.   *Confidentiality.* The application of confidentiality on partner or commodity level automatically generates reporting asymmetries, which should be taken into account during reconciliation studies.

9.C.14.   *Other sources of discrepancy.* A considerable discrepancy between import and export statistics may arise if the information on imports is more complete than the information on exports. Differences in data-collection procedures may also contribute noticeably to data divergences (e.g., export statistics compiled using sampling techniques might be quite different from imports data derived from customs records). Reporting errors may in some instances seriously affect the comparability of data sets as well. Another source of discrepancies can be simplified reporting, under which not all data items are provided.

9.C.15.   *Adjustments to data to achieve mutually agreed sets of trade figures.* The preparation of analytical tabulations comparing import and export data for various groupings and at various levels of details helps to identify and assess the disparities. Once the analytical tables are completed, a series of adjustments may be applied (usually either based on supplementary information or derived by a series of estimates) to align data as closely as possible.[b] Depending on the reconciliation methodology and the procedures agreed upon, adjustments are applied at either the high-level aggregates or detailed product level. Adjustments at the high-level aggregates level include adjustments for differences in commodity coverage and trade system definition, varying procedures of valuation, insurance and freight, and timing; and under-reporting, country definition, indirect trade, re-exports and re-imports. In some cases, it may be necessary to investigate discrepancies in transaction-level data and make use of information supplied by declarants, trade associations and other government agencies or obtained by means of special investigations. Classification adjustments may also be applicable, especially if items shown in chapters 98 and 99 of the HS are not included in the total trade. In such cases, they should be distributed at least to the chapter level and investigated for possible reclassification and inclusion. There may be cases where discrepancies are identified but remain unresolved because of the difficulty of establishing which data are more reliable for adjustment purposes without expending unreasonable amounts of time and resources. Depending upon the information available, it may or may not be possible to estimate the effect of every identified difference and agree on an appropriate adjustment. Difficulties in the preparation of adjustments may lead to further reconciliation activities, such as analysis of the differences at a more detailed commodity level and calculation of the residual adjustment (referred to as "other") by subtracting the adjusted export value from the agreed upon adjusted import value.

9.C.16.   *Conclusions of the reconciliation study.* The trading partners must decide at what point to consider the study completed. They must also decide on how to present the results: whether to compute a "reconciled" value for each direction of trade or simply to present an explanation of why the two data sets differ. The reconciliation study may conclude with a summary statement of its major results and a set of annexes detailing specific findings. It is unlikely that all significant discrepancies can be resolved. Although reconciliations between partner countries are usually unique for each set of countries, common kinds of major adjustments have typically been applied to arrive at reconciled trade flows.

b.   There are three broad categories of adjustment: (a) systematic adjustments affecting all products in a detectable way, e.g., inclusion of the cost of freight and insurance, and differences in timing; (b) known adjustments, which may affect only selected commodities in cases where countries record imports of special commodities separately and do not include them in regular official statistics (e.g., for trade in military aircraft); and (c) irregular adjustments, that is, adjustments that may change over time (e.g., coding and processing errors).

Annex IX.D.

Conduct of reconciliation studies: the experience of Brazil

9.D.1.   Reasons for divergences in bilateral trade. In the experience of Brazil, divergences in bilateral trade statistics can be caused by differences in coverage, different methods for the treatment of certain goods (e.g., military goods, ship's stores and confidential data), value increases in intermediary countries, differences in the classification of goods, time lags in reporting, differences in valuation, including CIF/FOB differences, currency conversion, methods of partner-country attribution, and of trade through third country intermediaries. Although such divergences may be substantially reduced by the adoption of the concepts and definitions recommended in IMTS 2010, there are also divergences that may originate from variations in data sources, reporting errors, errors in data collection or in the processing and forwarding of results, the use of fraudulent documents or the inability of traders to furnish accurate information. Therefore, a certain amount of non-comparability will remain.

9.D.2.   Establishment of a working group on statistics harmonization. Brazil has participated in several statistical harmonization groups within the framework of bilateral trade and investment negotiations, with the aim of improving the quality of statistical data for national purposes and to provide negotiators with trade figures that are accepted by both countries. In particular, statistical harmonization aims to discover the causes of the numerous discrepancies and to recommend corrective actions through the application of homogeneous and more compatible methodologies. When trade negotiations start, Brazil proposes the establishment of a working group on statistics harmonization, composed of specialists responsible for statistical production in both countries, in order to enable the exchange of data and the analysis of existing divergences. In some cases, Brazil also proposes the exchange of information on methods of data quality control and dissemination

9.D.3.   *Meetings and tasks of the working group on statistics harmonization.* Normally, more than two meetings are necessary. In the first meeting, the experts from both countries establish the work methodology and define the data to be exchanged for further bilateral analysis. This meeting is also useful for the purpose of establishing agreement on the layout of the files,[a] the agenda and the schedule for exchanging data, so that statistical harmonization between the two countries may be achieved or so that the causes of differences may be identified and solutions proposed to reduce them. In the second meeting, the focus is on the analysis of the flows that present the biggest divergences. In the third meeting, the study concludes with the analysis of the other flows and the preparation of a document by both countries containing their conclusions.

9.D.4.   *Data exchange.* Initially, data are exchanged for the previous three years and the available months of the current year. Later, the analysis is complemented by the remaining monthly data at the greatest possible level of detail. To facilitate the exchange of data, the Secretariat the Ministry of Development, Industry and Foreign Trade (MDIC/SECEX) creates mechanisms for the electronic transfer of data in American Standard Code for Information Interchange (ASCII) format according to an agreed layout through the File Transfer Protocol (FTP), granting access to the representatives of the partner country to upload and download files. After the initial exchange of files, each month's data are exchanged by the twentieth day of the following month.

9.D.5.   *Characteristics of the work of the working groups on statistic harmonization.* The work of the working group on statistic harmonization may be characterized as follows:

a.   The files always include the following variables: Reporting country, trade flow (exports or imports), reference year, reference month, partner country (last known country of destination for exports, country of origin for imports), country of consignment (for imports only), commodity code (HS at the six- or eight-digit level), supplementary quantity, supplementary quantity unit measurement code, net weight (in kilograms), FOB value (in United States dollars), insurance (in United States dollars, only for imports) and freight (in United States dollars, only for imports).

(a). Confidential data are not exchanged. The data exchanged are used only for the purposes of the working group on statistic harmonization and are not transferred to other entities or government agencies. Further publication of these data requires the prior written consent of the other party and an appropriate reference in the text of the publication;

(b). The parties exchange information on the methodology for processing adopted by each country. The statistical reconciliation demands the adoption of the same methodologies for the generation of data, with the exclusion of those aspects that, for operational reasons, cannot be adopted by the parties;

(c). If both parties adopt IMTS 2010, the concepts and definitions that may have more than one interpretation are prioritized for the bilateral analysis of data divergence. Indeed, some of the discrepancies result from different uses of these recommendations, based on different interpretations.

9.D.6.   Steps to be taken during reconciliation. To identify data differences and their causes, the working group on statistic harmonization usually follows the steps below:

Step 1 - An initial comparison is made at the two-digit (chapter) level of HS, considering always more than one year.

Step 2 - After identifying the differences at the 2-digit level, the analysis is expanded to a greater level of detail (the four-, six-, or, if possible, eight-digit level), even if there are differences in the tables of commodity codes.

Step 3 - The working group then checks to determine whether the various differences within the same positions at the four-digit or six-digit levels compensate each other, in which case the problem would lie with the different classification of goods for the same group of products. Further, the working group checks to determine whether differences in tariffs may induce companies to classify products in codes that represent the payment of lower duties.

Step 4 - The working group also checks to determine whether differences compensate each other across years and months. In that case, the problem is the time of registration, mainly on imports under the special trade system. Many factors may contribute to differences in time of recording, including the characteristics of the products traded, time spent at port of entry, distance between countries and type of transport, as well as different administrative and customs procedures (see chap. XII for further details). The working group evaluates the distance between the two countries, the predominant type of product and the more frequently used type of transport. Averages of differences of about 4 per cent are considered normal.

Step 5 - The working group examines the persistent divergences to determine whether they are in terms of values or in terms of quantities. If the quantities are similar, there may be a problem of undervaluation or overvaluation of goods which then becomes a fiscal problem. In these specific cases, the working group checks the original records of each country relating to the same operation. It is highly important that the technicians who are undertaking the harmonization have unrestricted access to all the data of the operations of export and import in sufficient detail to enable them to make a clear identification of the cause of divergence. If the values are similar, but not the quantities, there may be differences related to the unit of statistical quantity adopted by each country. The use of different units for the same product generates significant distortions and is in most cases, an important reason for differences of quantities.

This arises frequently in the case of errors in the classification of the same product.

Step 6 - Other factors to be considered by the working group are the effects of indirect trade and the criteria adopted for the registration of the partner country. In general, the values and quantities of imports where the partner country is not the country of origin must be excluded from the analysis. For instance, when the partner country is a member of the European Union, the "Rotterdam effect" may cause significant divergences.

Step 7 - When the data that are compared do not have the same valuation, the working group checks the characteristics of the goods sold and the average cost of freight and insurance. Those factors mean, in some cases, differences of over 100 per cent in the case of primary products (soybeans, iron ore, etc.). In average, the costs of freight and insurance, representing the difference between FOB and CIF of industrialized products, is between 8 and 10 per cent of the cost of goods. To conciliate them, it is necessary that both countries make available import and export data on an FOB basis, at the finest level of detail possible. In Brazil, the totality of foreign trade statistic is valued on an FOB basis.

9.D.7.   There are other sources of divergences, such as coverage, trade system and method of currency conversion, which must be examined according to IMTS 2010. In this matter, special attention is given to transactions in products like energy, on-board consumption, airplanes, ships, etc., or to the case where countries have special customs regimes in their territory.

9.D.8.   The most advanced working group study resulted in significant benefits in terms of the quality of statistics produced in both countries. Some suggestions for correction are implemented immediately by the authorities entrusted with statistical production, e.g., regarding issues related to coverage and valuation. Other issues are of a fiscal nature—for example, differences in goods classification and under-invoicing— and are not caused by methodological differences. In those cases, reports are sent to customs agencies identifying all problems found for each item in the customs nomenclature of the two countries, so that they can take appropriate action.

9.D.9.   After the implementation of corrective measures, the data exchange and the statistical monitoring of bilateral trade are continued.

Chapter X
Data compilation in a customs union

10.1.   Introduction. The present chapter describes briefly the main types of existing customs unions, concentrating on the implications for trade data collection and compilation. Practices in organizing data collection in a customs union are discussed and attention is given to the cooperation of the member States of customs unions in facilitating the timely compilation and dissemination of comparable data on intra-union and extra-union trade. Further possibilities of multi-country data exchanges are discussed. This chapter is linked, in particular, to chapter VII, which discusses compilation of data from different sources, as well as to chapter IX, section C, which contains information regarding reconciliation studies, cross-country comparability and bilateral data exchanges.

A.   Main types of customs unions and their implications for trade data compilers

1.   European Union: custom unions as a single market

10.2.   *From a tariff union to a single market.* The present European Union started in 1968 as a tariff union which abolished all customs duties on trade between its member States. The new export opportunities are credited with giving a boost to the economies of member States. Between 1958 and 1972, intra-European Community trade increased by a factor of nine, leading to market optimism and investment growth in the Community. However, free circulation of goods within the Community was still not a reality. Numerous customs border formalities were in existence. Before 1993, all trucks were still stopped at the internal Community borders for clearance and inspection.

10.3.   *Single market.* The European Union formally became a single market on 1 January 1993, when the physical frontiers and almost all customs checks at the internal borders were removed for the free movement of goods between member States. However, the abolishment of the physical barriers for the free movement of goods (and persons) is only one aspect of the establishment of a single market. Technical barriers, such as different product standards, etc, and barriers related to taxation need to be addressed in order for a single market for goods and services to be established. The single market of the European Union aims to establish and ensure the four basic freedoms: free circulation of goods, persons, services and capital in a frontier-free internal market.[97]

97.   For more information, please see Pascal Fontaine, Europe in 12 Lessons, October 2006, (Luxembourg, European Union, 2010), chap. 6, entitled "The Single Market". Available from http://europa.eu/abc/12lessons/index_en.htm.

Box X.1

Definition of customs union, free trade zone and common market[a]

A customs (or tariff) union is a trade agreement by which a group of countries charges a common set of tariffs to the rest of the world while granting free trade among themselves. It is a partial form of economic integration which constitutes an intermediate step between free-trade zones (which allow mutual free trade but lack a common tariff system) and common (or single) markets (which, in addition to the common tariffs, also allow free movement of resources such as capital and labour between member countries). A free-trade zone with common tariffs is a customs union. By virtue of the definition, a country cannot be a member of two customs unions. Some trade agreements might be referred to as a customs union without complying with the above definition.

a. See http://www.britannica. com/.

Box X.2

The WCO definition of customs union[a]

Customs union: Entity forming a Customs territory replacing two or more territories and having in its ultimate state the following characteristics:

• a common Customs tariff and a common or harmonized Customs legislation for the application of that tariff;

• the absence of any Customs duties and charges having equivalent effect in trade between the countries forming the Customs Union in products originating entirely in those countries or in products of other countries in respect of which import formalities have been complied with and Customs duties and charges having equivalent effect have been levied or guaranteed and if they have not benefited from a total or partial drawback of such duties and charges;

• the elimination of restrictive regulations of commerce within the Customs Union.

a. See World Customs Organization, "Glossary of international customs terms", (Brussels, October 2011).

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98. It is necessary to make distinction between Intrastat and intra-EU trade statistics. Intrastat refers to a data-collection system covering movements of Union goods between member States if such movements are not declared on the customs declaration. Intra-EU trade statistics merge information from Intrastat declarations, customs declarations and additional sources for specific movements and non-reported trade (estimation).

10.4.   *Need for new data sources.* The disappearance of customs records, a comprehensive and very closely controlled source of information, made it necessary to implement new fiscal, statistical and other systems to control or document goods crossing internal borders. This led also to the creation of Intrastat[98] - a specific data-collection system for intra-EU trade statistics.

10.5.   *Characteristics of Intrastat.* From the outset, the main characteristics of the Intrastat system have been:

(a). Direct collection of information from consignees and consignors of goods, who have to send the relevant statistical authority a summary statement of transactions for each month;

(b). A close link with the value added tax (*VAT*) system relating to intra-EU trade; in particular, the definition of providers of statistical information, the reference period and the value in line with the VAT system allow verification of the completeness of the data collected and the making of adjustments for non-reported trade;

(c). A maximum reduction of the workload of businesses by means of a system of exemption or simplification thresholds.

10.6.   *Intrastat survey and the link with the VAT system.* Intrastat is not the same as a typical business survey in which data from a small fraction of the population of enterprises are collected. It is similar to a system based on administrative data, which collects nearly all relevant observations. Only a minor part of trade (in terms of value) is not collected by Intrastat. Specifically, member States have implemented a threshold system which spares intra-EU traders from having report on their transactions or allows them to provide less detailed information on condition that their total trade value does not exceed a certain amount during the previous or present calendar year. To assure

sufficient coverage the exemption threshold is set such that each Member State has to guarantee that at least 97 per cent of the total value of a member State's dispatches and 95 per cent of the total value of its arrivals (which are measured based on VAT declarations) is directly collected. The remaining part is estimated on the basis of values declared for fiscal purposes. The exempted 3-5 per cent in value represents about 70-80 per cent of VAT registered traders in the European Union who trade between the member States.

10.7.   *About half a million companies in Europe are obliged to provide information on intra-EU goods transactions.* Each month, they have to declare, for statistical purposes, their goods deliveries to and from other member States. The merchandise has to be specified according to a commodity classification that contains about 10,000 codes (Combined Nomenclature), and for each goods item the value and quantity information have to be provided. For all trade operators involved, Intrastat meant a lighter workload compared with that of the previous system (before 1993, based on customs declaration), but the introduction of Intrastat made the statistical reporting burden apparent. Therefore, Intrastat has been subject to significant efforts to decrease the reporting burden for trade operators. A data set (eight data elements) that has been reduced, compared with customs data, is now required for EU purposes; the threshold system was expanded to exempt a larger number of enterprises; the number of nomenclature headings was reduced; and several simplified reporting measures were introduced. In addition, EU and its member States invested in the development of modern electronic data collection and validation tools which facilitate considerably the reporting required for Intrastat.

10.8.   *Institutional arrangements and data harmonization.* To ensure coordination in terms of content, time and methods, the EU statistics relating to the trading of goods between member States are based on EU legislation. However, according to the principle of subsidiarity, the Intrastat legislation allows member States to choose, to a large extent, their method of implementing Intrastat. The legislation is discussed with countries which have to provide their information to Eurostat according to requirements that are also referred to as the EU or community concept. The legislation also includes additional measures such as regular quality reporting. Compilation and all other relevant issues are regularly discussed by Eurostat and member States. Based on these discussions, Eurostat provides guidance on overall data compilation and specific compilation issues to its member States.

10.9.   *Community versus national concept.* In some instances, the EU concept diverges from the international recommendations. However, many member States simultaneously compile their data according to the so-called national concept which is usually more in line with the international recommendations. The principal differences between the EU concept and national concepts[99] entail: (a) breakdown by partner country: for arrivals, certain member States record the country of origin as the partner country, whereas the member State of consignment appears in the EU statistics relating to the same movements; (b) treatment of goods in transit: some member States do not record goods, which they consider to be "in transit" in their national figures. This involves, first, imports from non-member countries that are cleared in these member States before being dispatched to other member States and, second, goods from other member States that are immediately re-exported to non-member countries. These flows are included in the EU statistics under intra- or extra-EU trade, as appropriate. The phenomenon is sometimes referred to as the "Rotterdam effect";[100] and (c) general trade: some member States compile extra-EU trade statistics according to the general trade system, while the EU concept is based on special trade (relax definition).[101]

99.   The differences are described from a European Union perspective, using EU concepts as reference.

101.   For more information, see Eurostat, Quality Report on International Trade Statistics, 2010 ed., Eurostat Methodologies and Working Papers (Luxembourg, European Union, 2010).

100.   See International Trade Merchandise Statistics: Supplement to the Compilers Manual (United Nations Publication, Sales No. E. 08.XVII.9 and corrigendum), para. 6.41.

10.10.   *Challenges of merchandise trade statistics in the European Union.* Trade statisticians within the European Union aim to gain additional information from existing data collections without any additional burden on respondents, especially information relevant for the analyses of globalization. This is a challenge, given the policy, designed to minimize at the same time the burden on respondents. A major quality concern of the Intrastat system has been asymmetries in partner reporting. Regarding the compilation of extra-EU trade, a main challenge is the implementation of a modernized customs code which, among other things, would enable the implementation of centralized customs clearance (see below for more details).

2.   Customs unions of developing and transitional countries

10.11.   *Southern African Customs Union (SACU)* .[102] The members of customs union are Botswana, Lesotho, Namibia, South Africa and Swaziland. The SACU Secretariat is located in Windhoek, Namibia. SACU was established in 1910, making it the world's oldest customs union. Historically, SACU was administered by South Africa, through the 1910 and 1969 Agreements. The customs union collected duties on local production and customs duties on members' imports from outside SACU, and the resulting revenue was allocated to member countries in quarterly instalments utilizing a revenue-sharing formula. Negotiations to reform the 1969 Agreement started in 1994, and a new agreement was signed in 2002. The new arrangement was ratified by SACU Heads of State. The economic structure of the Union links the member States by a single tariff with no customs duties between them. The member States form a single customs territory in which tariffs and other barriers are eliminated on substantially all the trade between the member States for products originating in these countries. There is a common external tariff that applies to non-members of SACU.

10.12.   *Common Market for Eastern and Southern Africa (COMESA).* The objective of the cooperation in trade, customs and monetary affairs is to achieve a fully integrated, internationally competitive and unified single economic space within which goods, services, capital and labour are able to move freely across national frontiers.[103]COMESA has a strong statistical programme in support of these goals. The overall objectives of this programme are to harmonize and improve the production of statistics and to improve capacities at both national and regional levels to undertake trade policy impact assessments, with merchandise trade statistics as one of the focal areas. A main activity of COMESA in respect of trade statistics is the installation and support (including training) of the Eurotrace software, which has been installed in most member States and is instrumental in data harmonization. COMESA also adopted rules and regulations for compilation of international merchandise trade statistics in the COMESA region, which came into force in 2010 and aim at the uniform application of the IMTS concepts and definitions as contained in IMTS 2010.

10.13.   *Association of Southeast Asian Nations (ASEAN).* The member countries of ASEAN agreed to establish an ASEAN Community by 2015.[104] One of the pillars is the ASEAN Economic Community (AEC), which would entail the creation of a single market and production base with a free flow of goods. However, free flow of goods would require not only zero tariffs but the removal of non-tariff barriers as well. Another major component that would support the free flow of goods are trade facilitation measures such as integrating customs procedures, establishing the ASEAN single window, continuously enhancing the Common Effective Preferential Tariffs (CEPT) Rules of Origin including its Operational Certification Procedures, and harmonizing standards and conformance procedures.[105]

102. For more information on SACU, see http://www.sacu.int/index.php.

103. The following 19 countries are members of COMESA: Burundi, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia and Zimbabwe. For more information on the goals and activities of COMESA, see http://www.comesa.int/.

104. The following 10 countries are members of ASEAN: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam. For more information, see http://www.asean.org/about_ASEAN.html.

105. See ASEAN Economic Community Blueprint, (Jakarta, ASEAN Secretariat, 2008) p. 6.

10.14.   *ASEAN harmonization of trade statistics.*[106] The above requirements led to activities for the harmonization of trade statistics within ASEAN. An EU-ASEAN Statistical Capacity Building (EASCAB) Programme will implement two pilot projects in 2011 and 2012: on IMTS and Statistics on international trade in services/foreign direct investment statistics. The purpose of the IMTS pilot project is twofold: to help implement a reliable and timely IMTS data transmission, data production and data dissemination process at the ASEAN Secretariat, which can be taken over and continued by ASEANS; and second, to enable the active data handling and processing within the pilot project to help improve the quality of IMTS on the ASEAN level by identifying methodological and other quality-related issues currently still preventing the proper regional harmonization of data. As of October 2011, the technical assistance team had completed the data checking, loading and processing of all 10 countries and produced publications with results of the first and second quarter of 2010. It will finalize the publications of the results for the third and fourth quarter by end of 2011. It has also started processing the Q1 and Q2 2011 data sets. The data comprise figures of the ASEAN member States covering trade within the ASEAN region as well as with the rest of the world. The data has been processed according to the ASEAN Harmonized Tariff Nomenclature (AHTN) commodity classification up to the detail of eight digits to that extent that member States were able to provide such data. The model publication will finally evolve into a quarterly periodical on ASEAN trade statistics, to be published regularly by the ASEAN Secretariat. By 2012, the EASCAB technical assistance team shall hand over the IMTS production process to the ASEANstats (see "EASCAB Quarterly").

10.15.   *Customs Union of Belarus, Kazakhstan and the Russian Federation.* On 1 July 2011 Belarus, Kazakhstan and Russia lifted the customs controls existing between their countries as part of their customs union agreement. This means that information on trade existing between the member countries is no longer available from customs declarations and that additional sources of data have to be used (see box X.3 for details).

106. The ASEAN Framework of Cooperation in Statistics (AFCS) was adopted by the ASEAN heads of statistical offices meeting administrations at a meeting held on 30 December 2010. The overall objective of Framework of Cooperation is to strengthen the organizational framework and statistical capacity of ASEAN towards the establishment of an ASEAN community statistical system (ACSS) by 2015. The mission of the ACSS would be to provide relevant, timely and comparable ASEAN statistics in support of evidence-based policy and decision- making and enhance the statistical capacity of member States and ASEAN Secretariat. In strengthening ASEAN statistics, priority is given, inter alia, to development and harmonization in four areas of regional statistics: national accounts, international merchandise trade (IMT), relevant components of international trade in services (ITS) and foreign direct investment (FDI). See Strategic Plan for the Establishment of the ASEAN Community Statistical System (ACSS) 2011 – 2015.

Box X.3

Example of the Customs Union of Belarus, Kazakhstan and the Russian Federation

Belarus, Kazakhstan and the Russian Federation signed on 6 October 2007 a treaty establishment of a single customs territory and the formation of a Customs Union with the main objectives of ensuring free movement of goods in mutual trade, the creation of favourable conditions for foreign trade cooperation with third countries, and the further development of economic integration between the member States. The Customs Code of the Customs Union and the Common Customs Tariff came into force on 1 July 2010, and on 1 July 2011, after the abolition of all forms of customs control at internal borders, the Customs Union became fully functional. On 18 November 2011, member States signed the Declaration on Eurasian economic integration, which involves the launch of a single economic space beginning 1 January 2012, and the creation of a Eurasian Economic Union by 1 January 2015.

The plan of action for the formation of the Customs Union of Belarus, Kazakhstan and the Russian Federation has identified the organization and conduct of foreign trade and bilateral trade statistics of the Customs Union as a priority activity. The major objectives of the collection and dissemination of statistical data on foreign and mutual trade were identified as follows:

(a.)   To ensure full and accurate recording of data on trade between the member States and on trade with third countries;

(b.)   To analyse the structure and dynamics of trade flows;

(c.)   To provide to the Customs Union governing bodies and all stakeholders the information needed for decision-making in trade policy, the customs tariff and tariff regulation.

The agreements on the compilation of foreign trade statistics in general and on the compilation of bilateral trade statistics as well as on the data transfer to the newly created Centre for Statistics at the Customs Union Commission were adopted and are being implemented. The unified methodology of external trade statistics and statistics of bilateral trade between Customs Union members has been prepared and approved.

The emergence of the Customs Union of Belarus, Kazakhstan and the Russian Federation has set before its member States a complex task of collecting statistical data on international trade, as the customs records are no longer available for this purpose. In order to ensure collection of the necessary data, the member States agreed to designate an agency that will be responsible for collecting data on international trade and that should develop an action plan for the organization of statistical observation of the mutual trade. It is expected that, based on the latest available annual customs data, a set of potential respondents will be determined. In order to establish an effective control of data, a database will be established detailing trade by the commodity nomenclature codes, including average monthly quantity and value of exports and imports and the ranges of possible unit values for these commodities. Also, it is planned to disseminate as widely as possible among the potential respondents the information about the purposes and timing of the introduction of a new statistical survey, frequency of reporting, and methodology of data compilation.

There are plans to consider developing new (or revised) legislation to establish the responsibility of respondents for failure to submit the requested data or for the submission of incorrect data and, the responsibility of the tax authority to transfer (on a periodic basis) to the authorized statistical body the information necessary for the compilation of trade statistics. Availability of information from tax authorities will allow the responsible agency to organize its work more effectively, including the establishment and periodic update of the survey frame and the definition of the thresholds for exemption from reporting.

The member States, in particular, Belarus, have already accumulated some positive experience of conducting such surveys, which provides a good basis for future work. However, it should be noted that despite all the efforts undertaken, the statistics of bilateral trade between the member States of the Customs Union compiled by means of enterprise surveys, will not be of the same quality as trade statistics based on customs records. The data users will be properly informed about any quality issues so that they will be in a better position to adjust to the changes foreseen.

107. Consider, for example, the experience of the Cooperation Council for the Arab States of the Gulf (GCC) (see http://www.gcc-sg.org/eng/index.html): in 2010, six GCC countries agreed to postpone a decision on establishing a single customs union for a few more years. The Arab Customs Union was announced at the League of Arab States 2009 Arab Economic and Social Development Summit in Kuwait; the goal is to achieve a functional customs union by 2015 and an Arab common market by 2020.

10.16.   *Other customs and economic unions.* There are many other regional agreements that aim at the promotion of economic integration and cooperation among its members, frequently with the goal of creating a common market.[107] However, a customs union, which is a critical step towards forming a common market, entails the harmonization of external tariffs and the removal of all tariffs on internal trade. Also, all non-tariff barriers to the free movement of goods would need to be gradually removed. Because of the need to give up parts of national sovereignty, i.e., on tariff matters, trade agreements and product safety, and because of the many consequences and the required work programme, the establishment of new full customs unions is expected to only progress but slowly. Even in cases where countries enter a customs union, it might be the case that customs controls would remain in place for security and other reasons. Given this situation, countries might seek other forms of economic integration such as regional trade agreements relying on customs controls for their enforcement.

B. Current challenges and good practices in the organization of data compilation

10.17.   *Statistical work programme in preparation of a customs union.* The experiences of the European Union, SACU, COMESA and ASEAN indicate that the preparation for a customs union requires at least (a) the adoption of an uniform nomenclature of goods, (b) uniform rules of origin and (c) uniform customs valuation and uniform application of certain custom procedures to allow for the uniform application for external tariffs (which are by many countries applied at a more detailed level than the HS six-digit level). Also, the clarification of the customs territory (and, accordingly, the statistical territory) appears to be an essential requirement as all members need to be aware of what territories are included and not included in the customs union. The harmonization of other elements relevant for data compilation such as coverage, trade system, detailed customs procedures, partner-country attribution, quality assurance, etc., might depend on the requirements and use of the data compiled by countries. The establishment of a central statistical body which is in charge of the above tasks is important and represents good practice in respect of ensuring the provision of high-quality extra- and intra-trade statistics required for the effective functioning of a customs union.

10.18.   *Loss of customs information on intra-union trade.* The abolition of customs controls within a customs union means that no customs records will be available for the compilation of information on trade between members of a customs union. Possible data sources are administrative records which might be available from taxation (value added or sales tax) or from surveys of exporters and importers. In most countries, the overwhelming majority of exports are conducted by medium-sized or large enterprises which might be very limited in number and which may relatively easily be surveyed. The imports of certain goods might be equally concentrated, i.e., conducted by a few national importers, retailer or wholesale. However, an increasing proportion of imports might result from direct transactions between consumers and Internet retailers, which arrange for a direct shipment to the individual consumer. In such situation, the implementation of surveys might be more difficult and costly.

10.19.   *Challenges for the compilation of extra-union trade.* In the European Union, which is the most developed customs union, statistical data collection remains the responsibility of individual member States. Statistics on extra-union trade is therefore a combination of the national statistics of all member countries. In order for statistics of the members to be combined into reliable extra-union statistics, it is necessary that the national statistics fulfil a certain quality standard and be sufficiently harmonized, which can constitute a major challenge owing to the different country circumstances.

C. Longer-term strategies

10.20.   *Determination of long- term data requirements.* Countries within a customs union and the customs union itself need to decide what information on trade transactions between member countries are required (intra-union trade) and how best to fulfil the data requirements for extra-union trade in light of the need to facilitate trade. However, all decisions should be compatible with the international recommendations for merchandise trade statistics and allow countries to compile their trade statistics according to those recommendations.

10.21.   *Strategy and challenges regarding intra-union trade.* In the European Union, the requirements for intra-union trade statistics mirrored to a certain degree the requirements for extra-union trade which to some extent allows there to be exactly

the same statistics on the national level as existed before the customs union was established. There might be several problems with such approach. Customs records do not necessarily provide a benchmark for the information requirements, and non-customs sources can rarely provide the same set of information as customs records; further, and maybe most importantly, to require similar or the same information from non-customs sources as from customs records (i.e., in terms of commodity detail) puts a significant burden on the data compilation system and data providers for intra-union trade statistics. The development of an intra-union trade data compilation system needs to take into account not only the data requirements on the national and customs-union levels, the availability of data sources, the burden on respondents and the compilation system, but also international comparability.

10.22.   *Strategy and challenges regarding the compilation of extra-union trade statistics in the case of customs modernization.* Enterprises within a customs union might have facilities for production and distribution of their goods in several countries of the customs union. In order to facilitate their trade the European Union agreed to allow a centralized customs clearance. This means that the declaration of goods can take place in only one country, while the actual physical clearance can take place in any county of the customs union. Countries and statistical offices would need to rely on an exchange of customs declarations or information in order to obtain complete information regarding their trade with countries outside the custom union, unless additional information systems or sources were used (see paras. 10.25 and 10.26 below).

D.   Further possibilities in multi - country data exchanges

10.23.   *Possibilities of multi-country exchanges and use of mirror data.* A trading partner can agree not to compile export information but rather to replace it with the import information compiled by the other, as the information on imports is considered more reliable (see para.9.49 on United States of America-Canada data exchange). A country could also refrain entirely from compiling export and import information for a trading partner and adopt instead the partner's export and import data as representing those for its imports and exports with that trading partner, if this approach would provide the best available data. Many further variations of mutually beneficial data exchanges and use of mirror data could be developed and implemented. However, careful consideration needs to be given to whether such data exchanges constitute best or desirable practices, as the differences in mirror statistics are a major quality concern (see chap. IX, sect. C). One particular concern in the case of multi country data exchanges is the risk of double counting.

10.24.   *Data exchanges between members of a customs union.* In the case of a customs union, additional possibilities of multi - country data exchanges exist and could be used in the future. For example, the implementation of a centralized customs clearance for extra-union trade within the European Union requires the systematic data exchange between countries since all member States' customs administrations act as one administration within a single market. Regarding intra-union trade, it could be envisaged that the required information would be partially (i.e., for specific commodities such as oil and gas) or entirely compiled centrally on the union level and not on the country level.

10.25.   *Example of the European Union: single authorization (SA), single authorization for simplified procedures (SASP) and centralized customs clearance (CCC).* Single Authorization is an actually applied customs scheme, in which an authorization is granted by customs in one member State (the Supervising member State) permitting in all participating

member States the use of customs procedures with economic impact (CPEI).[108] Where an authorization covers the use of the simplified declaration procedure (SDP) or the local clearance procedure (LCP), it is referred to as an SASP. Such an authorization is a trade facilitation measure which allows an economic operator to conduct his customs business from the member State where he is established, irrespective of the member State in which the goods are located at the time of their release. It is expected that a wider use of the SASP will pave the way for the implementation of centralized customs clearance (CCC), a future standard procedure under the EU Customs Code. Centralized customs clearance will systematically allow economic operators to centralize and integrate accounting, logistics and distribution functions with consequent savings in administrative and transaction costs, thus providing a genuine simplification.[109]

10.26.   *Implications for trade statistics.* The single authorization for simplified procedure and the future centralized customs clearance make it necessary to redefine the terms "importing member State" and "exporting member State" for statistical purposes because the place where the customs declarations is available is disassociated from the location of the goods. Neither the supervising member State nor the participating member State are a priori a suitable territory for to allocating imports or export in statistics. Only the concepts of "member State of destination" for imports and "member State of actual export" enable the allocation of trade to be more closely connected to the economic impact on a member State, with a better use for balance-of-payments and national accounts.[110] Since the customs declaration as source of information on imports and exports is lodged in another member State, the compiling member State has to either collect information directly from economic operators (as is done actually under the single authorization for simplified procedure for national purposes) or receive information from the member State where the customs declaration was lodged (as is expected to be the case for centralized customs clearance when the mutual exchange of information has been implemented).

108. The term "customs procedure with economic impact" is defined in the EU Customs Code and is understood as applying to the following arrangements: customs warehousing, inward processing, processing under customs control, temporary importation and outward processing.

109. See the website of the European Commission (http://ec.europa.eu/taxation_customs/customs/procedural_aspects/general/centralised_clearance/index_en.htm).

110. See the report of the Project Group on Single Authorisation for Simplified Procedures (SASP), September 2007, pp. 9-10. Available from http://ec.europa.eu/taxation_customs/resources/documents/customs/policy_issues/conference_events/budapest2008/sasp_report.pdf

Chapter XI
Integrating trade and business statistics

11.1.   *Introduction.* The present chapter describes the benefits and challenges of integrating trade and business statistics in data compilation and data dissemination. Possible approaches to linking customs records to the national trade and business register are described and illustrated with examples. This chapter builds on the discussion of data sources and data compilation in the previous chapters. Although chapter XI is related to chapter VII, there are differences between the two, as chapter VII deals with the integration of data from different sources for the compilation of IMTS 2010, while this chapter aims at generating additional and better information, as well as efficiency gains in the compilation of economic statistics.

A.   Integrated approach to economic statistics

11.2.   *Background.* At its thirty-seventh session, held in March 2006, the United Nations Statistical Commission endorsed the concept of an integrated approach to economic statistics and recommended its operational use in national economic statistics programmes; and also recommended the establishment of a Friends of the Chair group to prepare a concept paper on the modalities of the integrated approach to economic statistics, including the feasibility of establishing a mechanism for improving coordination among international organizations and work groups engaged in economic statistics.[111]

11.3.   *Report of the Statistical Commission on its thirty-ninth session.* At its thirty-ninth session, held in February 2008, the Statistical Commission welcomed with appreciation the high quality and comprehensiveness of the report of the Friends of the Chair group on integrated economic statistics.[112] The Commission agreed with the conclusions of the Friends of the Chair (see box XI.1). The Commission further:

Affirmed the role of the System of National Accounts as the integrating framework in economic statistics, and recognized the importance of increasing the coherence of basic economic statistics for enhancing the quality and analytical value of both basic economic statistics and macroeconomic statistics;

Agreed with the need to collect and disseminate case studies and develop other practical knowledge material to share experiences and guide countries in the process of implementing an integrated approach in their national statistical systems;

Also agreed that there might be a need to develop a framework for establishing such guidelines, and recommended that such guidance on integration should focus, in particular, on practical aspects.

111.   See Official Records of the Economic and Social Council, 2006, Supplement No. 4 (E/2006/24), chap I, sect. C, decision 37/103. Available from http://unstats.un.org/unsd/statcom/sc2006.htm.

112.   Ibid., 2008, Supplement No. 4 (E/2008/24), chap. I, sect. B, decision 39/105.

Box XI.1

Conclusions of the report of the Friends of the Chair on Integrated Economic Statistics[a]

a.   See E/CN.3/2008/6.

The Friends of the Chair reached the following conclusions:

(a.)   The integration of economic statistics is about statistical reconciliation, that is, ensuring that the messages that statistics deliver are consistent and coherent. Reconciliation covers primary economic statistics and macroeconomic accounts, short-and long-term economic statistics, and national and international economic statistics. In essence, it involves dealing with conceptual, statistical production and institutional issues. Human resources issues (increasing the awareness of statistical agencies' staff concerning the impact of their work on the overall statistical system) and information technology issues (adopting common technology) also play a role and must be considered in that context;

(b.)   The integration of economic statistics is mainly driven by users' demand for data consistency and coherence;

(c.)   It is neither possible nor desirable to propagate one single and detailed implementing approach towards integrated economic statistics because national statistical systems are different. There are, however, some general guiding principles;

(d.)   Institutional arrangements at both the national and international levels are important for the management of integrated economic statistics and should be part of the corresponding reform programmes.

113. Countries increasingly realize the need for an integrated approach. For instance, the members of the Steering Group of the Regional Programme for the Improvement of Economic Statistics in Asia and the Pacific identified, among others, the issues of coordination (lack of clear division of work across different parts of the national statistical office and a need for a statistical legislature) and the statistical infrastructure (in particular quality assurance and business registers) as key constraints on the production of the core set of economic statistics. See the note by the Secretariat of the Economic and Social Commission for Asia and the Pacific (ESCAP) on the proposed regional programme for the improvement of economic statistics in Asia and the Pacific (E/ESCAP/CST(2)/5), available from http://www.unescap.org/stat/cst/2/CST2-5E.pdf. Decisions of the Committee on Statistics are contained in the report of the Committee on its second session (E/ESCAP/CST (2)/9), available from http://www.unescap.org/stat/cst/2/index.asp.

11.4.   *Integrated approach for international merchandise trade statistics.* Reconciliation of data from customs and non-customs sources, and reconciliation of results with related statistics, are important aspects of an integrated approach to foreign trade statistics. An integrated approach to foreign trade statistics means in particular that their compilation is, to the largest extent possible, integrated and harmonized with the compilation of all other basic economic and business statistics. Despite their long history of constituting a separate and distinct statistical domain and their reliance (in most countries) on custom records as their main data source, foreign trade statistics should be seen as an integral part of business statistics in respect of compilation and dissemination, in order that their full potential as a main source of information on globalization may be realized.

11.5.   *Need for linking business and trade statistics.* Linking and integrating trade and business statistics are important for data compilation and for analytical purposes. A major development in economics statistics in recent years has been the establishment and use of national statistical business registers (SBRs) which not only provide a framework and basis for the conduct of business surveys but also allow the linkage of information from different data sources, potentially leading to significant efficiency and quality gains in data collection. Further, the integration of data from different sources provides new information for many analytical purposes that would not otherwise exist. Accordingly, IMTS 2010 (paras. 11.5-11.6) encourages countries to integrate their trade register with their business register and to take steps towards establishing an integrated system of economics statistics for data compilation and analysis.[113]

11.6.   *Vision for the future of trade statistics.* At its forty-first session, the Statistical Commission adopted new international guidelines for merchandise trade statistics and statistics for international trade in services.[114] In February 2011, the Global Forum on Trade Statistics was organized as a follow-up to the 2010 Statistical Commission decisions on trade statistics. In this forum, trade statisticians and policy-makers agreed on a vision for the future of international trade statistics and called for the improvement of the relevance of international trade statistics by connecting trade information and integrating it with its economic, social, environmental and financial dimensions while minimizing the response burden, and to improve the statistical production process by better defining and organizing cooperation among national stakeholders. In a background note by UNSD, Eurostat and the World Trade Organization entitled "International trade information system in 2020" ("Vision 2020"), which was endorsed by major international organizations active in the area of trade statistics, concrete goals for the future of trade statistics were formulated, including the integration of statistics on the trade of goods and services and the integration of trade statistics with other business statistics that concern international aspects.[115]

11.7.   *Trade in value added.* There is very strong interest by policymakers and other user groups in analyzing the global value chains (broadly understood as the participation of multiple countries in the production of a single product and their respective contribution to the value added associated with a given product) and their impact on employment and economic development. There have been multiple case studies by researchers aiming to analyse the share of value added generated in individual countries during the production of single products.[116] It should be noted that these studies were usually focused on a very limited number of products, and the methodology of such calculations is still being debated. To provide broader measures of global value chains, another approach is being developed, one that attempts to construct and use global input-output tables in order to identify linkages between countries in the production processes and to derive various indicators relevant to the assessment of such linkages.[117] Some statistical offices are cooperating with researchers in such studies, mostly by making available to them data on trade and national input-output tables. Compilation of the new data items introduced in IMTS 2010 (chap. VIII) might further assist in the analysis of global value chains. However, the feasibility of the provision of any additional data relevant to the estimation of trade in value added on a routine basis has to be assessed by individual countries themselves.

B.   Benefits of integrating trade and business statistics

11.8.   *Potential benefits.* In general terms, the potential benefits of integrating trade and business statistics are additional and better information without major costs, as well as potential cost savings through efficiency gains. One very specific and important goal is to gain more information about traders and their specific characteristics, such as size, sector of economic activity, and level of concentration (see box XI.5). This will allow a deeper analysis of the impact of trade on national employment, production, value added and competitiveness in a globally integrated economy in which many countries frequently participate in the production of one single product.[118] Also, integrating trade and business statistics can allow more information to be obtained about specific trade transactions such as goods for processing and intra-firm trade, or provide information for other statistical domains such as transport statistics. Further, trade statistics can be part of a business microdata set or data warehouse allowing analysis for many different purposes. A further benefit is that the integration of trade and business statistics on the microlevel allows for checks of consistency between both sets of statistics.

114. See Official Records of the Economic and Social Council, 2010, Supplement No. 4 (E/2010/24), chap. I, sect. B, decisions 41/103 and 41/104.

115. See http://unstats.un.org/ unsd/trade/s_geneva2011/ outcome.htm.

116. See, for example, Hal R. Varian, "An iPod has global value: ask the (many) countries that make it", New York Times, 28 June 2007.

117. See the presentations at the Global Forum on Trade Statistics, Geneva, 2-4 February 2011. Available at http://unstats.un.org/ unsd/trade/s_geneva2011/ geneva2011.htm. Also relevant is the "Made in the World" initiative of the World Trade Organization (see http:// www.wto.org/english/res_e/ statis_e/miwi_e/miwi_e.htm).

118. See Eurostat, "International trade by enterprise characteristics", in "Statistics explained". http://epp. eurostat.ec.europa.eu/ statistics_explained/index. php/International_trade_by_ enterprise_characteristics.

11.9. *Potential costs*. The basic requirement for integrating trade and business statistics is a functioning business register and the entry of a uniform national business identification number on the customs declaration. The development and implementation of these two elements can take a long time and require major efforts. Also, business registers need to be maintained on an ongoing basis. Further, integrating different statistics requires significant efforts. Pursuing an integrated approach to trade and business statistics is likely to require major investments in existing statistics and strong efforts to overcome existing institutional arrangements and legal obstacles.

C. Integrating trade and business statistics in data compilation: possibilities and examples

11.10. *Principle requirements*. The core elements for the integration of trade and business statistics are (a) the availability of a functioning and up-to-date statistical business register (SBR), which assigns a unique identification number for all registered business entities (e.g., enterprises, establishments or local units) and which either contains or can be linked with relevant information on current activities of those entities, (b) the mandatory entry on the customs declaration of a unique identification number of the company on whose behalf the declaration is lodged and (c) the establishment of an electronic and automatic link between the identification number used for declaration purposes and the SBR identification number, if they are different. (For definitions of terminologies see Boxes XI.2 and XI.3.).

11.11. *The taxonomy of statistical outputs developed by Italy*. To provide business analysts and policymakers with information about key actors and drivers of

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Box XI.2

Common use of relevant terminology

Exporter/seller/consignor

The exporter is the institutional unit that sends goods to other countries; most often goods are sent for sale and therefore the exporter can also be referred to as the seller. The term "consignor" refers to the natural or legal person identified on the customs declaration that is sending the goods to another country. The terms "exporter", "seller" and "consignor" can, in general, be used synonymously.

Importer/ buyer/ consignee

The importer is the institutional unit that brings goods from abroad and frequently the importer is the buyer of the good. The term "consignee" refers to the natural or legal person identified on the customs declaration to which the goods are sent and who will physically receive the goods; the consignee, however, is not necessarily the importer or buyer;

Broker/ trader/ agent

These are institutional units that facilitate the sending of the goods to another country

Declarant

The term "declarant" refers to the natural or legal person that completes the customs declaration. The exporter or seller can complete the customs declaration himself but frequently specialized brokers/ traders/agents are in charge of completing the customs formalities, including the filling in of the custom declaration.

Box XI.3

Statistical units in a business register

For the purposes of the statistical production process, the principle statistical units are the enterprise, the establishment (local kind of activity) and the enterprise group:

Enterprise

An enterprise is the view of an institutional unit as a producer of goods and services. The term "enterprise" may refer to a corporation, a quasi-corporation (unincorporated enterprises belonging to households or government units), an non-profit institution (NPI) or an unincorporated enterprise (2008 SNA,[a] para. 5.1).

Establishment

An establishment is an enterprise, or part of an enterprise, that is situated in a single location and in which only a single productive activity is carried out or in which the principal productive activity accounts for most of the value added (2008 SNA, para. 5.2).

Enterprise group

Many enterprises operating within an economy are linked with other enterprises by complete or partial common ownership and a shared management structure to form an enterprise group (2008 SNA, para. A4.12);

a.   System of National Accounts 2008 (United Nations publication, Sales No. E.08.XVII.29)

competitiveness in global trade, a change from a product-based towards a business-oriented perspective in the compilation of trade statistics is required. The link between the list of trade operators and the business register provides the gateway for developing an array of new outputs. The National Statistical Institute of Italy (ISTAT) developed a taxonomy of statistical outputs which could be achieved from the linkage between trade and business statistics at the enterprise level. The core of this new statistical framework is the business register. Three different types of output, depending on the level of integration achieved, are differentiated:

(a). Type one: by reclassifying tradeflow by trade operators, where the trade operator is identified by the VAT code, it is possible, for instance, to derive trade statistics based on the number of trade operators by products and markets

(b). Type two: if trade figures are linked and integrated with the business register using the trade operator ID code matched to the company register ID code, statistics based on the business characteristics of exporting and importing enterprises can be derived.

(c). Type three: a full integration of trade and business statistics is achieved when the business register is further linked to and integrated with existing business surveys, administrative and fiscal data, and special surveys on globalization, inter alia, on multinationals and international sourcing. This allows the conduct of in-depth analyses of trade and business activity.

11.12. *New statistics and future developments in Italy.* ISTAT has experience in the production of new integrated trade statistics of types one and two. A large set of tables on trade operators and exporting and importing companies is published in the Foreign Trade Statistics Yearbook, providing information on the business structure of the exporting community. Further, ISTAT has developed new statistics on the spatial distribution of exports and on the contribution of multinational enterprises (MNEs) to foreign trade, and provided additional analyses on firms involved in international

trade. ISTAT is in the process of setting up an firm-level data warehouse that integrates a number of national surveys, data on foreign trade in goods, outward and inward multinational enterprise data and international databases, which will allow to effectively monitor the behaviour of firms deeply engaged in globalization. One challenge is that product-based and enterprise-based surveys are not fully harmonized. Also, there is a need for benchmarking and calibration with respect to different target populations. The intention is to make this warehouse accessible to researchers, taking into account confidentiality constraints. In the case of Italy, there are no additional costs for respondents.

11.13. *Linking trade and business statistics: experience of Brazil.* The SISCOMEX system of Brazil integrates the tracking and administrative, customs and exchange control of foreign trade. It is linked to all commercial information through the national code for companies (CNPJ) and the national code for individuals (CPF), which are mandatory fields for the declarations of exports and imports. When a company enters its code, SISCOMEX accesses automatically the database of companies registered at the Ministry of Finance, through which the code is confirmed and all commercial information is transferred (complete address, city, State, national code of economic activity, number of employees, etc.). The national code for companies consists of 14 digits: the first 8 digits represent the company group, the following 4 digits represent the enterprise (filial) and the last 2 digits are used to validate the complete number. This system allows the generation and dissemination of a wide array of special reports, such as on exports by company size, industry or State. Information deemed confidential is accessible only to the enterprise itself and authorized Government officials, while the public information is available on the Internet online system AL/ICEWE/B2 (http://aliceweb2.mdic.gov.br).

11.14. *OECD-Eurostat Trade by Enterprise Characteristics (TEC) database.* TEC is a joint OECD-Eurostat exercise in which data sets are compiled by linking microdata (data at trader level) with business registers. Under the guidance of the OECD Steering Group "Business Economic Statistics and Trade (BEST)", a first OECD set of linkage tables was sent out to participating non-EU-OECD member countries in June 2007 (see box XI.5 below for details). However, the tables currently provided by countries are frequently not fully comparable across countries and over time. Future goals are improved access to microdata, improved comparability, and inclusion of additional enterprise information. Regarding EU member States, the revision of EU trade statistics legislation makes the annual compilation of these statistics compulsory from reference years 2009 and 2010 onwards.

D. Ensuring the quality of the linked data sources and of the linked/integrated data

11.15. *Linking data sources: matching rates–experience of the United States of America.* The United States Census Bureau collects export data at the transaction level from two main sources: the Automated Export System (AES) and the Canada Data Exchange. Transaction-level data includes trade value, product codes, partner country, and the trader's unique identifier. The trader's unique identifier for AES records is the trader's Employer Identification Number (EIN), issued by the United States Internal Revenue Service, and for Canada's records, it is the trader's name. Transaction-level data are linked to enterprise characteristics in the Census Business Register using the trader's unique identifier and the EIN or company name in the Business Register. Enterprise characteristics include employment and industry classifications. While the AES linkages

are fairly straightforward, the records of Canada are associated with some complicated name matching routines and manual matching procedures. The quality of the linked data is very good as seen by the high match rates. The United States Census Bureau typically matches about 89 per cent of the export value to the Business Register, and AES match rates exceed 94 per cent, while Canada match rates are lower, close to 74 per cent. Import transaction-level data are also matched to enterprise characteristics in the Census Business Register. Import traders' unique identifiers are all reported as EINs, making these linkages also fairly straightforward. Initial match rates have been about 87 per cent, but should improve as matching routines are refined. Both export and import linkages are used to create the Exporter and Importer Databases and the Profile of US Importing and Exporting Companies, which is the publication that constitutes an offshoot of the databases. The first exporting company profile was published with 1987 data, with annual publications since 1996. The importing company profile was added to the publication beginning with 2009 data.

11.16.   *Linking of trade operator with the statistical unit: experience of the European Union*. The feasibility of linking external trade data with business registers has been tested in a series of pilot data-collection rounds. The objective of these studies was twofold: first, to investigate to what extent and under what conditions microdata linkages are possible; and second, to define new statistics which could be derived from the combined data set. At the conceptual level, the methodology can be simplified through presentation in the following framework: First, a linkage is established between trade operators and legal units in business registers. Second, the trade value of each trader, by product code and partner country, is combined with the main enterprise characteristics (economic activity and number of employees) retrieved from the business registers. Third, specific indicators are calculated. The quality of statistics based on data linkages depends to a very large extent on the matching rates between source data sets. The results of the pilot data collection rounds have shown that, in most cases, the matching rates were very high, particularly when measured in terms of trade value.[119]

11.17.   *Business registers – experience of the European Union*. Business statistics are usually derived from surveys of businesses. Business registers are normally used as a tool for the preparation and coordination of surveys. They detect and construct the active population of statistical units (enterprises, local units and enterprise groups) from administrative units (legal units) and include information on their identification, demographic, economic and stratification characteristics, the control and ownership of units, and links with other registers. Business registers are also used as a source of information for statistical analysis of the business population and its demography. Although business register data cover only a few key economic variables (e.g., employment and turnover), they can be used to obtain comprehensive data with detailed breakdowns across a full range of activities, in contrast with data collections such as those of structural business statistics which are largely based on surveys and are limited in scope. The business registers play an important role in bringing trade statistics closer to the business statistics. The links between legal units in the business registers and intra- and extra-Union trader identification codes need to be recorded in the business registers. Thus, the business registers provide a tool for linking detailed external trade microdata with the statistical units utilized in business statistics.[120] (See Box XI.2 for details).

119. See http://epp.eurostat. ec.europa.eu/portal/page/ portal/external_trade/ documents/External_trade_ statistics_by_ enterprise_characteristics.pdf.

120. Ibid.

Box XI.4

Definitions of "exporter" and "enterprise" in the European Union

The EU legislation currently defines only the terms "exporter" and "enterprise"; however, the discussion about „importer" has been recently launched.

Exporter[a]

The exporter is the person on whose behalf the export declaration is made and who is the owner of the goods or has a similar right of disposal over them at the time when the declaration is accepted.

Enterprise[b]

The enterprise is the smallest combination of legal units that is an organizational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries out one or more activities at one or more locations. An enterprise may be a sole legal unit.

Explanatory note: The enterprise thus defined is an economic entity which can therefore, under certain circumstances, correspond to a grouping of several legal units. Some legal units, in fact, perform activities exclusively for other legal units and their existence can only be explained by administrative factors (e. g. tax reasons), without them being of any economic significance. A large proportion of the legal units with no persons employed also belong to this category. In many cases, the activities of these legal units should be seen as ancillary activities of the parent legal unit they serve, to which they belong and to which they must be attached to form an enterprise used for economic analysis.

a. Article 788 of Commission Regulation (EEC) No. 2454/93 of 2 July 1993 laying down provisions for the implementation of Council Regulation (EEC) No. 2913/92 establishing the Community Customs Code.

b. Council Regulation (EEC) No 696/93 of 15 March 1993, as last amended by Regulation (EC) No. 1137/2008 of the European Parliament and of the Council of 22 October 2008.

E.   Generation and dissemination of additional information: possibilities and examples

11.18.   *Tables published within the TEC framework developed by Eurostat and OECD.* The Trade by Enterprise Characteristics (TEC) framework defines a harmonized set of indicators describing various aspects of the structure of international trade from the viewpoint of the characteristics of enterprises. Since the aim of these indicators is to describe enterprises rather than products, the activity sector of the trader is used as the primary classification in each indicator. There are five indicators which are available both for trade flows (imports and exports) and for intra- and extra-EU trade. All indicators use the enterprise as the statistical unit and are expressed in terms of number of enterprises and trade value. The indicators are obtained by linking data on the microlevel. (See Box XI.5 for details).

Box XI.5

Indicators of trade by enterprise characteristics (TEC)

1.   Trade by activity sector and enterprise size class
Trade by activity sector and enterprise size class shows the contribution of each economic activity and size class (measured in terms of number of employees) to total trade. This makes it possible, for instance, to analyse the impact of external trade on employment and to estimate the importance of small and medium-sized enterprises.

2.   Concentration of trade by activity
External trade is typically concentrated on a few enterprises. This indicator shows how much of the total trade is accounted for by the top 5, 10, 20, etc., enterprises.

3.   Trade by partner countries and activity
Trade by partner countries shows how many enterprises were trading with certain partner countries or country zones, and the trade value they accounted for. This makes it possible to identify most typical exports or imports markets.

4.   Trade by number of partner countries and activity

Number of partner countries shows how geographically diversified the exports markets are. For imports, it shows the number of countries from which goods are imported.

5.   Trade by commodity and activity

Trade by commodity and activity allocates the trade of each commodity to the economic activity of the trading enterprise. This shows which sectors were involved in the trade of each product group.

11.19.   *Trade by enterprise characteristics: an alternative approach.* IMTS 2010 (para. 11.6) encourages countries to take steps towards establishing an integrated system of economics statistics for data compilation and analysis and to integrate their trade register with their business register. However, faced with the growing demand for information from users regarding the link between international flows of goods and national economic activity, and in the absence of a link at the microlevel, enabling the identification of companies in the customs records and industrial surveys, counties might opt for the alternative of building a macrolevel correlation table between the classifications of industries and products. Countries may find this correspondence useful when analysing trade flows by activity categories. However, the approach as described in previous examples, i.e., to identify the activity of the trader and perform appropriate aggregations, should be given preference whenever possible (see IMTS 2010, para. 3.29).

11.20.   *Integrating trade information in business statistics.* Business statistics contain limited information on external trade. By linking trade and business statistics, the wealth of information on the demography and activities of businesses can be supplemented with detailed trade information, allowing the analysis of the impact of trade on businesses.

11.21.   *Special surveys of trading enterprises.* Often, certain information, such as trade between related enterprises or goods for processing without change of ownership, cannot be derived from customs records. The link with the business registers allows the conducting of surveys of specifically identified enterprises whose aim is to obtain such information. Also, special surveys of trading enterprises could be used to explore the link between trade in goods and trade in services.

11.22.   *Trade statistics as part of a geospatial information system.* At its forty-first session, held in February 2010, the Statistical Commission recognized, in paragraph (b) of its decision 41/110 on global geographic information management, the importance of the integration of geographical and statistical information and the opportunities provided in that context by the swift development of information technology, noting that national statistical offices are playing an increasing role in such integration.[121] Linking trade information to the business registers allows regional analysis of trade patterns; for example, the Secretariat of Foreign Trade of the Ministry of Development, Industry and Foreign Trade of Brazil publishes, using the address of the enterprises, a report on trade balance by States and municipalities (see para. 11.13).[122] Linking this trade information with localized employment or tax information (e.g.., average wages, employment rate, enterprise and personal tax revenue) allows a detailed analysis of economic impact of trade.

F.   Required institutional and working arrangements

11.23.   *Agreement on a joint vision and commitment to integrating trade and business statistics.* The cooperation of different departments within the same agency and of

122. The results can be distorted if the headquarters reside elsewhere than at the location where the economic activity is carried out. Therefore, the use of the local unit would be preferable when linking trade and business statistics. However, it might be very difficult or even impossible to compile reliable business and trade information on a local-unit basis.

121. See *Official Records of the Economic and Social Council, 2010, Supplement No. 4* (E/2010/24), chap. I, sect. B.

different agencies responsible for different parts of the business statistics programme is required for the development and implementation of a programme of integrated economic statistics. The cooperation itself and the development and implementation of such a programme require the commitment of significant human resources and the willingness to accept changes in existing practices. It is therefore crucial that the concerned agencies and departments within agencies agree, or at least accept, the goal and vision for an integrated system for business and economic statistics.

11.24.   *Statistical business register and data access at compilation.* In many countries, more than one organization or agency is involved in trade and business statistics (e.g., the national statistical institute, the customs authority, the central bank and other agencies). The establishment of a statistical business register, which would provide a uniform basis for data collection by various agencies and ensure coherence of data compiled in various statistical domains, requires legal arrangements to allow sharing and use of information on individual enterprises among these agencies—information that would be otherwise subject to confidentiality.

11.25.   *Access to and use of information.* Business registers and data warehouses contain sensitive information about businesses. According to principle 6 of the Fundamental Principles of Official Statistics,[123] 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. The generation of enterprise microdata from trade statistics and its combination with information from existing business statistics require solving issues of confidentiality and the protection of highly sensitive business data.

123. Available from unstats.un.org/unsd/methods/stator/FP-English.htm.

PART THREE

Compilation of particular data items

Chapter XII
Time of recording

12.1.   *Introduction.* The present chapter provides additional clarification on the statistical concept of time of recording, as defined in IMTS 2010, chap. I, on scope and time of recording, and describes good practices in the approximation of time of recording in the use of both customs records (see chapter II of the present Manual) and non-customs data sources (see chaps. III and IV). Section A provides an overview of the basic concept and data sources for determining the time of recording, while subsequent sections provide additional details regarding the determination of time of recording under different circumstances and in different cases.

A.   Basic concepts and data sources: an overview

12.2.   *Time of recording.* The time of recording is defined in IMTS 2010 (para. 1.8), as the time when goods enter or leave the economic territory of a country. In general, it is sufficient to identify the day when the goods physically cross the boundary of economic territory. This day is to be used to allocate a given flow of goods to the shortest reference period for which official trade statistics are compiled. For example, if certain goods entered the economic territory of a country on 1 January and in this country the shortest reference period for trade data compilation is a month, then those goods should be included in January imports irrespective of when these statistics will be officially published. The country practices in the implementation of this general guideline vary to some extent, depending on the availability of relevant data sources and other circumstances.

12.3.   *Use of different data sources.* Customs records are the main source for determining time of recording. However, the economic territory in many cases does not coincide with the customs territory and some cross-border movements of goods are not sufficiently reflected in customs records. Therefore, it is a good practice (a) to use both customs and non-customs sources of information and (b) to develop sound approximation techniques for the cases where no reliable data exist and to consistently apply such techniques to ensure maximum possible data comparability.

12.4.   *Customs as data source: lodgement of customs declaration and date of lodgement.* IMTS 2010 states that in the case of customs-based data-collection systems the time of recording can be frequently approximated by the date of lodgement of the customs declaration. Compilers should be aware that the revised Kyoto Convention (RKC) does not define the term "lodgement of customs declaration" and does not prescribe the rules regarding the determination of the date of lodgement. However, from the context of the Convention, it is understood that the date of lodgement is the date when customs registers[124] (or accepts) the declaration for processing, taking into account that certain customs requirements were satisfied.[125]

12.5.   *Requirements for lodgement of the customs declaration.* The customs requirements for lodgement of the customs declaration include provision that customs "shall limit the data required in the Goods declaration to only such particulars as are deemed necessary for the assessment and collection of duties and taxes, the compilation of statistics and the application of Customs law" (General Annex, Chapter 3,

124. The terms "register" and "registered" are used in several RKC standards, for example, standards 3.26 and 3.30, respectively.

125. See IMTS 2010, para. 2.22.

Standard 3.12). Further, according to the Convention: "Where, for reasons deemed valid by the Customs, the declarant does not have all the information required to make the Goods declaration, a provisional or incomplete Goods declaration shall be allowed to be lodged, provided that it contains the particulars deemed necessary by the Customs and that the declarant undertakes to complete it within a specified period" (ibid., Standard 3.13). Moreover: "Where national legislation lays down a time limit for lodging the Goods declaration, the time allowed shall be sufficient to enable the declarant to complete the Goods declaration and to obtain the supporting documents required" (ibid., Standard 3.23). Further: "National legislation shall make provision for the lodging and registering or checking of the Goods declaration and supporting documents prior to the arrival of the goods" (ibid., Standard 3.25).

12.6.   *Use of time of lodgement.* In view of the above provisions, compilers should be aware that the date of lodgement may not be appropriate in all cases for determining the time of recording. The lodgement of the declaration and the actual time when goods cross the border of the economic territory of a country may, in some cases, vary significantly. Therefore, it is good practice for trade statistics compilers to consult with national customs authorities about the rules that define the date of lodgement and assess in which cases it can serve as an acceptable approximation of the time of recording and when it should be replaced with a more appropriate date. As practices and terminology vary across countries, some countries might use the date of release from customs, the date of assessment or the date of acceptance by customs, instead of the date of lodgement, for determining the time of recording. This might be appropriate if any of those dates reflect an appropriate approximation of when goods enter or leave the economic territory.

12.7.   *Use of non-customs sources.* It is good practice for non-customs sources to be used only in cases where customs records do not exist or the date of lodgement significantly deviates from the moment when goods physically cross the boundary of the economic territory of a country.

12.8.   *Use of estimates.* In a number of cases, the time of cross-border movement of goods is not reflected in any data source. In such cases, development of sound approximation techniques becomes a necessity in order to ensure a better temporal data comparability.

12.9.   *Metadata on sources and rules used for establishing time of recording.* The determination of which data sources and rules should be used while establishing the time of recording, so as to ensure both compliance with the international recommendations and high- quality national data, is the responsibility of the national compiling agency. It is good practice to develop clear and practical rules to ensure (a) that the time that will be used for the purposes of time of recording is the closest possible approximation of the time when goods actually enter/leave the economic territory of the country and (b) that reliable methods of establishing such a date are established and consistently applied. The description of the selected sources and rules should be part of the country's trade metadata.

B.   Determination of the time of recording and customs territory

12.10.   *Use of the customs territory as an approximation of the economic territory.* It is good practice to use the boundary of the customs territory as the boundary of the economic territory (even if they diverge to some extent from each other) provided that no important economic activity is occurring in that part of the economic territory

that is outside of the customs territory. In this case, the use of date of lodgement of the customs declaration as the time of recording is a good practice, except when the date of lodgement deviates significantly from the time of actual border crossing by the imported/exported goods (as determined by the responsible agency). However, if an important economic activity is carried out in any part of the economic territory outside of the customs territory (e.g., industrial free zones), the customs boundary cannot be used as a good approximation of that of the economic territory. In such cases, the time of recording of goods entering and leaving such parts of the economic territory should be either determined using non-customs sources or estimated.

12.11.   *Time of recording in the case of the special trade system.* Under the special trade system, the time of recording should be the time when goods enter or leave that part of the economic territory that is included in the statistical territory of the compiling country. As in the case of the use of the general trade system, this time may be approximated by the date of lodgement of the customs declaration when goods are directly entering the customs territory (assuming that all of the customs territory is within the statistical territory). However, other dates need to be used when goods enter parts of the statistical territory outside the customs area.

12.12.   *Use of additional sources of information in the case of the special trade system.* Even if goods are moving in and out of free zones without payment of duties or completion of certain formalities, customs records of such movements might exist. This information might be valuable to trade statistics compilers in determining the time of recording. However, the use of different non-customs sources, such as surveys, etc., becomes a necessity if no sufficient customs information for the determination of the time of recording exists. For example, in the United States of America, the time of recording used for goods entering foreign trade zones is the date when the merchandise was received at the zone. This information is provided by the zone operator (for country experience see Box XII.1).

Box XII.1

Time of recording in Brazil

In Brazil, the time of recording of exports is that when the goods leave the economic territory (general trade system), which in practice is the time of clearance of the goods for shipment. In the case of imports, the time of recording is that when the goods enter into the free circulation area (special trade system), which is the time of clearance of goods for consumption, or when they enter into the Manaus free zone, whose operations follow the general trade system.

C.   Use of the lodgement of the customs declarations for determining the time of recording

12.13.   *Lodgement of provisional or incomplete declarations.* If the declarant is unable to provide all the required information at the time of lodgement of the declaration, the customs authority may accept a provisional or incomplete declaration and release the goods under the condition that the declarant provide the missing information thereafter within a specified period in an additional declaration. The time of lodgement of the additional declaration and the time when goods cross the border of the customs territory may be far apart. However, both declarations refer to the same transaction and must be linked during the data processing.[126] Compilers are advised to use (a) the provisional or incomplete declaration to identify the time of lodgement and collect provisional data and (b) the additional declaration to revise or complete trade data, with the time of recording remaining unchanged.

126. In the European Union also simplified and supplementary declarations are used and they are treated as one.

12.14.   *Presentation of the declaration after release of goods.* Compilers should take into account that customs may allow traders to release goods before the presentation of the corresponding declaration. Such authority is given to a growing number of traders in order to enable speedy release of the imported or exported goods without a wait for collection of the documents needed for completion of the declaration. It is good practice to include the data provided in such declarations in the monthly statistical reports corresponding to the months when the goods actually enter and leave the economic territory of a country. If necessary, this can be done as part of the regular revision of monthly data.

12.15.   *Periodic lodgement of a declaration.* When goods are frequently imported (or exported) by the same company or person, the RKC recommends (General Annex, Chapter 3, Transitional Standard 3.32) that customs allow a single goods declaration to cover all imports (or exports) by that company or person for a particular reference period. That facility may be granted if the company or person keeps proper commercial records and where necessary control measures can be taken. The RKC recognizes the right of customs to require that the declarant produce, at the time the goods actually cross the border, a commercial or official document such as an invoice, waybill or dispatch note, etc., giving the main particulars of the concerned consignment. Compilers are advised to periodically review such documents, if permitted by law, in order to be able to assign the trade to the appropriate month (based on the time of crossing the border), especially in cases when trade is significant in value (amount) and/or the reference period for which the trader reports data to customs does not coincide with the period used for statistical reporting (normally the calendar month). It is good practice for compilers to work with customs agencies to ensure that the reference period for which traders are required to report data to customs coincides with the period used by customs for the statistical reporting.

12.16.   *Time of recording in the case of split consignments.* For the convenience of shipment, certain goods may be disassembled into several parts which may, with customs permission, leave the exporting country and enter the importing country at different times and at different exit/entry points. Since goods exportation or importation is not completed until the last part leaves or enters the country, it is a good practice to use the date when the last part is declared to the customs of the exporting or importing country instead of the time of lodgement of the declaration covering all of the consignment.

12.17.   *Identification of best proxy dates for time of recording.* In all cases where the date of lodgement is inadequate (e.g., if goods are cleared well in advance or long after their arrival) or non-customs data sources are used (e.g., enterprise surveys), more appropriate dates for the time of recording should be identified and used (e.g., the date of arrival or departure of the goods carrier as indicated in the transportation documents). It is the responsibility of countries' statistical authorities to identify (or estimate) the best proxy date for the general guideline on time of recording by taking into account the peculiarity of national rules on administrative procedures and the need for consistency in the application of the selected method.

D.   Use of non-customs data sources

12.18.   *Use of shipping manifests, bills of landing and other transport documents.* It is good practice to use such documents for verification purposes or when customs declarations are absent. However, it is recognized that such practice should be limited,

owing to resource constraints and other considerations, to important and exceptional cases

12.19.   *Time of recording in enterprise surveys.* Countries applying the general trade system frequently have to use enterprise surveys to ensure complete coverage of their trade statistics. The date of exports or imports indicated in such surveys reflects business accounting practices, and, normally, will not coincide with the date of lodgement of the corresponding customs declaration or with the time of physical crossing of the country's border, but rather with the time when goods change ownership.

Box XII.2

European Union experience on time of recording

The time of recording, defined in the EU as the reference period, of the information to be provided within the Intrastat system shall be the calendar month of dispatch or arrival of the goods. This is the month in which the goods physically enter or leave the statistical territory of the member State. However, the reference period may be adapted by member States to take into account the linkage with value added tax (VAT) obligations according to article 6 (2) of Regulation (EC) No. 638/2004 of 31 March 2004. Member States may define the reference period to which the monthly trade flows should be allocated as the calendar month when the chargeable event for VAT purposes occurs, thus when the goods are supplied. The supply of the goods is regarded as having been effected when VAT shall have become chargeable on issue of the invoice or on the fifteenth day of the month following that in which the chargeable event occurs, if the invoice was not issued. This means that the goods are recorded when they are delivered, or with one month's delay. The majority of member States adopted the VAT principle of recording for Intrastat.

Member States may adapt the period of reference in cases where the Customs declaration is used for intra-EU trade statistics. In such cases, the reference period may then be defined as the calendar month during which the declaration is accepted by Customs. The reference period for extra-EU trade statistics shall indicate the calendar year and month in which the goods are imported or exported. When the customs declaration is the source for records on imports and exports, the reference period shall indicate the calendar year and month when the declaration is accepted by customs authorities.

12.20.   *Use of time of change of ownership.* In exceptional cases where the general guideline of recording goods when they enter or leave the economic territory is not applicable or is insufficient (for example, in the case of trade in ships and aircraft), IMTS 2010 (para. 1.4) recommends using the criterion of change of ownership to determine whether certain goods should be recorded. In such cases, the time of recording should be determined by the time of change of economic ownership. The time of change of ownership is defined in accordance with 2008 SNA and BPM6[127] as the time of change of economic ownership from a resident unit to a non-resident unit. The time when the economic ownership changes from a resident unit to a non-resident unit can be approximated by the time when claims and obligations arise, are transformed or are cancelled. Although the principle is clear, its implementation is far from simple, as parties do not always apply the same rules. Even when they do, differences in actual recording may occur for practical reasons such as delays in communication. Consequently, transactions may be recorded at different times by the transactors involved, sometimes even in different accounting periods. It is therefore good practice for trade statisticians to consult with compilers of balance of payments and national accounts as necessary.

12.21.   *Time of recording of trade over fixed transmission lines.* Trade in goods which continuously cross borders over fixed transmission lines (e.g., pipelines for the transmission of oil, natural gas or water, power lines for the transmission of electricity, etc.) should be allocated to the proper shortest reference period based on (a) the actual

127. International Monetary Fund, Balance of Payments and International Investment Position Manual, 6th ed. (Washington, D.C.; 2009).

period of transmission recorded in the customs declarations submitted by the line operators or (b) their administrative records, following the same requirements as for all other enterprise surveys conducted for the purposes of compilation of trade statistics. It is good practice for compilers of the exporting and importing countries of such goods to agree on the compilation procedures, including time of recording, in order to ensure data comparability.

Chapter XIII
Harmonized Commodity Description and Coding System (HS)

13.1.   *Introduction.* The present chapter describes the Harmonized Commodity Description and Coding System (HS), which is recommended by IMTS 2010 (para. 3.11) for the collection, compilation and dissemination of international merchandise trade statistics at the most detailed level. It is based on chapter III of IMTS 2010, on commodity classifications. This chapter provides an overview of the HS and details of the latest (fifth) edition of HS which entered into force on 1 January 2012 (HS12), discusses application of HS for coding traded goods as well as some particular aspects of quality assurance related to the classification of goods (quality assurance in general is covered in chap. IX), and describes country experiences in the use of HS for data dissemination and analytical purposes. Understanding HS by trade data compilers is necessary for a better understanding of the classification decisions made by national customs authorities, for setting up appropriate validation and editing checks, for communicating more effectively with both customs authorities and the user community, and for developing the ability to assist in the formulation of proposals for future revisions of HS. Other international classifications relevant primarily to the dissemination and analysis of international merchandise trade statistics are described in chapter XXVII.

A.   Recommendation on using HS

13.2.   *HS as the recommended classification for IMTS compilation and dissemination.* The International Convention on the Harmonized Commodity Description and Coding System (HS Convention) was adopted by the Customs Cooperation Council (CCC) in Brussels on 14 June 1983, and entered into force on 1 January 1988 (HS88). The Harmonized Commodity Description and Coding System (popularly known as the Harmonized System, or HS) is a nomenclature comprising headings and subheadings and their related numerical codes, sections, and chapters, as well as Subheading Notes and the General Rules for the Interpretation of the Harmonized System, as set out in the Annex "Nomenclature of the Harmonized System" to the HS Convention.[128] The United Nations Statistical Commission, at its twenty-seventh session, hold from 22 February to 3 March 1993, recommended that countries adopt the HS for the compilation and dissemination of their trade statistics.[129]

13.3.   *Implementation of HS in IMTS compilation and dissemination.* As of 2011, almost all countries use the HS for trade data compilation and dissemination. This is a very significant achievement, as it ensures the best possible international comparability of national trade data. However, experience shows that many countries face significant challenges in the consistent application of HS.

B.   Overview

13.4.   *Obligations of contracting parties.* The HS is a legal instrument. A contracting party to the HS Convention has two main obligations: to bring its customs tariff and

128. As of 7 January 2013, there were 146 contracting parties to the Convention, and about 60 countries or territories that were not contracting parties but were using the HS for customs/statistical purposes. The HS, when incorporated in the country's customs tariff, becomes a national law. Entering incorrect tariff codes in the goods declaration may entail legal consequences.

129. See Official Records of the Economic and Social Council, 1993, Supplement No. 6 (E/1993/26), para. 162 (d).

statistical nomenclatures into conformity with the HS; and to make its import and export trade statistics publicly available at the six-digit level or beyond.[130] Fulfilling these obligations requires that contracting parties use all the HS headings and subheadings and numerical codes, without addition or modification; that they apply, without modification, the General Rules for the Interpretation of the Harmonized System as well as all section, chapter and subheading notes; and that they follow the numerical sequence of the HS.[131]

13.5. *Maintenance of the Harmonized System.* In accordance with the Preamble to the HS Convention, which recognized the importance of ensuring that the HS is kept up to date in the light of changes in technology or in patterns of international trade, the HS is regularly reviewed and revised. The HS Convention established the Harmonized System Committee (HSC), composed of representatives from each of the contracting parties, which meets twice a year. The HSC is assisted in its work by its Working Party, by the Review Subcommittee, and by the Scientific Subcommittee. The HSC, inter alia, considers the needs of users, as well as changes in technology and patterns of international trade, and proposes amendments to the HS based on its considerations, prepares recommendations about and circulates information concerning the application of the HS, and gives guidance on matters concerning the classification of goods.

13.6. To assist users in the implementation of the HS, the World Customs Organization issues and periodically updates the following supplementary information:

(a). Explanatory Notes to the Harmonized System

(b). Alphabetical Index to the Harmonized System

(c). Compendium of Classification Opinions to the Harmonized System

(d). Harmonized System Commodity Database

(e). E-learning Modules on the Harmonized System

(f). Correlation Tables between the latest and previous version of the HS

13.7. *Revision policy of the Harmonzied System,. WCO revises the HS as necessary, approximately every five years.* From 1 January 2012 onward, the HS Nomenclature 2012 edition (HS12) is the valid version applied in international trade transactions. Details of the HS12 are provided in section C below. There are initial plans for the next set of amendments to be in effect in 2017. The Statistical Commission, at its twenty-seventh session, recommended taking fully into account the statistical implications of any changes proposed for the HS and the statistical needs and capacities of developing countries.[132] It is good practice for the compilers of trade statistics to work closely with the national customs authorities in developing proposals for future HS amendments.

C. 2012 edition of the Harmonized System (HS12)

13.8. *The HS12 structure and the classification scheme.* The HS is a structured nomenclature comprising a series of four-digit headings, most of which are further subdivided into five- and six-digit subheadings. The 2012 edition of the HS comprises 5,205 groups of goods identified by a six-digit code (compared with 5,052 in the 2007 edition) and is provided with the necessary definitions and rules to ensure its uniform application. HS12 comprises a total of 1,224 headings which are grouped in 96 Chapters,[133] the latter being themselves arranged in 21 Sections. The headings are identified by a four-digit code, with the first two digits indicating the Chapter in which the heading appears (a leading zero is used with the first nine Chapters) and the second pair of digits referring to the position of the heading within the Chapter. (See Box XIII.1 for details).

131. HS Convention, article 3 (a) (i) – (iii).

132. See Official Records of the Economic and Social Council, 1993, Supplement No. 6 (E/1993/26), para. 162 (e).

133. HS Chapter 77 is reserved for possible future use and HS Chapters 98 and 99 are reserved for special use by contracting parties. Countries should avoid, where possible, the use of Chapters 98 and 99.

13.9.   The general structure of HS12 is as follows:

Sections I to IV: Agricultural products

Sections V to VII: Minerals, chemical and related products, plastics, rubber and articles thereof

Sections VIII to X: Animal products, such as hides, skins and furskins, as well as wood, cork, pulp, paper, and articles thereof

Sections XI and XII: Textiles, footwear and headgear

Sections XIII to XV: Articles of stone, plaster, cement, asbestos, mica and the like, ceramic products, glass, pearls, precious or semi-precious stones, precious metals, jewelry, base metals and articles thereof

Section XVI: Machinery, mechanical appliances and electrical equipment

Section XVII: Vehicles, aircraft, vessels and associated transport equipment

Section XVIII: Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatus, clocks and watches, musical instruments

Section XIX: Arms and ammunition

Sections XX and XXI: Miscellaneous manufactured articles, such as furniture, lighting fittings, prefabricated buildings, sports requisites, works of art, collectors' pieces and antiques

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Box XIII.1

Further information on the HS structure and the classification scheme

Classification scheme. The HS classification scheme is determined by the requirement that the HS should enable customs officers to classify goods presented to them by referring mainly to characteristics that are either directly observable or that can be established by the use of scientific instruments. Therefore, many of the HS sections, chapters and headings are defined in terms of the goods' natural origin or material of production. However, natural origin or material of production is not always what gives goods their essential character. In some cases, goods are normally classified by industry or by main use. For example, the sections:

- "Live animals; animal products" (Section I), "Vegetable products" (Section II) and "Mineral products" (Section V) are defined by natural origin or material of production; while

- "Products of the chemical or allied industries" (Section VI) and "Vehicles, aircraft, vessels and associated transport equipment" (Section XVII) are defined by industry or by main use.

Order of goods. As a general rule, goods are arranged in order of their degree of manufacture: raw materials first, followed by unworked products, semi-finished products and finished products. For example, live animals fall in Chapter 1; animal hides and skins, in Chapter 41; and leather footwear, in Chapter 64. Although a higher-level category may be defined mainly by one criterion, its subdivision into lower-level categories can be defined by other(s). For example:

- Leather and articles of leather belong in Section VIII but, irrespective of having the same animal origin, they are classified in different chapters to reflect different stages of production (leather in Chapter 41; articles of leather in Chapter 42);

- Heading 62.06 ("Women's or girls' blouses, shirts and shirt-blouses") is divided into five subheadings according to the material from which they are made (of silk or silk waste, 6206.10; of wool or fine animal hair, 6206.20; of cotton, 6206.30; of man-made fibres, 6206.40; of other textile materials, 6206.90).

Two categories of subheadings. Compilers of trade statistics should be aware that subheadings can be separated into two categories:

- Subheadings covering goods specifically identified as a part of the heading by indicating one or more specific attributes (e.g., "Corks and stoppers" of natural cork: 4503.10)

- Residual subheadings covering all goods of the respective heading not included in its other subheadings (e.g., "Other" articles of natural cork: 4503.90).

The latter category comprises about 22 per cent of all 6-digit codes. Such subheadings may cover highly diverse goods, and their use in the coding of particular items should be undertaken with special care. Also, setting the control range for such subheadings is problematic, thus creating a data-quality issue.

Splitting of headings into "one-dash" subheadings. Some headings are split into several "one-dash" subheadings. Each such subheading is identified by a six-digit code, where the first four digits represent the heading's code, and the last two digits refer to the subheading's position within the heading. For example, heading 01.04 ("Live sheep and goats") is split into two one-dash subheadings: 0104.10 ("Sheep") and 0104.20 ("Goats").

One-dash subheadings divided into "two-dash" subheadings. The one-dash subheadings can be further divided into "two-dash" subheadings. In such cases, one-dash subheadings are not coded; codes are assigned only to the two-dash subheadings. For example, heading 01.03 ("Live swine"), is split into two one-dash subheadings: "Pure-bred breeding animals" and „Other". The former subheading is not further subdivided and is coded (0103.10), while the latter is split into two parts and not coded. Rather, it is subdivided into „Other, weighing less than 50 kg" and „Other, weighing 50 kg or more", which are coded 0103.91 and 0103.92, respectively.

Headings that do not contain subheadings. Headings that do not contain subheadings are treated, for data-processing purposes, as six-digit codes, carrying two zeros as their last two digits.

Section, Chapter and Subheading Notes. The headings and subheadings of the HS are accompanied by Section, Chapter and Subheading Notes and interpretative rules, which form an integral part of the HS and are designed to facilitate classification decisions in general and to clarify the scope of the particular Sections, Chapters, headings and subheadings.

13.10.   *Causes of amendments contained in HS12.* Environmental and social issues of global concern are the major feature of the HS12 amendments, particularly owing to the use of the HS as the standard for classifying and coding goods of specific importance to food security and the early warning data system of the Food and Agriculture Organization of the United Nations (FAO). The volume of amendments within, for instance, Chapter 3, for the separate identification of certain species of fish and crustaceans, mollusks and other aquatic invertebrates, is substantial. The modifications aim at improving the quality and precision of trade data in these commodities. The amendments include, inter alia, improved specifications for species from the southern hemisphere. These amendments will enable economic trends in products other than those familiar to North Atlantic consumers to be monitored. In the same vein, new subheadings have been created for the separate identification of certain edible vegetables, roots and tubers, fruit and nuts, as well as cereals. The HS12 also features new subheadings for specific chemicals controlled under the Rotterdam Convention of the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade[134] and ozone layer depleting substances controlled under the Montreal Protocol on Substances that Deplete the Ozon Layer.[135] Other amendments resulted from changes in international trade patterns. These include deleting 43 subheadings due to the low volume of trade in specific products, separately identifying certain commodities in either existing or new headings, and reflecting advances in technology where possible. Finally, a number of amendments aim to clarify texts to ensure uniform application of the HS.

13.11.   Whenever revisions are made to the HS, some existing items are deleted and new items are added by the creation of new headings (four-digit codes) or subheadings (six-digit codes). In order to accommodate users who maintain data under different versions of the HS, code numbers for commodities that have been deleted

134. United Nations, Treaty Series, vol. 2244, No. 39973.

135. Ibid., vol. 1522, No. 26369.

are not re-used until a certain period has elapsed, unless reuse is unavoidable. Where possible, compilers are encouraged to follow the same practice for the more detailed commodity codes used in national commodity classifications.

13.12.   *Implementation of the HS12: correlation tables.* The WCO Secretariat has issued the correlation tables between the 2012 and 2007 versions of the HS,[136] and updated HS publications, such as the Explanatory Notes, the Compendium of Classification Opinions and the Alphabetical Index. Customs administrations have the serious task of ensuring timely implementation of HS12, as required by the HS Convention. Trade data compilers are advised to cooperate with national customs administrations in ensuring that data collection in terms of HS12 is carried out on time.

D.   Application of Harmonized System for coding traded goods

13.13.   *General Rules for the Interpretation.* The Harmonized System incorporates a series of preliminary provisions codifying the principles on which the HS is based and laying down general rules for ensuring uniform legal interpretation. There are six of these rules, known as the General Rules for the Interpretation of the Harmonized System, also known as the General Interpretative Rules (or GIRs), which are applied in hierarchical fashion, i.e., Rule 1 takes precedence over Rule 2, Rule 2 over Rule 3, etc. Compilers should apply these rules when classifying goods not classified by customs. An overview of these rules and the classification issues to which they apply are provided in the the boxes XIII.2-XIII.7 below.

Box XIII.2

General Interpretative Rule 1 (GIR 1)

GIR 1: Role of titles of Sections and Chapters and Sub-Chapters

The titles of Sections, Chapters, and Sub-Chapters are provided for ease of reference only; for legal purposes, classification shall be determined according to the terms of the headings and any relative Section or Chapter Notes. There are, however, cases where the texts of the headings and Notes do not, of themselves, determine the appropriate heading with certainty. Classification is then effected by application of the other Rules.

Box XIII.3

General Interpretative Rule 2 (GIR 2 (a) and GIR 2 (b))

GIR 2 (a): Incomplete or unfinished articles; unassembled or disassembled goods

The scope of any heading which refers to a particular article covers not only the complete article but also that article incomplete or unfinished, provided that, as presented, it has the essential character of the complete or finished article. Complete or finished articles presented unassembled or disassembled, usually presented as such due to the requirements or convenience of packing, handling or transport, are to be classified in the same heading as the assembled article. Examples of application:

(a.)   A machine lacking only a flywheel, a bedplate, calendar rolls, tool holders, etc., is classified in the same heading as the machine, and not in any separate heading provided for parts. Similarly, a machine or apparatus normally incorporating an electric motor (e.g., electromechanical hand tools of heading 84.67) is classified in the same heading as the corresponding complete machine even if presented without that motor;

(b.)   For convenience of transport, many machines and apparatus are transported in an unassembled state. Although in effect the goods are then a collection of parts, they are classified as being the machine in question and not in any separate heading for parts. The same applies to an incomplete machine having the features of the complete machine, presented unassembled.

GIR 2 (b): Mixtures or combinations of materials or substances referred to in one heading

The scope of any heading covering certain materials or substances also includes goods consisting only partly of such materials or substances, unless another heading refers to them in their mixed or composite state. As a consequence of this rule, mixtures and combinations of materials or substances, and goods consisting of more than one material or substance, if, prima facie, classified under two or more headings, must be classified according to the principles of Rule 3.

Box XIII.4

General Interpretative Rule 3 (GIR 3 (a), GIR 3 (b) and GIR (c)

GIR 3 (a): Mixtures, combinations, and goods put up in sets for retail sales, classifiable, prima facie, under two or more headings

Goods should be classified in the heading giving the most specific description. However, there is a provision that if two or more headings each refers to only one of the materials or substances contained in mixed or composite goods, or to only some of the articles included in a set put up for retail sale, those headings are to be regarded as equally specific in relation to those goods, even if one of them gives a more complete description than the others. Examples of application:

(a.)   Tufted textile carpets, identifiable for use in motor cars, which are to be classified not as accessories of motor cars in heading 87.08 but in heading 57.03, where they are more specifically described as carpets;

(b.)   Unframed safety glass consisting of toughened or laminated glass, shaped and identifiable for use in aeroplanes, which is to be classified not in heading 88.03 as parts of goods of heading 88.01 or 88.02 but in heading 70.07, where it is more specifically described as safety glass.

GIR 3 (b): Classification of goods according to the material or component that gives them their essential character

Covered are such articles as mixed or composite goods, goods consisting of an assembly of different articles, and goods put up in sets for retail sale. This Rule applies only if Rule 3 (a) fails. According to this Rule, goods are classified in the heading applicable to the material or component that gives them their essential character.

Examples of composite goods which can be classified by reference to Rule 3 (b) are:

(a.)   Ashtrays consisting of a stand incorporating a removable ash bowl;

(b.)   Household spice racks consisting of a specially designed frame (usually of wood) and an appropriate number of empty spice jars of suitable shape and size (usually of glass with lids of plastics or metal).

As a general rule, the components of these composite goods are packaged together.
Examples of sets that can be classified by reference to Rule 3 (b) are:

(a.)   Sets consisting of a sandwich made of beef, with or without cheese, in a bun (heading 16.02), packaged with potato chips (French fries) (heading 20.04): classification in heading 16.02;

(b.)   Sets, the components of which are intended to be used together in the preparation of a spaghetti meal, consisting of a packet of uncooked spaghetti (heading 19.02), a sachet of grated cheese (heading 04.06) and a small tin of tomato sauce (heading 21.03), put in a carton: classification in heading 19.02;

(c.)   Hairdressing sets consisting of a pair of electric hair clippers (heading 85.10), a comb (heading 96.15), a pair of scissors (heading 82.13), a brush (heading 96.03) and a towel of textile material (heading 63.02), put up in a leather case (heading 42.02): classification in heading 85.10;

(d.)   Drawing kits comprising a ruler (heading 90.17), a disc calculator (heading 90.17), a drawing compass (heading 90.17), a pencil (heading 96.09) and a pencil-sharpener (heading 82.14), put in a case of plastic sheeting (heading 42.02): classification in heading 90.17.

GIR 3 (c): Use of the heading last in numerical order

This rule takes effect when goods cannot be classified by application of GIR 3 (a) or GIR 3 (b). It provides that goods should be classified in the heading which occurs last in numerical order amongst those which equally merit consideration in determining their classification.

Box XIII.5

General Interpretative Rule 4 (GIR 4)

GIR 4: Goods that are not specifically covered by any heading.

Goods that cannot be classified in accordance with Rules 1 to 3—for example, because they have newly appeared on the world market, shall be classified in the heading appropriate to the goods to which they are most akin. Kinship can, of course, depend on many factors, such as description, character or purpose.

Box XIII.6

General Interpretative Rule 5 (GIR 5 (a) and GIR 5 (b)

GIR 5 (a): Cases, boxes and similar containers, suitable for long-term use and presented with the articles for which they are intended

These should be classified in the same heading/subheading as the articles for which they are intended. Examples are: camera cases, musical instrument cases, etc. This rule does not apply to containers that give the whole its essential character, such as a silver caddy containing tea.

GIR 5 (b): Packing materials and packing containers presented with the goods they hold

These are to be classified in the same heading/subheading as the goods they hold. However, this provision is not binding when such packing materials or packing containers are clearly suitable for repetitive use.

Box XIII.7

General Interpretative Rule 6 (GIR 6)

GIR 6: Classification in subheadings

Classification in the subheadings of a heading must be determined, mutatis mutandis, with reference to the principles applicable to classification in the four-digit headings; in any event, the terms of the subheadings or Subheading Notes must be given precedence. This Rule also specifies that, for classification purposes, only subheadings of the same level are comparable; this means that, within a single heading, the choice of a one-dash subheading may be made only on the basis of the texts of the competing one-dash subheadings; similarly, selection of the appropriate two-dash subheading, where necessary, may be made only on the basis of the texts of the subdivisions within the applicable one-dash subheading.

13.14.   The Rules establish classification principles that, unless the texts of headings, subheadings or Section or Chapter Notes otherwise require, are applicable throughout the HS Nomenclature. Moreover, the Rules clearly provide a step-by-step basis for the classification of goods within the HS, so that in every case a product must first be classified in its appropriate 4-digit heading, then in its appropriate one-dash subdivision within that heading, and only thereafter in its appropriate two-dash subheading within the predetermined one-dash subdivision; at each step, no account is taken of the terms of any lower-level subdivisions. This principle applies without exception throughout the HS.

13.15.   *Settlement of classification disputes.* Where a dispute arises between two or more contracting parties regarding the interpretation or application of the HS, the parties concerned should, in the first instance, endeavour to reach agreement among themselves. However, classification disputes that cannot be settled by direct negotiation are referred through the WCO Secretariat to the Harmonized System Committee (HSC) which, after examination, makes appropriate recommendations for their solution. If the Committee is unable to settle a dispute, it refers the issue to the WCO Council for a recommendation on the question. In either event, the parties to a dispute may agree in advance to accept the recommendation of the Committee or the Council as binding.

13.16.   *Use of HS Chapters 98 and 99.* The HS considers Chapters 98 and 99 to be reserved for special use by contracting parties. In practice, there is a tendency for countries to reserve Chapter 98 for goods that can be classified at the Chapter level of the HS and to use Chapter 99 for recording special transactions and commodity categories not classified according to the HS (e.g., postal packages not classified according to kind). It is advisable that this practice be followed by all countries. Compilers are encouraged to code items attributed to Chapters 98 and 99 by applying the formats „98hh" (where "hh" is the code of the HS chapter where goods could have been classified) and „99xxxx" (where "xxxx" is a sequence of digits chosen by a country to code a particular transaction). In general, it is good practice to limit the use of these Chapters as much as possible, since the groupings used by countries in these Chapters are usually not internationally comparable (for country experience see Box XIII.8).

Box XIII.8

Examples of the use of chapters 98 and 99 in the Combined Nomenclature (CN) of the European Union

Chapter 98. This chapter is used to simplify the classification of individual parts of an industrial plant, i.e., large-scale stationary units producing goods or providing services. The commodity codes are composed as follows:

The first four digits shall be 9880

The fifth and the sixth digits shall correspond to the CN chapter to which the goods of the component part belong, the seventh and the eighth digits shall be 0

Chapter 99. This chapter contains codes applicable in intra- and extra-EU trade statistics as defined by the implementing regulations:

Goods delivered to vessels and aircraft:
- 9930 24 00: goods from CN chapters 1 to 24
- 9930 27 00: goods from CN chapter 27
- 9930 99 00: goods classified elsewhere

Goods delivered to offshore installations:
- 9931 24 00: goods from CN chapters 1 to 24
- 9931 27 00: goods from CN chapter 27
- 9931 99 00: goods classified elsewhere

These codes are mandatory within intra-EU trade. As they are optional within extra-EU trade, customs authorities of member States may choose not to apply them.

Trade under military secrecy:
- 9999xx99 (xx is the CN Chapter)
- 9999xxxx (xxxx is the HS-4 code).

These codes are not specified in the legislation and should be provided to Eurostat only in exceptional cases. The real CN code is preferred to be transmitted by Member States.

Codes applicable to Intrastat only:
- Low-value transactions and trade under the simplification threshold (for residual products only): 9950 00 00
- Parts for motor vehicles: 9990 87 zz (zz according to national purposes)
- Parts for aircraft: 9990 88 zz (zz according to national purposes)

Codes to be used only on customs declaration: Certain goods, that are not subject to duties or other prohibitions or restrictions:

- 9905 00 00 for personal property belonging to natural persons transferring their normal place of residence
- 9919 00 00 for the following goods, other than those mentioned in 9905 00 00:

(a.)   Trousseaux and household effects belonging to a person transferring his or her normal place of residence on the occasion of his or her marriage; personal property acquired by inheritance

(b.)   School outfits, educational materials and related household effects

(c.)   Coffins containing bodies, funerary urns containing the ashes of deceased persons and ornamental funerary articles

(d.)   Goods for charitable or philanthropic organisations and goods for the benefit of disaster victims

As these codes are optional, customs authorities of member States may choose not to apply them.

E.   Measures to ensure proper classification

13.17.   *Knowledge of compilers about the HS.* It is good practice for compilers to have a close dialogue with customs on implementation of the HS, and familiarize themselves with the HS so that they can review, for statistical purposes, classification assignments made by customs and assign appropriate HS codes to commodities not labelled by customs.

13.18.   *Measures to ensure proper classification.* Goods need to be properly classified in the HS, not only in order to ensure effective revenue collection, but also for the compilation of consistent international trade statistics. The HS, when incorporated in the national tariff, becomes a national law. Correct goods classification is a legal obligation of declarants and entering wrong codes in the goods declaration may entail legal consequences. It is good practice for compilers of trade statistics to cooperate with customs administrations in efforts to provide training and assistance to declarants in the business community, and to increase their awareness regarding their obligations and the importance of properly classifying goods for policy and analytical purposes.

13.19.   *Training and tools for customs officers and traders.* Another important means of ensuring proper goods classification is organizing training for customs officers, traders and trade statisticians in the application of the HS. It is advised that statistical offices, in cooperation with customs, develop appropriate training programmes and conduct training seminars and workshops on a regular basis. It is also advised that trade data compilers periodically undertake special studies to assess the accuracy of the classification decisions and discuss their results with customs authorities. These studies may focus on the most frequently exported or imported goods or on traders with a significant share in total country exports or imports. Also, appropriate assistance and tools for assigning the appropriate HS code should be made available to customs officers and the business community.

13.20.   *WCO measures to improve the quality of classification decisions.* As part of the technical assistance programme of its Nomenclature and Classification Sub-Directorate, WCO periodically conducts regional training seminars to enhance the classification skills of local customs personnel. At such seminars, classification principles are reviewed and practice is provided in classifying a sample of goods. Unresolved classification questions raised during such seminars may be forwarded to the Secretariat, which prepares an answer. If the contracting party does not agree with the answer, it can ask that the matter be referred to the Harmonized System Committee for resolution. WCO has also assisted customs offices in establishing customs laboratories to which goods may be sent when technical data are required for proper classification (see para. 13.21 below). In addition, representatives of intergovernmental and other international organizations are often invited to be present at Committee meetings, where they are able to make the Committee aware of the need for new elements in the classification, of industry practices that affect classification (e.g., the use of an unusual form of measurement, or a particular means of distinguishing quality, with regard to a given commodity) and of difficulties that traders experience in classifying certain goods.

13.21.   *Customs laboratories.* One important measure that has been helpful in assisting declarants is the establishment of customs laboratories. The technical nature of classification work often demands laboratory analysis of certain products to enable their correct HS classification. Customs laboratories are able to establish an efficient system within which samples of goods for analysis are sent to the laboratory, where prompt and relevant analyses of such samples are performed and results are expeditiously reported. The WCO has prepared a "Customs laboratory guide"[137] to serve as a practical handbook to establish or improve customs laboratories in developing countries.

137. World Customs Organization (Brussels, September 2002).

F.   Country experiences in the use of HS

13.22.   *Benefits and challenges associated with the use of the HS.* The HS has been in use since 1988. During this period, both benefits and challenges associated with its use became apparent. Compilers should be aware of them in order to enjoy the benefits to the maximum extent possible, while properly dealing with the challenges presented by its application, e.g., through the use of other classifications more suitable for particular needs (see chap. XXVII).

13.23.   *Benefits of using the HS.* The HS is the only commodity classification recommended by the United Nations Statistical Commission for the collection and compilation of international merchandise trade statistics. It is also widely used for dissemination and analysis of these statistics for the following reasons:

(a).   The HS encompasses a legal text and extensive explanatory notes which ensure the maximum possible uniformity in the interpretation of the definitions of commodity

groups, thus creating a universal language applicable both in commercial practice and in trade negotiations;

(b). The HS enables international comparability of trade statistics at the six-digit level, facilitating detailed analysis of international trade and its role in the globalization of national economies;[138]

(c). The universal application of the HS allows the conduct of effective trade data reconciliation studies;

(d). As the HS contains detailed descriptions of commodities, its headings and sub-headings can be used as the building blocks of other product classifications;

(e). The HS Convention allows each country to introduce its own level of statistical detail beyond the six-digit level, thus providing the necessary flexibility in accommodating national needs;

(f). The establishment of data conversions from the HS to other classification and its widespread use in data collection allow information for various purposes to be easily provided (*see chap. XXVII*).

13.24.   *Challenges in the implementation and use of the HS.* The most frequently cited challenges in the use of the HS include the following:

(a). The HS is relatively complex and difficult to implement without very extensive training, e.g., so as to avoid serious classification errors. Also, the HS Explanatory Notes, which are critical for classification guidance, are not cost-free, which may reduce the extent of their use by trade analysts;

(b). The HS does not provide stand-alone descriptors of its six-digit codes which can be used as metadata in trade statistics databases and publications; this leads to duplicative work, as many countries and international organizations develop such descriptors (*see box XIII.10*) ; [139]

(c). Definition of commodity groups in the HS is not always satisfactory for economic analysis, and it is therefore necessary to develop various analytical classifications (*see chap. XXVII*);

(d). Commodities are not always classified in such a way as to reflect countries circumstances and statistical priorities, particularly at the most detailed levels of classification. Many countries further divide HS subheadings to provide the detail required for tariff and statistical purposes; sometimes, countries use alternative groupings for certain commodities which better suit their analytical needs;

(e). As part of the application of the HS, WCO recommends the use of certain standard units of quantity for the six-digit HS level (*see chap. XV for details*). However, the recommended units of quantity are not always indicative of the quantity units used in industry practices (they might be different across countries), which in certain cases creates additional difficulties in HS implementation and analytical use;[140]

(f). Frequent revisions of the HS result in the discontinuation or merging of some codes every five years. This causes breaks in time series needed for analytical purposes.

13.25.   *It is recognized that, to a large degree, most of the challenges listed above are inherent and unavoidable in any multipurpose international commodity classification.* Countries are advised to build upon the strengths of the HS while minimizing it weaknesses, e.g., by providing more detailed commodity breakdowns beyond the six-digit HS-level. Also, it is good practice to use other product classifications such as the Standard International Trade Classification (SITC), the Central Product Classification (CPC), and the Classification by Broad Economic Categories (BEC), as well as the International Standard Industrial Classification of All Economic Activities (ISIC), as applicable (see chap. XXVII for details) (for country experiences see Boxes XIII.9-XIII.11).

138. In this connection, it should be stressed that countries should avoid the use of simplified classification decisions as much as possible even if certain customs procedures and thresholds allow this.

139. Countries are advised to consult the WCO website for additional materials on such descriptors.

140. For example, natural gas traders work in British thermal units (BTUs), rather than in cubic metres (m^3). This is also particularly true in the textiles area.

Box XIII.9

European Union experience in the development and use of the Combined Nomenclature

The Combined Nomenclature (CN) was established by Council Regulation (EEC) No. 2658/87 of 23 July 1987 on the tariff and statistical nomenclature and on the Common Customs Tariff. It ensures that requirements of the Common Customs Tariff, and the external trade statistics, as well as other EU policies concerning the importation or exportation of goods, are met at one and the same time.

The CN is a further breakdown of the Harmonized System which introduces eight-digit codes below the six-digit level of HS. These eight-digit codes are referred to as "CN subheadings", and are created in those cases where a corresponding rate of duty is specified. When a HS heading or subheading is not further subdivided for European Union purposes, the seventh and eighth digits are '00'.

The CN comprises also preliminary provisions, as well as additional section or chapter notes and footnotes relating to CN subheadings.

The Combined Nomenclature is reproduced in Annex I of the above mentioned Council Regulation. The rates of duty of the Common Customs Tariff and, where applicable, the supplementary statistical units, as well as other necessary information, are laid down in that Annex.

The CN codes as well as the supplementary units are revised on an annual basis, amending Annex I through a Commission Regulation reproducing the complete version of the CN. As a result, CN codes are created, deleted or merged in order to:
- Take into account changes in requirements relating to statistics or to commercial policy
- Take into account technological or commercial developments
- Align or clarify texts
- Introduce the changes of the HS

The said Commission Regulation shall be published not later than 31 October in the *Official Journal of the European Union* and it shall apply from 1 January of the following year.

To assist in classifying commodities, CN Explanatory Notes are produced on an adhoc basis, although they are not legally binding.

Box XIII.10

Stand-alone commodity descriptors: Canada

Merchandise trade data disseminated by Statistics Canada is often supplied with "stand-alone" descriptors designed to identify the commodities of a particular data series. While trade data is collected using the Harmonized System (HS), the HS descriptors are not always suitable for publication purposes. The length of the legal HS descriptors and the use of "Other" or "Other–Other" often do not provide meaningful labels for disseminated data. For example, the Canadian Customs Tariff contains the following descriptors:
- Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus:

8528.72 - - Other, colour

8528.72.20.00 - - - Incomplete or unfinished television receivers, including assemblies for television receivers consisting of video intermediate (IF) amplifying and detecting systems, video processing and amplification systems, synchronizing and deflection circuitry, tuners and tuner control systems, and audio detection and amplification systems plus a power supply, but not incorporating a cathode-ray tube, flat panel screen or similar display.

This has been shortened, through the use of a Statistics Canada stand-alone descriptor, to "Television receivers, colour, incomplete or unfinished".

Data users are advised that these stand-alone descriptors are for dissemination purposes only and have no legal standing. While they are not as precise as the legal descriptors, they do enable an easier understanding of the basic data series.

Box XIII.11

Relationship between HS, the European Union Combined Nomenclature and other international classifications relevant to trade statistics

The following schema illustrates how various international, European and national classifications relevant to trade statistics relate to each other. Each arrow indicates a relationship between a reference classification and a derived classification (to which it points). Solid arrows indicate classifications linked by structure. Dotted arrows and lines indicate classifications linked through conversion tables.
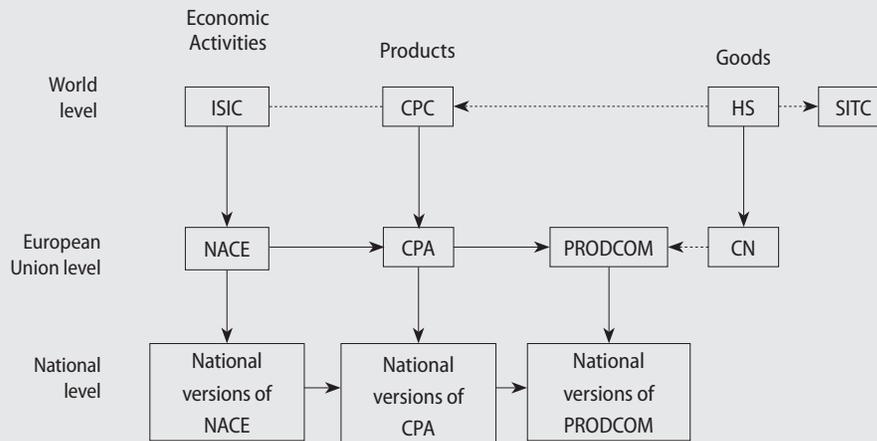
Abbreviations:
ISIC: International Standard Industrial Classification of all Economic Activities
NACE: Statistical Classification of Economic Activities in the European Community
CPC: Central Product Classification
CPA: Classification of Products by Activity
HS: Harmonized Commodity Description and Coding System
CN: Combined Nomenclature
SITC: Standard International Trade Classification
PRODCOM: Classification of goods used for collection and dissemination of statistics on industrial production in the European Union.

Chapter XIV
Valuation

14.1.   *Introduction.* The present chapter elaborates on the recommendations and expressions of encouragement contained in IMTS 2010 (chap. IV), on valuation. It contains details on the compilation of the statistical value of both the cost, insurance, freight (CIF) and the free on board (FOB) types of value, based on the invoice price and terms of delivery (using Incoterms 2010).[141] Further additional guidance is provided on the valuation of selected categories of goods and issues of currency conversion.

A.   Statistical value and its components: an overview

14.2.   *Statistical value.* IMTS 2010 (para. 4.1) recommends that for all goods covered in international merchandise trade statistics, whether sold, exchanged or provided without payment, a statistical value should be recorded. IMTS 2010 (para. 4.8) further recommends that the statistical value of exported goods be a FOB-type value and the statistical value of imported goods be a CIF-type value. Countries are encouraged to compile FOB-type value of imported goods as supplementary information. The statistical value is defined in terms of three components: (a) the transaction value of the goods, (b) the value of services performed to deliver the goods to the border of the exporting country that is not already included in the transaction value and (c) the value of the services performed to deliver the goods from the border of the exporting country to the border of the importing country that is not already included in the transaction value. FOB-type value comprises components (a) and (b), while CIF-type value comprises the sum of (a), (b) and (c).

14.3.   *Need to consider all appropriate sources of information.* The recommendations imply that compilers should develop statistical procedures to make use of all of the price and value information available in customs records, other administrative sources and commercial documents and to estimate the statistical value of goods where such information is not provided or appears inaccurate. In order to obtain the statistical value of the goods, compilers should have a clear understanding of the basic concepts relevant to the valuation as well as a knowledge of the advantages and limitations of various data sources.

14.4.   *Definition of transaction value.* IMTS 2010 (annex D, para. D.1) recommends that the transaction value of the goods should be established in accordance with the World Trade Organization Agreement on Customs Valuation,[142] which in its article 1 defines it as "the price actually paid or payable for the goods when sold for export to the country of importation adjusted in accordance with the provisions of Article 8. This price is to be calculated as "the total payment made or to be made by the buyer or for the benefit of the seller for the imported goods";[143] payments can be monetary or "in the form of specified goods or services".[144] The compiler should be aware that the total payment made or to be made by the buyer or for the benefit of the seller for the imported goods according to Article 8 of the Agreement should include only the following items to the extent that they are incurred by the buyer but are not included in the price actually paid or payable for the goods:

141. Incoterms provide a set of international rules for the interpretation of the most commonly used trade terms in foreign trade. Successive revisions of Incoterms have been introduced by the International Chamber of Commerce (ICC) to adapt them to contemporary commercial practice, including Incoterms 2000 (endorsed by the United Nations Commission on International Trade Law) and Incoterms 2010 (which went into effect on 1 January 2011). Incoterms 2010 defines 11 terms of delivery: ex works (EXW), free carrier (FCA), carriage paid to (CPT), carriage and insurance paid to (CIP), delivered at terminal (DAT), delivered at place (DAP), delivered duty paid (DDP), free alongside ship (FAS), free on board (FOB), cost and freight (CFR) and cost, insurance and freight (CIF). For details on Incoterms 2000, see the report of the Secretary-General of the United Nations on ICC INCOTERMS 2000 (A/CN.9/479). Available from http://www.uncitral.org/uncitral/en/commission/sessions/33rd.html. Further information on Incoterms 2010 is available from the ICC website (http://www.iccwbo.org/incoterms/), as well as in annex E of IMTS 2010.

142. See Legal Instruments Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations: done at Marrakesh on 15 April 1994 (GATT secretariat publication, Sales No. GATT/1994-7). Available from www.wto.org/english/docs_e/legal_e/legal_e.htm#artvii.

143. Agreement on Customs Valuation, Annex 1, Note to Article 1, para. 1.

144. Ibid., General Introductory Commentary, para. 1.

145. Buying commissions are the fees paid by the buyer to a bona fide buying agent (a third party acting as an intermediary on behalf of the buyer) for its services in connection with the purchase of an imported good. Typically, the commission is equal to an agreed-upon percentage of the price of the goods. See, e.g., United States Customs and Border Protection (2006), "Buying and Selling Commissions".

(a). Commissions and brokerage, except buying commissions[145];

(b). The cost of containers which are treated as being one for customs purposes with the goods in question;

(c). The cost of packing whether for labour or materials;

(d). The value, apportioned as appropriate, of the goods and services supplied directly or indirectly by the buyer free of charge or at reduced cost for use in connection with the production and sale for export of the imported goods, to the extent that such value has not been included in the price actually paid or payable:

(e). Royalties and license fees related to the goods being valued that the buyer must pay, either directly or indirectly, as a condition of sale of the goods being valued, to the extent that such royalties and fees are not included in the price actually paid or payable;

(f). The value of any part of the proceeds of any subsequent resale, disposal or use of the imported goods that accrues directly or indirectly to the seller.

(g). Any costs incurred by the seller associated with goods delivery to the buyer and which the buyer agrees to pay, can be part of transaction value (*e.g., export taxes and duties*).

14.5.   *The Agreement covers only the case of imported goods subject to ad valorem duties.* However, IMTS 2010 (para. 4.4) recommends that, for statistical purposes, the transaction value of all imported and exported goods should be established on the basis of the Agreement.

14.6.   *Relationships between transaction value, customs value and statistical value.* Compilers should be aware of the fact that the WTO Agreement on Valuation defines customs value as transaction value, but gives customs authorities flexibility in determining its components. Countries are free to include in or exclude from the customs value, in whole or in part: (a) the cost of transport of the imported goods to the port or place of importation; (b) loading, unloading and handling charges associated with the transport of the imported goods to the port or place of importation; and (c) the cost of insurance (see article 8, para. 2). This means that, depending on the country customs practice, the transaction value can be defined differently and cover partially or wholly the cost of services performed to deliver the goods from their location in the exporting country to the border of the importing country.

14.7.   Customs rules may require that the transaction value of imported goods includes all cost components of CIF-type value and that the transaction value of exported goods include all components of FOB-type value. Whenever this is the case, it is good practice to accept the customs value as the statistical value. In all other cases, compilers should make the necessary adjustments to the available customs values as set out in Article 8.1 of the WTO Agreement on Valuation, including adjustments concerning insurance and freight. If the required information is not available or does not exist (e.g., where goods cross the border without being sold, as is the case for food and other humanitarian aid), the statistical value should be estimated using valuation principles contained in IMTS 2010, chapter IV, and as set out below.

14.8.   *Statistical value and invoice price.* These are two different concepts. The invoice price represents an expected direct monetary payment to the seller and may not take account of other payments (both monetary and non-monetary) which should be included in or excluded from the transaction value. Therefore, the invoice price is usually only a starting point for the derivation of the customs and/or statistical values and has to be adjusted as necessary. The invoice price may not be acceptable for this purpose if the conditions of Article 1 of the WTO Agreement on Customs Valuation are

violated (e.g., if the buyer is precluded by the seller from reselling the goods), in which case the transaction value should be determined on another basis provided for in the Agreement. Further, the invoice value depends on the terms of delivery of the goods and may include various service components conceptually covered in items (b) and (c) of para. 14.2 above. Therefore, it is very important that when estimating the statistical value, compilers have information about the delivery terms, so that the specific items and their costs included or not included in the invoice price can be identified and compilers are in a position to make the calculations needed to obtain the recommended statistical value (see sects. B and C).

14.9.   *The value of service components.* The services rendered in the delivery of goods to the border of the exporting or importing country include, for example, loading and unloading of the goods, fulfillment of the customs formalities such as clearing goods for exportation and paying applicable taxes and duties, transportation, and insurance. They may or may not be included in the invoice price and, in many cases, they should be evaluated with respect to their inclusion in or exclusion from the invoice price in order to obtain the required statistical value. It is advised that compilers apply generally accepted accounting principles which would allow the establishment of the value of these services, and follow broadly, in this regard, the definition of the transaction value of goods as provided in the WTO Agreement on Customs Valuation. It is further advised that the guidelines of the 2008 SNA and BPM6 on valuation of services be taken into account, whenever appropriate.[146]

146. See the 2008 SNA, paras. 3.118-3.150; and BPM6, paras. 3.68-3.80.

14.10.   *List of cost items relevant for the determination of the statistical value.* The main cost items relevant for the determination of the statistical value of the goods for purposes of international merchandise trade statistics are:

(a). Cost of the goods at "factory" gates;

(b). Cost of loading on internal transport;

(c). Cost of transportation from seller's warehouse to main carrier (*including container stuffing costs*);

(d). Cost of insurance to border of exporting country;

(e). Contract of carriage, trade documents in exporting country;

(f). Cost of loading on main carrier (*including transport and warehouse port costs*);

(g). Cost of customs clearance at exportation, including any export duties and other charges;

(h). Cost of international carriage to border of importing country;

(i). Cost of insurance while in international carriage;

(j). Cost of customs clearance at importation, including import duties and other charges;

(k). Cost of unloading at the port of importation (*including transport and warehouse port costs*);

(l). Cost of transportation in the importing country (*including container un-stuffing costs*);

(m). Cost of insurance while in transport in the importing country;

(n). Cost of unloading at the buyer's warehouse.

B.   Compilation of the statistical value of imported goods

14.11.   *Use of customs value as the statistical value.* If the customs value is determined in conformity with the WTO Agreement on Customs Valuation, the statistical value of imported goods either is equivalent to the customs value or can be derived from it by adding the cost of certain services, pursuant to article 8 (2) of the WTO Agreement. The consequence of this provision in article 8 is that the customs value of imported goods may or may not cover the value of all the services required for inclusion in the statistical value of imported goods, e.g., it may or may not include insurance and freight. If a country chooses to include all of the required cost items in the customs value, then the customs value will be the statistical value. Otherwise, compilers need to add the costs (possibly estimated) of these services to the customs value in order to obtain the statistical value.

14.12.   *Use of customs value if the terms of delivery are CIF or CIP.* The customs value for imports should be accepted as the statistical value without any adjustments if:

(a).   The customs value was established in accordance with articles 1-8 of the WTO Agreement;

147. The Incoterm CIP (Carriage and Insurance Paid to) rule is the containerized transport/ multimodal equivalent of the CIF rule.

(b).   The terms of goods delivery are CIF or CIP,[147] and none of the exclusions from the customs value allowed in article 8 (*2*) were made.

14.13.   *Use of the customs value if the terms of delivery are other than CIF/CIP.*   The terms of goods delivery may be other than CIF or CIP. In these cases, the customs value should be accepted as the statistical value, provided that the appropriate adjustments to the invoice price were made by customs or the trader. Compilers should confirm with customs authorities that, if the terms of delivery are other than CIF/CIP, the customs value includes the value of the services covered by the definition of CIF-type statistical value and that it excludes any other costs. The required adjustments to the invoice price are outlined and further explained in table XIV.1 below.

14.14.   *Declaration of the customs value.* It is the responsibility of customs to ensure the proper calculation of the customs value. To ensure accuracy, many countries require the importer to complete a special form, the declaration of the customs value. This declaration identifies the cost components that are included in the customs value, depending on the terms of delivery. If such a declaration is available, it is good practice, in the case of high-value shipments, to review the cost components listed in it in order assess whether any adjustments to the customs value are necessary. It is also advised that compilers cooperate with customs in efforts to improve the reliability of the valuation procedures.

14.15.   *Compilation of the statistical value in the absence of the customs value.* If the customs value deviates from the requirements of the WTO Agreement or if there is no customs value, compilers should derive or estimate the statistical value following the principles of the WTO Agreement. Part I of the WTO Agreement is reproduced in annex D of IMTS 2010.

14.16.   *Adjustments to the invoice value of imported goods depending on the terms of delivery.* Customs administrations generally require the FOB- or CIF-type value to be placed on the customs declarations by traders or, if necessary, calculate those values themselves based on the various documents submitted by traders. Such supporting documents may include the contract of sale, which would normally contain the terms of delivery of goods and the price of the goods, and the invoice issued to the buyer by the seller of the goods. The price of the goods negotiated between traders and reflected in the invoice (also referred to as the invoice price) depends on the terms of delivery. The terms of delivery constitute an agreement between the seller and the buyer on who

is responsible for the cost and risk of delivering the goods to the agreed place. Terms of delivery used in international commerce include those of the FOB and CIF types, as defined by the International Chamber of Commerce and described in annex E of IMTS 2010. Compilers have to make appropriate adjustments to the invoice price to obtain CIF- or FOB-type values of goods if such values are not available from customs or other sources.

14.17.   *Table XIV.1* describes the various terms of delivery (right-hand column headings) in terms of a list of cost items that need to be added to or subtracted from the invoice price (left-hand column) to obtain the CIF-type value of imported goods. The list of cost items is indicative, and may not be applicable in all cases. The content of a cost item as well as its inclusion in or exclusion from the invoice price might differ from one transaction to another depending on national legal requirements and on the contractual agreements between the parties. (For the purposes of tables XIV.1-XIV.3, it is assumed that the cost of the goods at the factory gate are included in the invoice price.) The CIF column of the table identifies (with a boldface "Y") cost items that are covered by the definition of CIF-type value, and which are assumed to be normally included in the invoice price of imported goods when delivered under those terms. The other columns in the table identify whether a cost item is assumed (a) to be included in the invoice price when the goods are delivered under those terms, with no adjustment needed (indicated by the symbol "*"), (b) to be excluded from the invoice price and added to it (indicated by the symbol "+") or (c) to be included in the invoice price and to be subtracted from it (indicated by the symbol "−"). An empty cell indicates that the item is assumed to be excluded from the invoice value and therefore from the CIF- or FOB-type values as well. If, in a particular case, an assumption regarding inclusion or exclusion of any cost item in the invoice price is not correct, then that item should be subtracted or added, as appropriate. The term "FCA" appears as "FCA/x" to indicate that it is to be interpreted as FCA, border of exporting country.

14.18.   *The use of table XIV.1 can be illustrated as follows.* If, for example, goods are imported under the terms of DDP (delivered duty paid to buyer's warehouse), then the insurance while in international transport should be added; however, the cost of customs clearance at importation, including import duties and other charges, cost of transportation in the importing country and cost of insurance while in transport in the importing country, and the cost of unloading at the buyer's warehouse, should all be subtracted from the invoice price to obtain a CIF-type value, as recommended for import statistics.

Table XIV.1
Adjustments to the invoice price required to obtain CIF-type value of imported goods

Cost item	Terms of delivery										
	CIF	EXW	FCA/x	FAS	FOB	CFR	CPT	CIP	DAT	DAP	DDP
Costs in exporting country											
1. Cost of loading on internal transport	Y	+	*	*	*	*	*	*	*	*	*
2. Cost of transportation from seller's warehouse to main carrier (including container stuffing costs)	Y	+	*	*	*	*	*	*	*	*	*
3. Cost of insurance to border of exporting country	Y	+	*	*	*	*	*	*	*	*	*
4. Contract of carriage, trade documents in exporting country	Y	+	*	+	*	*	*	*	*	*	*
5. Cost of loading on main carrier (including transport and warehouse port costs)	Y	+	+	+	*a	*	*	*	*	*	*
6. Cost of customs clearance at exportation, including any export duties and other charges	Y	+	*	+	*	*	*	*	*	*	*
Main carriage											
7. Cost of international carriage to border of importing country	Y	+	+	+	+	*	*	*	*	*	*
8. Cost of insurance while in international carriage	Y	+	+	+	+	+	+	*	+	+	+
Costs in importing country											
9. Cost of customs clearance at importation, including import duties and other charges											−
10. Cost of unloading at the port of importation (including transport and warehouse port costs)	Yb	+	+	+	+	*	*	*	*	+	*
11. Cost of transportation in the importing country (including container un-stuffing costs)											−
12. Cost of insurance while in transport in the importing country											−
13. Cost of unloading at the buyer's warehouse											−

14.19.   *Establishing the statistical value of imported goods.* Commercial practices in international merchandise trade display a variety of detail in the terms of delivery of goods. Statisticians should carefully examine the available data sources and information, including the terms of delivery of goods, in order to derive the recommended CIF-type values. In addition, they should establish a close cooperation with customs and other primary data collectors in order to provide guidance on the methodology regarding the statistical value and to ensure the availability of adequate data.

C. Emerging good practices in the compilation of free on board (FOB)-type value of imported goods

14.20.   A number of countries compile FOB-type value of imported goods on a regular basis. An example of how this is done is provided in box XIV.1 below.

Box XIV.1

The practice of the Philippines in computing the FOB value of imports

 The valuation of imports in its monthly releases in the Philippines is in terms of FOB value. The final publication for imports, however, consists of both FOB and CIF.

The FOB value is computed in two ways. First, the terms of delivery or Incoterms in box 20 of the Import Entry and Internal Revenue Declaration Form (IERD) is checked. If the entry in box 20 is FOB, the value is simply copied. If the terms of delivery is CFR, the FOB value is computed by subtracting the Freight value which is found in box 9a of the IERD. If the terms of delivery are CIF, the FOB value is computed by subtracting the sum of the freight value (box 9a) and the insurance value (Box 9b).

Another way to compute the FOB value is as follows: FOB value = Dutiable value in pesos (box 46)/ Exchange rate (box 23) − [Freight value (box 9a) + Insurance value (box 9b)]

14.21.   *Adjustments to invoice value to obtain FOB-type value of imported goods.* Table XIV.2 provides guidance on the adjustments to invoice price that are required to obtain the FOB-type value of imported goods. (See para. 14.17 for explanation of the notation used in Table XIV.2)

14.22.   *Estimation of FOB value of imports from alternative data sources.* In cases where FOB values are not available from the primary trade data source, they can be estimated using actual or estimated freight and insurance costs for transactions that are provided by traders on declarations, supplemented by information on freight and insurance rates from providers of those services. Further, CIF/FOB adjustment factors could be obtained for a sample of imports through supplementary surveys of importers. The sample could be selected from the imports declarations, with information on importers' names and contact addresses being the basis for the survey. Another possibility is to obtain information on the exported value in cooperation with authorities in the exporting countries, if processing systems and confidentiality rules allow declarations to be accessed.

Table XIV.2
Adjustments to the invoice price required to obtain FOB-type value of imported goods

Cost items	Terms of delivery										
	FOB	EXW	FCA/x	FAS	CFR	CIF	CPT	CIP	DAT	DAP	DDP
Costs in exporting country											
1. Cost of loading on internal transport	Y	+	*	*	*	*	*	*	*	*	*
2. Cost of transportation from seller's warehouse to main carrier (including container stuffing costs)	Y	+	*	*	*	*	*	*	*	*	*
3. Cost of insurance to border of exporting country	Y	+	*	*	*	*	*	*	*	*	*
4. Contract of carriage, trade documents in exporting country	Y	+	*	+	*	*	*	*	*	*	*
5. Cost of loading on main carrier (including transport and warehouse port costs)	Y[a]	+	+	+	*	*	*	*	*	*	*
6. Cost of customs clearance at exportation, including any export duties and other charges	Y	+	*	*	*	*	*	*	*	*	*
Main carriage											
7. Cost of international carriage to border of importing country					−	−	−	−		−	−
8. Cost of insurance while in international carriage						−		−			−
Costs in importing country											
9. Cost of customs clearance at importation, including import duties and other charges											−
10. Cost of unloading at the port of importation (including transport and warehouse port costs)					−	−[b]	−			−	−
11. Cost of transportation in the importing country (including container un-stuffing costs)											−
12. Cost of insurance while in transport in the importing country											−
13. Cost of unloading at the buyer's warehouse											−

Abbreviations: FOB: Free on Board; EXW: Ex works; FCA/x: Free Carrier; FAS: Free Alongside Ship; CFR: Cost and Freight; CIF: Cost, Insurance, Fright; CPT: Carriage Paid to; CIP: Carriage and Insurance Paid to; DAT: Delivered at Terminal; DAP: Delivered at Place; and DDP: Delivered Duty Paid.

Note: "Y" signifies that a cost item is covered by the definition of FOB-type value and normally included in the invoice price when delivered under FOB terms. An asterisk (*) signifies that the cost item is normally included in the invoice price, when the goods are delivered under the terms indicated by the columns heading, with no adjustment needed. A plus sign (+) signifies that the cost item is excluded from the invoice price and is to be added. A minus sign (−) signifies that the cost item is included in the invoice price and is to be subtracted.

a. Under the FOB term, this cost item may be divided between seller and buyer and may be only partially included in the invoice value of the goods. However, it should be fully included in the FOB-type statistical value of imported goods.

b. Under the CIF term, this cost item may be divided between seller and buyer and may be only partially included in the invoice value. However, it should be fully excluded from the FOB-type statistical value of imported goods.

14.23.   *Adjustment factors.* If it is not possible to calculate the FOB value of imports directly, adjustment factors can be derived. The allocation of work in this area between trade statistics and balance-of-payments compilers will depend on

national circumstances, but the interlinked nature of the tasks means that there should be close cooperation. As freight and insurance costs vary with factors such as the commodities involved, mode of transport, size of consignment, and distance between ports, adjustment factors should be derived in some detail, for example, by country, product and mode of transport. To the extent that the costs vary over time and with the mix of products, they will need to be updated frequently. For adjustment factors from samples, the degree of detail is likely to be considerably less than is possible with complete coverage from customs declarations. Adjustment factors are usually expressed as percentages of trade values, but this is only an approximation, as some costs relate to weight or volume rather than to value. In addition, the relative prices of the good and its transport costs might move in different ways (for example, if metal prices fall, there is no reason to expect that freight costs will also fall). The insurance companies that insure goods when they leave a country are possible sources of information on insurance costs.

D.   Compilation of statistical values of exported goods

14.24.   *Use of customs value as the statistical value.* The customs value and the statistical value of both imported and exported goods should be consistent. In this connection, IMTS 2010 (para. 4.4) recommends that countries adopt the WTO Agreement on Customs Valuation as the basis for valuation of all goods flows. This approach builds on article VII of the General Agreement on Tariffs and Trade (GATT),[148] which requires that the same principles of valuation should apply to valuation of both imported and exported goods. However, there is no international agreement on the implementation of article VII of the GATT with respect to the customs value of exported goods. IMTS 2010 recommends that an FOB-type value be used as the statistical value of exported goods.

14.25.   *Customs administrations enjoy freedom of interpretation in respect of how the customs value of exported goods should be determined.* In general, customs requires that actual prices paid for the goods and costs of delivery to the border be declared, so that an FOB-type customs value can be established. In the absence of price information, customs might require certain substitutes such as the prices of identical or similar goods. The degree of verification of accuracy of the information provided by declarants depends in part on whether or not customs values are used for assessing export duties and other related charges. Countries may also have different interpretations of the term "costs of delivery to the border of the exporting country". For example, some countries do not include in this item the cost of inland insurance.

14.26.   *Ensuring accuracy and comparability in valuation of exports.* As in many countries the customs valuation of exported goods is less regulated than valuation of imported goods, it is a good practice to make special efforts to assess the compatibility of customs practices of valuation of exported goods with statistical requirements. It is further advised that if customs values of economically significant shipments of goods, when established, clearly deviate from those requirements, these customs values be replaced, for statistical purpose, by values derived from non-customs sources or by estimated values (e.g., based on the value of identical or similar goods, if deemed more accurate). Compilers are encouraged to contact exporters of major commodities and, if necessary, to conduct special studies to determine the statistical value on the basis of cost of production, including cost of materials, compensation of employees and other relevant information.

14.27.   *Use of the customs value if the terms of delivery are FOB or FCA.* The customs value for exports should be accepted as the statistical value, without adjustment (a) if the transaction value was established in accordance with articles 1 - 8 of the WTO Agreement and (b) provided that the terms of delivery were (i) free on board (FOB)[149] at port on the frontier of the exporting country (for goods dispatched by sea or inland

148. See Legal Instruments Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, done at Marrakesh on 15 April 1994 (GATT secretariat publication, Sales No. GATT/1994-7).

149. If the term "delivered at frontier" (DAF), as defined in Incoterms 2000, is applied, then the customs value can also be accepted as the statistical value.

waterway) or (ii) free carrier (FCA) at terminal on the frontier of the exporting country (for goods dispatched by means of transport to which FOB is not applicable).

14.28.   *Use of the customs value if the terms of delivery are other than FOB or FCA.* In such cases, the customs value should be accepted as the statistical value, provided that appropriate adjustments were made to the invoice value. If the terms of delivery are other than FOB or FCA, compilers should ascertain whether the customs value includes the value of the services covered by the definition of statistical value and that it excludes any other costs. An outline of the required adjustments to the invoice price is contained in table XIV.3, below[150] (see para. 14.17 for explanation an of the notation used in table XIV.3).

Table XIV.3
Adjustments to the invoice price required to obtain FOB-type value of exported goods

Cost items	FOB	EXW	FCA/x	FAS	CFR	CIF	CPT	CIP	DAT	DAP	DDP
Costs in exporting country											
1. Cost of loading on internal transport	Y	+	*	*	*	*	*	*	*	*	*
2. Cost of transportation from seller's warehouse to main carrier (including container stuffing costs)	Y	+	*	*	*	*	*	*	*	*	*
3. Cost of insurance to border of exporting country	Y	+	*	*	*	*	*	*	*	*	*
4. Contract of carriage, trade documents in exporting country	Y	+	*	+	*	*	*	*	*	*	*
5. Cost of loading on main carrier (including transport and warehouse port costs)	Y[a]	+	+	+	*	*	*	*	*	*	*
6. Cost of customs clearance at exportation, including any export duties and other charges	Y	+	*	+	*	*	*	*	*	*	*
Main carriage											
7. Cost of international carriage to border of importing country					−	−	−	−		−	−
8. Insurance while in international carriage						−		−			-
Costs in importing country											
9. Cost of customs clearance at importation, including import duties and other charges											-
10. Cost of unloading at the port of importation (including transport and warehouse port costs)					−	−[b]			−	−	−
11. Cost of transportation in the importing country (including container un-stuffing costs)											−
12. Cost of insurance while in transport in the importing country											−
13. Cost of unloading at the buyer's warehouse											−

150. It should be noted that table XIV.3 is identical to table XIV.2, as the FOB-type statistical value of exported and imported goods is compiled with reference to the same point of valuation: the border of the exporting country.

Abbreviations: FOB: Free on Board; EXW: Ex works; FCA/x: Free Carrier; FAS: Free Alongside Ship; CFR: Cost and Freight; CIF: Cost, Insurance, Fright; CPT: Carriage Paid to; CIP: Carriage and Insurance Paid to; DAT: Delivered at Terminal; DAP: Delivered at Place; and DDP: Delivered Duty Paid.

Note: "Y" signifies that a cost item is covered by the definition of FOB-type value and normally included in the invoice price when delivered under FOB terms. An asterisk (*) signifies that the cost item is normally included in the invoice price, when the goods are delivered under the terms indicated by the columns heading, with no adjustment needed. A plus sign (+) signifies that the cost item is excluded from the invoice price and is to be added. A minus sign (−) signifies that the cost item is included in the invoice price and is to be subtracted.

a. Under the FOB term, this cost item may be divided between seller and buyer and may be only partially included in the invoice value of the goods. However, it should be fully included in the FOB-type statistical value of exported goods.

b. Under the CIF term, this cost item may be divided between seller and buyer and may be only partially included in the invoice value. However, it should be fully excluded from the FOB-type statistical value of exported goods.

E.   Valuation of selected categories of imported and exported goods

14.29.   Provided below is additional guidance on the valuation of selected categories of goods, designed to assist countries in setting up the appropriate valuation procedures and to ensure better international comparability. The present section relates to paragraph 4.15 of IMTS 2010, which provides information regarding some additional categories of goods and to paragraph 4.16, on the valuation of transactions without valuation.

14.30.   *Media, whether or not recorded.* According to IMTS 2010 (paras. 1.18 and 4.15 (b)), media, whether or not recorded, should be valued at their full transaction value (and not at the value of unrecorded media such as empty diskettes, blank CD-ROMs, DVDs, paper, etc.). Compilers should be aware that the transaction value might fully or partially include the value of certain services. In this connection, media carrying customized software or software written for a specific client or originals of any nature, if identified, are to be excluded. Details on how the transaction value is established and how the value of the software is identified and excluded should be provided in the metadata. If a significant value of customized software or software written for a specific client or originals is suspected to have been included, it is good practice to contact the declarant and ask about the details of the product content. It should be noted that the licence agreements on the usage of software (e.g., on subsequent purchase of additional usage rights) that are not directly connected with a transfer of relevant media are not relevant for the valuation of media (for country experiences see Boxes XIV.2 and XIV.3).

Box XIV.2

Experience of Eurostat in distinguishing customized and regular software

Licences to use non-customized software downloaded or otherwise electronically delivered, whether with a periodic licence fee or a single payment, should be included in computer services *(see Manual on Statistics of International Trade in Services 2010ᵃ* (MSITS2010), para. 3.225, as well as para. 3.257 on *mass-produced audiovisual products)*. In contrast, non-customized software products on storage devices, and with licences that convey perpetual use, are to be included in general merchandise trade statistics.

In case of cross-border acquisition of tailor-made software, the transactions should of course be included in services. In the case where the software will be used for more than one year, the company records it in the balance sheets as an asset (and not under profit and loss). The full amount of the cross-border payment as an import will be recorded at the moment when the software changes ownership.

a.   United Nations publication, Sales No. E.10.XVII.14.

Box XIV.3

Experience of Italy in distinguishing customized and regular software

The correct classification and measurement of trade in goods are highly problematic when the monetary value of a good incorporates a significant share of remuneration for services provided together with the good. Besides the well-known case of software products, there are some other remarkable examples where the possibility of making a clear-cut distinction between goods and services becomes more and more remote, as when machine tools incorporate services for their installation as well as technical assistance on demand.

A concrete example of a goods transaction containing a relevant services component is provided by Italy. A company in that country imported ground flying trainers consisting of a simulator and its related software. The software was declared together with the simulator to constitute a single

good with a remarkably high unit value, which, usually, would indicate a possible outlier. The correct classification and measurement of this trade transaction were possible on the basis of the following additional information:

- The commercial invoice sent by the company, upon a request for clarification, which contained a detailed description of the two products (simulators and software) and their specific value
- Confirmation by the company that the software was not standardized but rather customized for the specific use of the simulator

As a result, the transaction was recorded as two distinct flows: "Ground flying trainers and parts thereof, n.e.s.[a] (excluding air combat simulators and parts thereof)" (HS 2007 code 880529); and the software developed to use those simulators (HS 2007 code 852340). The commercial invoice, the transport documents and the direct contact with the respondent were highly useful in enabling a decision to be made on this kind of transaction and the correct statistical value of the good to be measured.

a.   Not elsewhere specified.

14.31.   *Electricity, gas, oil and water.* According to IMTS 2010 (paras. 1.24 and 4.15 (c), electricity, gas, oil and water should be valued net of any delivery charges not included according to FOB- or CIF type valuation. IMTS 2010 recommends that, in the absence of adequate customs records: (a) the transaction value of these goods should be obtained directly from the buyer and seller, (b) if only the overall value inclusive delivery charges is available, such charges should be identified (e.g., using other sources of information and estimation) and subtracted to obtain the statistical value of these goods, (c) delivery charges should be valued at market prices, if possible, and (d) trading partners in such transactions should value and record these flows in a uniform way to improve international comparability. The estimations of the value can be based on historical data, information from traders, stock markets, spot prices or small surveys of price statistics (see also chap. XXII for more details regarding the recording of trade transactions in electricity, gas, oil and water).

14.32.   *Goods for processing with or without change of ownership.* According to IMTS 2010 (paras. 1.19-1.21 and 4.15 (e), if the transaction value of goods for processing entering or leaving the compiling country without change of ownership is not available, the trade compilers should apply the appropriate methods contained in the WTO Agreement on Customs Valuation in order to derive their statistical value. Goods for processing should always be valued at their full (gross) value. The full value of the goods in their unprocessed state must be reported for transactions involving goods sent for processing. They may be based on a qualified estimation in cases where the invoice does not show this amount. Regarding transactions following processing, the full transaction value of the processed goods must be reported. The transaction value should include the value initially reported for the unprocessed goods plus the processing costs.

14.33.   *Goods that cross borders as a result of transactions between related parties.* The proper statistical valuation of goods that cross borders as a result of transactions between related parties (see IMTS 2010, para. 1. 22) is a challenge, as the use of transfer pricing in intra-firm trade is a quite widespread practice especially in cases where there is no legal obligation for traders to comply with the provisions of the WTO Agreement on Customs Valuation. In these cases, the invoice may not reflect the true market value. The existence of a problem may be indicated by the low unit values as compared with the unit values for identical or similar goods in transactions between non-related parties. In cases of economic significance, it is good practice to replace the transfer prices of such goods by their estimated statistical value following the methods provided in the WTO Agreement, i.e., based on the value that would have been realized in the event of a purchase or sale under normal market conditions. This type of estimation should also

be adequately reflected in the metadata (see chap. XXI for more details on the trade between related parties).

14.34.   *Returned goods.* According to IMTS 2010 (paras. 1.23 and 4.15 (f), if identifiable, returned goods are to be valued as at the initial transaction. When the returned goods are broken or defective, the value reported should be the value of the original sale or purchase of the goods. Returned goods are a special case of re-imports and re-exports and only in this special case does the valuation at the initial transaction value apply. In all other cases, reimports and re-exports should be valued as any other good, based on their transaction value.

14.35.   *Transactions without valuation: the case of humanitarian aid in goods.* According to IMTS 2010 (paras. 1.14 and 4.16), important transactions relating to humanitarian aid in high-value goods (e.g., medicines) should be recorded in international merchandise trade statistics in full commodity and partner detail. However, if recording full commodity and partner detail for humanitarian aid transactions represents a disproportionate effort, the inclusion in the total of exports or imports without such detail is deemed appropriate. In the United States of America, for example, exports of international aid in goods are usually classified under four commodity codes in Chapter 98. They are food products, medicinal and pharmaceutical products, wearing apparel, and donated articles not elsewhere specified. It is required that the value of these goods be reported at their market value. If that value is not known, then filers are to report an estimate of how much they would receive if they sold the goods. They are advised that the value should be consistent with respect to the goods being exported.

14.36.   *Waste and scrap.* The transaction value of waste and scrap should be assessed as the full payment by the importing country to the country of exportation, less payment by the exporting country to the country of importation, for the services related to the disposal of waste and scrap, if any. If the net payment of the importing country is zero or negative, that waste and scrap should be excluded from the merchandise trade statistics of both countries, but separately recorded, using appropriate quantity units.

F.   Issues of currency recording and conversion

14.37.   *Summary of IMTS 2010 recommendations on currency conversion.* IMTS 2010 recommends that:

(a). If the value of trade transactions is expressed initially in a variety of currencies or in other standards of value compilers should convert these values into a single (*reference*) unit of account (IMTS 2010, para. 4.18)

(b). The national currency unit is the preferable reference unit of account, however, if it is subject to significantly larger fluctuations than those of other currencies, it might be appropriate to use another, more stable unit of account (*IMTS 2010, para. 4.18*)

(c). Countries should follow the provisions of the WTO Agreement on Customs Valuation with respect to exchange rate for conversion. The rate of exchange to be used shall be that duly published by the competent authorities, the conversion rate to be used shall be that in effect at the time of exportation or the time of importation, etc. (*see IMTS 2010 para. 4.19*);

(d). Compilers should apply an equivalent approach to conversion for both imports and exports. In cases when both buying and selling (*official/market*) rates are available, the rate to be used is the midpoint between the two, so that any service charge (i.e., the spread between the midpoint and those rates) is excluded. If a rate

is not available for the date of exportation or importation, the average rate for the shortest period applicable should be used (see IMTS 2010, para 4.20);

(e). If multiple official exchange rates are used, the trade transactions should be recorded using the actual rate applicable to specific transactions, noting which official rate was used for each currency (*see IMTS 2010, para. 4.21*);

(f). Transactions that involve parallel or black market rates should be handled separately from those that involve official rates. Compilers of trade statistics should attempt to estimate the exchange rate actually used in transactions in such markets, and should use that rate for conversion (*see IMTS 2010 para. 4.22*).

14.38.   *Rules for conversion of the currency in which the value of a transaction is expressed to the national currency are established in most countries by customs.* In general, the conversion is effected by customs or the declarants according to the rules set by customs. Compilers are advised to review those rules and their application to assess their compliance with the recommendations contained in IMTS 2010 and as described above. Compilers should cooperate with customs to ensure compliance. If values are not converted by customs or declarants according to the requirements, compilers should conduct the currency conversion themselves or adjust values to ensure compliance (see paras. 14.39–14.40 and Box XIV.4 for country experiences).

14.39.   *Currency conversion: experience of Germany.* Currency conversion is usually conducted by customs or by the declarants and can refer to (a) official rates that are applicable for customs purposes (published monthly by the customs administration), (b) the exchange rates that are applicable for taxation purposes (published monthly by the Ministry of Finance) or (c) official exchange rates published in the daily press at the time when the declaration is completed. Data collection and data processing are carried out in the national currency (the euro). However, for international comparisons the results are published in euros as well as in dollars. The conversion from euro to dollar is conducted by the Statistical Office and the conversion factors are based on the average currency exchange rates calculated monthly and published by the European Central Bank (euro reference rates). This method is also applied to the currency conversion for yearly figures (i.e., annual average exchange rates are not used). Currency conversion may be one cause for asymmetries in mirror statistics.

14.40.   *Currency conversion: experience of Brazil.* The foreign trade operations in Brazil are controlled by a system called SISCOMEX, which is characterized by the integration of the activities of recording, monitoring and control of foreign trade operations through a single flow of information. The integration of this system allows the values of all transactions to be automatically converted to the equivalent value in United States dollars, using the official exchange rate of the Central Bank on the day of the registration of the export or import operations.

Box XIV.4

Experience of the European Union in currency conversion using different exchange rates for customs data and in Intrastat

Currency conversion shall be made if the invoiced value is not stated in the national currency of the compiling member State.

The exchange rate to be applied in the Intrastat system shall be:

- The rate of exchange applicable for determining the taxable amount for value added tax (VAT) purposes, when this is established or
- The official rate of exchange at the time the declaration has been completed or that applicable to calculation of the value for customs purposes, in the absence of any special provisions decided by the member States

The exchange rate applicable for VAT purposes shall be the latest selling rate recorded, at the time the VAT becomes chargeable, on the most representative exchange market or markets of the member State concerned. In practice, this means that the exchange rate announced by the European Central Bank (for members of the euro zone), or by the national bank for the date when the invoice was issued, is applied.

The statistical value on the customs declaration shall be expressed in the national currency of the member State where the customs declaration is lodged. Where a conversion of currency is necessary for expressing the statistical value in the national currency, the rate of exchange to be used shall be:

- The rate applicable according to the provisions on currency conversion laid down in the Customs Code at the time the customs declaration is accepted or, failing this,
- The reference rate applicable at the time the goods are imported or exported set by the European Central Bank for member States belonging to the euro zone or the official rate set by member States not belonging to the euro zone

The rate recorded on the second-last Wednesday of a month and published on that or the following day is used, generally to convert factors used to determine the customs value of goods expressed in a currency other than that of the member State where the valuation is made. This exchange rate shall be used during the following calendar month unless it differs by 5 per cent from that recorded on the last Wednesday of a month.

Chapter XV
Quantity measurement

15.1.   The present chapter focuses on good practices in the collection, validation and reporting of quantity information based on the recommendations contained in chapter V, on quantity measurement, of IMTS 2010. It provides details on the World Customs Organization (WCO) standard units of quantity and elaborates the concept of net weight. The chapter covers the subject of data compilation from customs and non customs sources, the conversion of non-standard quantity units to the WCO standard units and net weight, quality issues and the estimation and imputation of missing quantities. The annexes to the chapter present mathematical conversion factors and conversion factors applied by UNSD. This chapter is linked to chapter XIII on the Harmonized Commodity Description and Coding System (HS), as the standard units of quantity are specified in terms and as part of the HS. Section D on quality issues, which is linked to Chapter IX, contains additional information regarding the quality assurance of quantity and net weight.

A.   An overview of the World Customs Organization standard units of quantity

15.2.   *IMTS 2010 recommendations regarding units of quantity.* IMTS 2010 (para. 5.5) recommends that countries collect or estimate, validate and report quantity information in the WCO standard units of quantity and in net weight[151] on all trade transactions.[152] Specifically, it is recommended that:

(a).   Countries use the applicable WCO standard units of quantity when collecting and reporting international merchandise trade on the basis of the Harmonized System;[153]

(b).   In the case of the HS headings (*subheadings*) where the standard unit is other than weight, a net weight also be compiled and reported;

(c).   Weight figures be reported on a net weight basis; however, if only gross weight is available, it should be recorded and used for estimation of net weight;

(d).   Countries that use units of quantity other than the WCO standard units or use units of quantity different from the one recommended for the specific commodity (*HS six-digit subheading*) provide the conversion factors to the recommended standard units in their metadata.

15.3.   *WCO standard units of quantity.* In 2011, WCO adopted a new Recommendation on the use of standard units of quantity to facilitate the collection, comparison and analysis of international statistics based on the HS Nomenclature 2012 Edition.[154] The WCO standard units of quantity are:[155]

- Weight: — kilograms (kg)
              — Carat (carat)
- Length: — metres (m)
- Area: — square metres (m²)
- Volume: — cubic metres (m³)
              — litres (l)

151. Information on net weight is useful for economic analysis, such as the calculation of unit values. To the extent that gross weights (including packaging) are also desired by a country, they should be collected directly. However, given that collection of gross weight data presents difficulties in many countries, countries may wish to obtain gross weights from net weights through sampling and estimation.

152. A few exceptions may be noted: e.g., net weight does not apply to HS subheading 271600 "Electrical energy".

153. It is acknowledged that WCO standard units of quantity do not necessarily reflect industry norms for trade under certain subheadings in all countries.

154. See World Customs Organization, Recommendation of the Customs Co-operation Council on the use of the standard units of quantity to facilitate the collection, comparison and analysis of international statistics based on the Harmonized System, (24 June 2011). Available from http://www.wcoomd.org/en/about-us/legal-instruments/recommendations/~/media/WCO/Public/Global/PDF/About%20us/Legal%20Instruments/Recommendations/HS/Recommendation_HS2012_UnitsOfQuantity.ashx.

155. Ibid, annex, introduction, para. 4.

- Electrical power: — 1,000 kilowatt-hours (1,000 kWh)
- Number (units): — pieces/items (u)
                   — pairs (2u)
                   — dozens (12u)
                   — thousands of pieces/items (1,000u)
                   — packs (u (jeu/pack)

15.4.   *WCO Recommendation*. In the WCO Recommendation on the use of standard units of quantity, one of the above standard units of quantity is specified for each HS six-digit subheading.[156] Further, it is recommended that Member administrations and Contracting Parties to the Harmonized System Convention report international trade data to the United Nations and other international organizations, in terms of standard units of quantity specified in the annex to the WCO Recommendation, employing as many as possible, but not less than 90 per cent of the HS subheadings.[157] It is recognized that in the commercial practice of many countries the quantities of some goods might be recorded in other units of quantity, as the application of the WCO recommended quantity units is not an international legal obligation. If such non-standard units are in use, it is a good practice to provide users with the appropriate factors of conversion to net weight and, if required by users, to the appropriate WCO standard units of quantity.

15.5.   *Recommended quantity units by subheading, heading and HS Chapter level.* For 75.8 per cent of the six-digit subheadings of HS 2012, the recommended unit is kilograms and for almost 21.3 per cent it is number of items (see table XV.1). Other recommended units are mainly used for very specific commodities. For example, "square metres" is the recommended quantity unit for, among other commodities, carpets and other textile floor coverings (HS 2012 heading 57.02); "1,000 kilowatt hours" only applies to electrical energy (HS 2012 code 2716.00); "metres" is the recommended quantity for only two headings, namely, photographic film in rolls (HS2012 heading 37.02) and cinematographic film (HS2012 heading 37.06); "pairs" is mainly used for footwear (HS2012 headings 64.01 to 64.05) and skis and ice skates and roller skates etc. (HS2012 heading 9506); and "litres" is the recommended quantity unit only for beverages, spirits and vinegar etc. (HS2012 Chapter 22). For two thirds (63 out of 96) of the HS chapters, the recommended quantity is the same for the entire chapter, and for 90 percent out of 1224 headings the recommended quantity is the same for all commodities within the heading. This indicates that the recommended quantity is the same for many commodity groupings.

Table XV.1
Quantity units of the HS 2012 six-digit subheadings

WCO quantity unit [a]	WCO abbreviation	Number of sub-headings per quantity unit	Share of quantity units (percentage)
No quantity	-	1	0.00
Area in square metres	m^2	50	1.00
Electrical energy in thousands of kilowatt-hours	1000 kWh	1	0.00
Length in metres	m	10	0.20
Number of items	u	1 106	21.30
Number of pairs	2u	24	0.50
Volume in litres	l	22	0.40

Weight in kilograms	kg	3 949	75.80
Thousands of items	1,000u	1	0.00
Number of packages	u(jeu/pack)	1	0.00
Volume in cubic metres	m³	32	0.60
Weight in carats	carat	8	0.20
Total		5205	

15.6.   *Practices in the application of the supplementary units in the European Union.* Supplementary units used in the European Union to measure quantity other than net mass are laid down in the Combined Nomenclature (CN)[158] (see box XV.1). They are defined at the most detailed level, i.e., for the CN subheadings. If a supplementary unit is not given in the CN, the quantity of goods is expressed only in net mass. EU supplementary units may differ from those recommended by WCO (for example, volume for HS 271121 (Natural gas) is expressed in terajoules (gross calorific value). The EU supplementary units are subject of annual revision of the Combined Nomenclature.

158. The Combined Nomenclature (CN) is the classification used within the European Union for collecting and processing foreign trade data. The CN is defined on the eight-digit level, adding subdivisions to the HS. For further details on the CN, see box XIII.9.

Box XV.1
Supplementary units of the Combined Nomenclature (*CN*) used in EU member States

c/k	Carats (1 metric carat = 2 × 10−4 kg)
ce/el	Number of cells
ct/l	Carrying capacity in tonnes
g	Gram
gi F/S	Gram of fissile isotopes
kg C5H14ClNO	Kilogram of choline chloride
kg H2O2	Kilogram of hydrogen peroxide
kg K2O	Kilogram of potassium oxide
kg KOH	Kilogram of potassium hydroxide (caustic potash)
kg met.am.	Kilogram of methylamines
kg N	Kilogram of nitrogen
kg NaOH	Kilogram of sodium hydroxide (caustic soda)
kg/net eda	Kilogram drained net weight
kg P2O5	Kilogram of diphosphorus pentaoxide
kg 90 % sdt	Kilogram of substance 90 % dry
kg U	Kilogram of uranium
1 000 kWh	Thousand kilowatt-hours
l	Litre
1 000 l	Thousand litres
l alc. 100 %	Litre pure (100 %) alcohol
m	Metre
m²	Square metre
m³	Cubic metre
1 000 m³	Thousand cubic metres
pa	Number of pairs
p/st	Number of items
100 p/st	Hundred items
1 000 p/st	Thousand items
TJ	Terajoule (gross calorific value)

15.7.   *Definition of gross and net weight.* Weight (in kilograms) can be measured on a net or a gross basis to meet a variety of needs. The total gross weight is defined by WCO as the weight (mass) of goods including packaging but excluding the carrier's equipment for a declaration, while net weight refers to the weight (mass) of the goods

themselves without any packing. [159] Both measures of weight have their own analytical value. For example, gross weight is more appropriate for analysis of transportation, while net weight is necessary, e.g., for the analysis of the nutritional or calorie content of imported food items.

15.8.   *Specific guidelines regarding the definition of net weight.* IMTS 2010 (para. 5.5 (c) recommends that weight figures be reported on a net basis, i.e., excluding all/any packaging. This also applies when the packaging is very elaborate or expensive, although one could imagine cases where the packaging itself is also a good, for example, a silver caddy containing tea, or an ornamental ceramic bowl containing sweets, or where packing materials or packing containers are clearly suitable for repetitive use, for example, certain metal drums or containers of iron or steel for compressed or liquefied gas (for country experiences see Boxes XV.2 and XV.3).

Box XV.2

Definition of "net weight" adopted by China

Because the information on net weight often refers to the transportation document, in practice, the net weight is often the weight excluding the weight of the outer package. According to the Guideline for Completing the Customs Import and Export Declaration Form, the definition of net weight for some specific goods are listed as following:

  a.)   For the goods contained in a reusable container, such as compressed oxygen or similar products, the net weight should exclude the weight of the container;

  b.)   For the goods contained in a package for retail sale, such as canned food, cosmetics, medicine and other similar products, the net weight of the goods should exclude the outer package, but include the inner package for retail packing;

  c.)   For goods like beverages, spirits or similar products, the net weight of goods is the weight of the liquid, which should exclude the packaging, even if for retail packing.

Box XV.3

Definition of "net weight" (mass) used in the European Union

In the European Union, completion of information on net mass is, in general, obligatory for all customs procedures. The net mass is the mass of the goods without any packaging.

"Packaging" means materials and components used in any packaging operation to wrap, contain and protect articles or substances during transport. The term "package" includes all articles used and, in particular, holders used as external or internal coverings for goods, holders on which goods are rolled, wound or attached, containers (other than those defined in international conventions) and receptacles. The term excludes means of transport and articles of transport equipment such as pallets and freight containers.

Example: A company imports 1,000 bottles of wine. Each bottle of wine weighs 1.25 kg and the wine in each bottle weighs 0.75 kg. The figure 750 must be entered in box 38 (not the unit value).

B.   Compilation of quantity data from customs sources and non-customs sources

15.9.   *Compilation of quantity data using customs records.* Customs declarations contain in general (see chap. II) fields for the supplementary quantity and net weight. However, the provision of this information might not always be mandatory and/or it might not be provided by the declarant. Quality issues and the estimation of quantity information are covered in sections D and E below.

The boxes XV.4 to XV.6 below provide country experiences in the use of non-customs data sources for the compilation of quantity data.

Box XV.4

Compilation of quantity information in the Intrastat system of the European Union

In the Intrastat system, the collection of data on net mass is not always required. Member States may opt not to request the net mass for all CN codes. In such cases, either member States define a list of codes exempted from reporting the net mass or the net mass is not collected for the CN codes with a specified supplementary unit.

However, if the information is not collected, member States shall estimate the net mass at the CN8 subheading level. In order to facilitate the task of the member States, Eurostat has established European average conversion factors for all the CN codes with a supplementary unit. These conversion factors were established on the basis of EU historical trade data after the filtering of outliers. Member States are free to use either the list of conversion factors provided by Eurostat or any other estimation method.

In member States that apply a simplification threshold, the providers of statistical information (PSI) may be exempted from providing information on quantity (net mass or a supplementary unit) if they belong to the group that benefits from the simplified reporting obligation.

PSIs which report the transactions below €200 do not have to report quantity (net mass or a supplementary unit).

It should be noted that the provisions for compilation of quantity for some specific goods and movements differ from those that fall under the standard rules for compiling statistics on European Union trade in goods; that is to say, the quantity is optional for industrial plants, goods delivered to vessels and aircraft (except for net mass of goods belonging to CN chap. 27) and goods delivered to and from offshore installations (except for goods belonging to CN chap. 27). As far as vessels and aircraft are concerned, the quantity is expressed in net mass and pieces. The provisions for specific goods and movements mentioned here are identical for compilation of intra- and extra-EU statistics.

Box XV. 5

Norway: direct reporting of quantity of exports of petroleum products

Significant parts of Norway's petroleum exports are produced outside Norway's customs territory and hence are not included in data received from customs. As an alternative, reports of figures for Norway's exports of crude oil are received both from Government institutions and directly from the oilfield operators.

Crude oil. Preliminary figures for Norway's exports of crude oil are received directly from the oilfield operators. There are different reports depending on whether the mode of transportation is oil tanker or pipeline. Monthly field reports of transportation by oil tankers contain lifting date, cargo number, name of vessel, name of shipper, destination, net barrels (bbls) and net metric tons. The report of transportation by pipeline contains volume in barrels per terminal. Destination countries for transportation by pipeline are based on reports from Norway's authorities. On a quarterly basis, final shipment figures, volume and price per barrels (FOB) are received from the owners of the oil cargos. Occasionally, figures for crude oil transported by pipeline are also received; information is received on a quarterly basis.

Natural gas. Preliminary volume figures for Norway's exports of natural gas are received monthly from the oilfield operators. There are two means of transportation: a significant proportion of the pipeline exports goes through the pipeline transportation system, but to some extent there is also transportation by gas tankers (LNG). Monthly reports of transportation by pipeline contain volume in standard cubic metres (scm). Information on destination countries for transportation by pipeline is based on reports from Norway's authorities. Field reports of transportation by tankers contains lifting date, cargo number, name of vessel, name of shipper, discharge port and net metric tons. Preliminary prices are based on information from petroleum companies. Final figures, volume and value, are received from the largest producing companies on a quarterly basis.

Box XV.6

Uganda: quantity units used in the Informal Cross Border Trade survey

In Uganda, prior to conduct of an Informal Cross Border Trade (ICBT) survey, various units of measurement based on the WCO standard units of quantity were developed for commonly transacted commodities, with the aim of guiding data collection. The weight of commodities was derived by physically weighing them (especially agricultural products) or by using already established packaging weights of informal survey practitioners. Nevertheless, there were challenges encountered in respect of obtaining weights of assorted commodities in the same package and converting certain weights to internationally recommended weights for a particular product.

C. Factors with which to convert from non-standard to standard units of quantity

15.10.   *Converting units of quantity*. There are two means of converting reported units of quantity to standard HS units of quantity, namely, (a) mathematical conversion of the reported units to the standard units and (b) conversion from one unit to another unit using, for example, the specific gravity of the commodity or commodities involved.

15.11.   *Mathematical conversion*. Annex XV.A below gives examples of (multiplication) factors with which specific non-standard units can be converted to standard HS units of quantity. The table contains mostly units of quantity of the systems of measurement of the United States of America and the United Kingdom of Great Britain and Northern Ireland. Those factors are applied by the United Nations Statistics Division to convert units of quantity to WCO standard unit of quantity for certain HS headings. It is good practice to establish a comprehensive list of conversion factors and to publish and circulate this list among all agencies involved in the collection of trade statistics. There are other country-specific units of measurement, many of which apply to a single commodity. Commodity boards and other organizations publish conversion factors for some of those.[160] Many of those commodity-specific sources are gathered together in other reference sources.[161] Still other references deal with smaller groups of commodities.[162]

15.12.   *Specific gravity*. The use of specific gravity to convert, for instance, litres of a certain commodity into kilograms constitutes a much more complicated and less accurate approach, since it is based on empirical rather than mathematical principles. HS headings often contain a multitude of products which can all differ in, say, weight per volume or weight per unit. Even such seemingly homogeneous commodities as crude oil and milk will have different weight-per-volume indices, depending on country of origin and, for example, on the sweetness (for crude oil) or the concentration of fat or time of collection (for milk) (for examples of the various conversion factors, see annex XV.B below).

15.13.   *Use of specific versus broad-based conversion factors*. The best conversion of volume into weight or of pieces into weight is carried out at the national or even the subnational level. For instance, to convert to cubic metres (m^3) the volume of sawnwood originally reported by Canada and the United States in 1,000 board feet, the Food and Agriculture Organization of the United Nations applies the country-specific conversion factor of 2.36 m^3 per 1,000 board feet, as sawing conventions in those countries generally result in a volume that is smaller than the nominal volume. [163] In contrast, broad-based conversions at the national or international level are inaccurate by definition and can serve the purpose only of making quantity (especially weight)

160. See, for example, Quarterly Bulletin of Cocoa Statistics.

162. See, for example, "Weights, measures, and conversion factors for agricultural commodities and their products", Agricultural Handbook No. 697 (Washington, D.C., United States Department of Agriculture, June 1992).

161. See, for example, The Economist Desk Companion: How to Measure, Convert, Calculate and Define Practically Anything (New York, John Wiley and Sons, 1998).

163. It is estimated that for the United States, taking coniferous and non-coniferous data together, the actual average volume of rough green sawnwood would be 3 per cent less than the nominal volume, while the weighted average for surfaced dry coniferous and rough dry non-coniferous sawnwood would be 27 per cent less than the nominal volume". Further details are available from the FAO website (www.fao.org).

estimates for general trade or transport analyses. The use of broad-based conversion factors by FAO is reflected in the examples below:

(a). When countries record coconuts in number instead of weight, amounts are converted to weight on the assumption that, on an average basis, 1,000 nuts = 1 metric ton, unless official conversion factors are available;

(b). Refined sugar is converted to raw sugar equivalent using the factor 1.087 for all countries;

(c). Quantities of wine, vermouth and similar beverages are expressed in weight; for countries recording their statistics in volume, it is assumed that 1,000 liters = 1 metriction.

D. Quality issues

15.14.   *The need for quantity information.* Quantity is an important dimension of international trade statistics which is indispensable for various policy and analytical purposes, including for the planning of transport infrastructure, the compilation of energy, agricultural and other commodity balances, the assessment of the impact of international trade on the environment, and the verification of trade values and the construction of trade index numbers.

15.15.   *Challenges in the compilation of quantity data.* Often quantity, whether supplementary quantity or net weight, is not provided by the traders completing the customs declarations. In other cases, the quantity provided is not correct or the supplementary quantity is provided in a quantity unit different from the one recommended for the particular commodity. For instance, when a shipment contains several different commodities, the quantity might be given as the gross weight of the shipment. Further, in commercial practice, barrels are often used instead of weight and appropriate conversion factors may not be available. Also, the customs administration is generally more interested in the quantity information for imports than in that for exports, since quantity information is, in some cases, utilized to determine both import duties and the unit values used to validate the price and value information declared by the importers (for country experience see Box XV.7).

Box XV.7

The approach of the United States of America to validation of quantity data

In the United States of America, all eligible export shipments are required to be reported electronically through the Automated Export System (AES). The AES ensures the quality of quantity data by validating the reported shipment information and returning electronic responses to filers. For example, the AES requires that the unit of measure for each quantity reported match the unit of measure required for the Harmonized Tariff code reported. If there is no match, the filer receives a message indicating that a fatal condition is noted owing to invalid data and that their shipment has not been accepted. Filers must immediately address the problem, correct the data and retransmit the information to the AES. Failure to comply may result in a penalty to the filer. Outreach and education programmes are conducted to assist filers with their reporting, including an AES fatal error outreach program.

15.16.   *Best practices in improving the compilation of quantity data.* It is recommended that the training courses for traders on filling out customs declarations devote sufficient attention to the correct declaration of quantity information on the customs forms.

15.17.   *Quantity aggregations.* The compilation of quantity aggregates has both an analytical and a quality dimension, owing to the heterogeneity of the goods that constitute broader commodity groups. As the proper use of quantity aggregates is limited to very specific types of analysis (e.g., of transportation issues), it is good practice to provide users with clear information on the heterogeneity underlying each quantity aggregate, and to encourage, for instance, the use of foreign trade indices as alternative measures of aggregate volume and price trends.

E.   Estimation and imputation of quantity data

15.18.   In the absence of collected quantity information, it is good practice to estimate and impute quantity data and reflect the estimation and imputation methods in the metadata.

15.19.   *Estimation of quantity data: current practice in Germany.* Missing or erroneous quantity data are generally estimated. Quantity data are regarded as erroneous and are replaced by an estimated value if the ratio between statistical value and quantity is outside a valid range defined separately for each commodity code. In the case where an error is detected, as a general rule, it is assumed that the declared quantity (not the declared value, which is assumed to be more reliable) has led to the mistake. The acceptable range is being reviewed at least once a year and updated if necessary. The estimation is based on the average values per quantity unit. These values are calculated for each commodity code empirically with the help of plausible data relating to the preceding 12 months. The average values are updated permanently. For some commodities, a supplementary unit in addition to the net mass (e.g., the metre or the litre) is used for measuring quantity. If available, the supplementary quantity unit (instead of the unit value) is used to estimate the net mass on the basis of specific conversion factors. It must be kept in mind that the estimation of quantities may be difficult if the composition of a commodity group is heterogeneous and the unit values show a broad distribution. Hence, estimations carried out automatically should be checked manually, at least in cases of high values.

15.20.   *Unit value editing and quantity imputation: the experience of Canada.* Prior to the advent of the current editing system, Statistics Canada employed a parameter-based approach in which calculated unit values were compared with expected high and low unit values. However, this approach had several limitations: (a) given the number of classification codes, it became increasingly difficult to maintain an up-to-date set of parameters for each code; (b) although the Harmonized System provides a very detailed product classification, numerous codes include goods that are not homogeneous, resulting in extremely wide parameter sets. Consequently, a new methodology, referred to as "clipping", was developed. Essentially, this approach is based on the assumption that the majority of transactions are reported correctly and that only the outliers require correction or imputation. For each classification code, the clipping system calculates parameter sets based on the current data received. Outliers are then moved towards the mean through imputation of a corrected quantity. The principle advantages of this system are: (a) the dynamic parameters are based on more current prices; (b) the effects of seasonality are at least partially compensated for; and (c) it is far less resource-consuming.

15.21.   *Estimation methods used by UNSD for UN Comtrade.* Estimation of quantity and net weight is performed in either of two cases: where the data have not been provided or where the data provided do not conform with, and cannot be mathematically converted to, the WCO recommended quantity units. To take the best possible advantage of the information provided by a country, the quantity estimation is applied in the following sequence: 1. Estimation using empirical conversion factors; 2. Estimation using partially reported quantity and/or net weight and 3. Estimation using standard unit values. However, broad-based conversions and estimation of quantity at the national or international level are inaccurate by definition and can serve the purpose only of making quantity (especially weight) estimates for general trade or transport analyses. Estimates of quantities are sometimes also needed to preserve aggregated quantity information at the heading level of the HS.

Annex XV.A.

Mathematical conversion factors

Reported unit of quantity	WCO standard units of quantity	Conversion factor from the reported unit to the WCO unit of quantity
Barrel (BBL)	litre (l)	159.000
Board foot (BFT)	cubic metre (m³)	0.00236
Cubic foot (CF)	cubic metre (m³)	0.02832
Cubic yard (CYD)	cubic metre (m³)	0.7646
Cord (CD)	cubic metre (m³)	2.550
Centimetre (CM)	metre (m)	0.010
Cubic centimetre (CC)	litre (l)	0.001
Cubic metre (CBM)	litre (l)	1000.000
Dozen (DOZ)	thousand pieces/items (1,000u)	0.0120
Dozen (DOZ)	piece/item (u)	12.000
Foot (FT)	metre (m)	0.3048
Gallon (GAL)	litre (l)	3.785
Gram (GM)	kilogram (kg)	0.001
Gross (GR)	piece/item (u)	144.000
Hundredweight (CWT)	kilogram (kg)	45.360
Linear feet (LFT)	metre (m)	0.3048
Long ton (LTN)	kilogram (kg)	1016.000
Litre (LTR)	cubic metre (m³)	0.001
Metric ton (TON)	kilogram (kg)	1000.000
Number (NO)	thousand pieces/items (1,000u)	0.001
Ounce (OZ)	kilogram (kg)	0.02835
Pound (LB)	carat (carat)	2268.000
Pound (LB)	kilogram (kg)	0.4536
Pair (PR)	dozen (12u)	0.1667
Square centimetre (SCM)	square metre (m²)	10000.000
Square foot (SFT)	square metre (m²)	0.0929
Square inch (SQT)	square metre (m²)	0.0006452
Square yard (SYD)	square metre (m²)	0.8361
Short ton (STN)	kilogram (kg)	907.200
Thousand metres (THM)	metre (m)	1000.000
Thousand (THS)	pieces/item (u)	1000.000
Thousand board feet (MBF)	cubic metre (m³)	2.360
Thousand square foot (MSF)	square metre (m²)	92.900
Troy ounce (TOZ)	kilogram (kg)	0.03110
Wine gallon (WG)	litre (l)	3.785
Yard (YD)	metre (m)	0.9144

Annex XV.B.

Quantity conversion factors used by the United Nations Statistics Division to convert volume (V) and number/units (N) to weight (W), for selected categories of goods

HS code	from	to	HS heading	Conversion factor
040110	V	W	Milk not concentrated, < 1% fat	1.03
040120	V	W	Milk not concentrated, 1-6% fat	1.01
040130	V	W	Milk and cream not concentrated	0.99
040291	V	W	Milk and cream unsweetened	0.99
040299	V	W	Milk and cream other sweetened	0.97
040310	V	W	Yogurt concentrated or not	0.97
040390	V	W	Buttermilk, curdled milk	1.02
040410	V	W	Whey whether or not concentrated	1
040490	V	W	Products consisting of whey	1
040700	N	W	Eggs, bird, in shell	0.000058
040811	N	W	Egg yolks dried	0.000244
040819	N	W	Egg yolks other	0.000073
040891	N	W	Eggs, bird, not in shell, dried	0.000244
040899	N	W	Eggs, bird, not in shell, other	0.000073
200911	V	W	Orange juice, frozen	1
200919	V	W	Orange juice, other	1
200920	V	W	Grapefruit juice	1
200930	V	W	Citrus fruit juice, other	1
200940	V	W	Pineapple juice	1
200950	V	W	Tomato juice	1
200960	V	W	Grape juice	1
200970	V	W	Apple juice	1
200980	V	W	Fruit and vegetable juice, other	1
200990	V	W	Mixtures of juices	1
210500	V	W	Ice cream	0.7
220110	V	W	Mineral and aerated waters	1
220190	V	W	Ice and snow and potable waters	1
220210	V	W	Waters, containing sugars	1
220290	V	W	Non-alcoholic beverages	1
220300	V	W	Beer made from malt	1
220410	V	W	Grape wines, sparkling	1
220421	V	W	Grape wines, other, in bottles	1
220429	V	W	Grape wines, other	1
220430	V	W	Grape must, other	1
220510	V	W	Vermouth, in bottles	1
220590	V	W	Vermouth, other	1

220600	V	W	Fermented beverages, other	1
220820	V	W	Spirits obtained by distillation	0.925
220830	V	W	Whiskies	0.925
220840	V	W	Rum and tafia	0.925
220850	V	W	Gin and genever (Geneva)	0.925
220860	V	W	Vodka	0.925
220870	V	W	Liqueurs and cordials	0.925
220890	V	W	Other spirits with alcohol <80%	0.925
240220	N	W	Cigarettes containing tobacco	0.000001
270600	V	W	Tar distilled from coal	1
270710	V	W	Benzole	0.88
270720	V	W	Toluole	0.88
270730	V	W	Xylole	0.88
270740	V	W	Naphthalene	0.735
270750	V	W	Aromatic hydrocarbon mix	0.735
270760	V	W	Phenols	0.735
270791	V	W	Creosote oils	0.735
270799	V	W	Oils, other, of coal tar	0.735
270810	V	W	Pitch	1.14
270820	V	W	Pitch coke	1.14
270900	V	W	Petroleum oils, crude	0.86
271000	V	W	Petroleum oils, other than crude	0.86
271210	V	W	Petroleum jelly	0.8
271220	V	W	Paraffin wax containing < 75% oil	0.8
271290	V	W	Mineral waxes, other	0.8
271311	V	W	Petroleum coke, not calcined	1.14
271312	V	W	Petroleum coke, calcined	1.14
271320	V	W	Petroleum bitumen	1.01
271390	V	W	Residues of petroleum oil	1.01
271500	V	W	Bituminous mixtures based on natural asphalt	1.04
340311	V	W	Lubricating oils for treatment of leather and textiles	0.9
340319	V	W	Lubricating oils, other	0.9
340391	V	W	Lubricating grease for treatment of leather and textiles	0.9
340399	V	W	Lubricating grease, other	0.9
440110	V	W	Fuel wood	0.725
440121	V	W	Wood in chips, coniferous	0.7
440122	V	W	Wood in chips, non-coniferous	0.7
440130	V	W	Sawdust and wood waste	0.7
440200	V	W	Wood charcoal	0.4
440310	V	W	Poles, treated or painted	0.7
440320	V	W	Logs, poles, coniferous	0.7
440341	V	W	Tropical wood logs, meranti	0.75
440349	V	W	Tropical wood logs, other	0.75

440391	V	W	Logs, oak	0.75
440392	V	W	Logs, beech	0.75
440399	V	W	Logs, non-coniferous, other	0.75
440610	V	W	Railway sleepers, not impregnated	0.78
440690	V	W	Railway sleepers, other	0.78
440710	V	W	Lumber, coniferous	0.6
440724	V	W	Tropical lumber, mahogany, etc.	0.7
440725	V	W	Tropical lumber, meranti, red	0.7
440726	V	W	Tropical lumber, meranti, white	0.7
440729	V	W	Tropical lumber, other	0.7
440791	V	W	Lumber, oak	0.7
440792	V	W	Lumber, beech	0.7
440799	V	W	Lumber, non-coniferous	0.7
440910	V	W	Lumber, coniferous, continuously shaped	0.6
440920	V	W	Lumber, non-coniferous, continuously shaped	0.7
450110	V	W	Natural cork, raw	0.24
450190	V	W	Natural cork, other	0.24
450200	V	W	Natural cork, roughly squared	0.24

Chapter XVI
Partner country

16.1.   *Introduction.* The present chapter elaborates on the recommendations on partner-country attribution contained in IMTS 2010, chapter VI. In particular, it discusses details of the definition of country of origin provided in the revised Kyoto Convention (RKC), elaborates the concepts of country of the last known destination and country of consignment, and describes challenges and good practices in partner country attribution for imported and exported goods. It also discusses the definition of partner country in trade between member countries of a customs union, and the partner country coding for statistical purposes. This chapter is related to chapter VI of the present Manual, on statistical territory and organization of data collection.

A.   Recommendations of IMTS 2010

16.2.   *Trade by partner country.* As stated in IMTS 2010 (para. 6.1), trade statistics by partner country, both for the total value of trade in goods and for the value and quantity of trade in individual commodities, are of significant analytical value and are used for a number of purposes, including the analysis of economic trends and regional trade patterns, the calculation of trade shares, market analysis, business decisions, trade policy monitoring and negotiations, the compilation of national accounts, and balance of payments, as well as for checking the accuracy and reliability of trade data. Trade-by-partner statistics are frequently used by analysts to estimate imports and exports of a country that does not report trade data (or does so only after substantial delay).

16.3.   *IMTS 2010 recommendations.* It is recommended that in the case of imports, the country of origin be recorded, and in the case of exports, the country of last known destination be recorded (IMTS 2010, para 6.25). It is recognized that the partner data compiled on the basis of the country of origin (for imports) and the country of last known destination (for exports) are very often not comparable which limits their usefulness for economic analysis. To provide more comparable data, it is recommended that the country of consignment be recorded for imports as the second partner country attribution, alongside country of origin; in the case of exports, the compilation of export statistics on the country-of-consignment basis is encouraged, depending on a country's needs and circumstances, and may be considered by some countries as a rather longer-term objective (ibid., para. 6.26). Also, its is recommended that the economic territory of the trading partners constitute the basis upon which the statistics on trade by partner are compiled (ibid., para. 6.28).

B.   Country of origin and its use in import statistics

1.   Rules of origin

16.4.   *Rules of origin.* Statistics on imports by country of origin depend on the countries' rules of origin and the ways they are applied. Compilers need to be familiar with those rules and to know how they are applied in order to be able to assist users in

interpreting the disseminated trade data and to provide feedback to customs authorities on possible amendments and improvements. Compilers need to be aware that, in the absence of internationally accepted detailed rules of origin, the only international guidance in this area is provided in Specific Annex K of the RKC. The RKC is instrumental in ensuring that national rules of origin have many similarities. However, Annex K is very general and, in practice, national rules of origin for particular commodity groups reflect national trade policy priorities. Therefore, they may, and do, vary significantly.

16.5.   *Non-preferential and preferential rules of origin.* In general, countries distinguish between rules of origin for non-preferential and preferential trade. Non-preferential rules of origin are used to differentiate between foreign and domestic products in order to determine the origin of products that are subject to various kinds of commercial policy measures (such as the application of the most-favoured-nation (MFN) clause, anti-dumping and countervailing duties, safeguard measures, origin marking, quantitative restrictions, tariff quotas and public procurement). The preferential rules of origin are related to contractual or autonomous trade regimes leading to the granting of tariff preferences.

2.   Guidance provided by the revised Kyoto Convention

16.6.   *Guidance on non-preferential rules of origin.* The RKC is intended to provide guidance on the non-preferential rules of origin in trade. "Country of origin of goods", according to the RKC, means the country in which the goods have been produced or manufactured, according to the criteria laid down for the purposes of application of the Customs tariff, of quantitative restrictions or of any other measure related to trade.[164]

16.7.   *Two basic criteria.* The RKC formulates two basic criteria for the determination of the origin of goods: (a) the criterion of goods "wholly produced" (obtained) in a given country, where only one country enters into consideration in attributing origin and (b) the criterion of "substantial transformation", where two or more countries have taken part in the production of the goods. In this context, IMTS 2010 (para. 6.7) recommends that, while defining their national rules of origin, countries follow the relevant provisions of the RKC. The substantial transformation criteria are being elaborated on a product-specific basis, and are to be applied to a good when more than one country is involved in its production.

16.8.   *Goods produced wholly in a given country.* According to the RCK, goods produced wholly in a given country shall be taken as originating in that country.[165] Only the following goods shall be taken to be produced wholly in a given country:[166]

(a).   Mineral products extracted from its soil, from its territorial waters or from its sea-bed;

(b).   Vegetable products harvested or gathered in that country;

(c).   Live animals born and raised in that country;

(d).   Products obtained from live animals in that country;

(e).   Products obtained from hunting or fishing conducted in that country;

(f).   Products obtained by maritime fishing and other products taken from the sea by a vessel of that country;

(g).   Products obtained aboard a factory ship of that country solely from products of the kind covered by item (*f*) above;

(h).   Products extracted from marine soil or subsoil outside that country's territorial waters, provided that the country has sole rights to work that soil or subsoil;

164. See the RKC, Specific Annex K, Chapter 1, Definition E1./F2.

165. See the RKC, Specific Annex K, Chapter 1, Standard 2.

166. The list provided in the RKC is seen by some trade statistics compilers as not exhaustive, since certain goods that appear to be wholly produced in a given country are not included (e.g., wheat).

(i).   Scrap and waste from manufacturing and processing operations, and used articles, collected in that country and fit only for the recovery of raw materials;

(j).   Goods produced in that country solely from the products referred to in subparagraphs (*a*) to (i) above.

16.9.   *Substantial transformation.* Where two or more countries have taken part in the production of the goods, the origin of the goods should be determined on the basis of substantial transformation. According to the RKC definition of "substantial transformation criterion", the country of origin is the country in which the last substantial manufacturing or processing, deemed sufficient to give the commodity its essential character, has been carried out.[167] It is a recommended practice that in applying the substantial transformation criterion, use should be made of the International Convention on the Harmonized Commodity Description and Coding System (HS Convention).[168] It should be noted that the concept of "essential character" is defined neither in RKC nor in the HS Convention. However, the General Rules for the Interpretation of the HS imply that articles classified in different subheadings of the HS have different essential characters. Therefore, any manufacturing or processing that results in the reclassification of a product in another HS subheading can be treated as a substantial transformation. Where the substantial transformation criterion is expressed in terms of the ad valorem percentage rule, the values to be taken into consideration should be:

(a).   For the materials imported, the dutiable value at importation or, in the case of materials of undetermined origin, the first ascertainable price paid for them in the territory of the country in which manufacture took place;

(b).   For the goods produced, either the ex-works price or the price at exportation, according to the provisions of national legislation.

16.10.   *Operations that should not be regarded as substantial transformations.* The RKC stipulates that operations that do not contribute or that contribute to only a small extent to the essential characteristics or properties of the goods, and in particular operations confined to one or more of those listed below, should not be regarded as constituting substantial manufacturing or processing:[169]

(a).   Operations necessary for the preservation of goods during transportation or storage;

(b).   Operations to improve the packaging or the marketable quality of the goods or to prepare them for shipment, such as breaking bulk, grouping of packages, sorting and grading, repacking;

(c).   Simple assembly operations;

(d).   Mixing of goods of different origin, provided that the characteristics of the resulting product are not essentially different from the characteristics of the goods that have been mixed.

16.11.   *Special cases.* There are certain special cases for which the RKC identifies the recommended practice:

(a).   Accessories, spare parts and tools for use with a machine, appliance, apparatus or vehicle should be deemed to have the same origin as the machine, appliance, apparatus or vehicle, provided that they are imported and normally sold therewith and correspond, in kind and number, to the normal equipment thereof;[170]

(b).   An unassembled or disassembled article that is imported in more than one consignment because it is not feasible, for transport or production reasons, to import it in a single consignment should, if the importer so requests, be treated as one article for the purpose of determining origin;[171]

167.   See RKC, Specific Annex K, Chapter 1, Definition E3./F1.

168.   United Nations, Treaty Series, vol. 1503, No. 25910.

169.   See RKC, Specific Annex K, Chapter 1, Recommended Practice 6.

170.   Ibid., Recommended Practice 7.

171.   Ibid., Recommended Practice 8.

(c). For the purpose of determining origin, packings should be deemed to have the same origin as the goods they contain unless the national legislation of the country of importation requires them to be declared separately for tariff purposes, in which case their origin should be determined separately from that of the goods;[172]

(d). For the purpose of determining the origin of goods, where packings are deemed to have the same origin as the goods, account should be taken, in particular where a percentage method is applied, only of packings in which the goods are ordinarily sold by retail.[173]

16.12. *Note on certain inputs.* It should be noted that for the purpose of determining the origin of goods, no account shall be taken of the origin of the energy, plant, machinery and tools used in the manufacturing or processing of the goods.[174]

16.13. *Documentary evidence of origin.* The trade statistics compiler should be aware that the recommended practice is to require such evidence only when it is necessary for the application of preferential customs duties, of economic or trade measures adopted unilaterally or under bilateral or multilateral agreements or of measures adopted for reasons of health or public order.[175] If imported goods are being admitted to the country on a non-preferential basis and are not subject to any other customs controls requiring the evidence of their origin, the recorded country of origin will be as indicated by the declarant. Small-value shipments and goods granted temporary admission are also exempted from the requirement to proof origin.

3.   The status of work on the harmonized rules of origin

16.14. *WTO Agreement on Rules of Origin.*[176] The WTO Agreement on Rules of Origin concerning objectives and principles, the establishment of committees, etc., came into force as part of the Agreement Establishing the World Trade Organization in 1995. Since then, the Technical Committee on Rules of Origin (TCRO), under the auspices of the World Customs Organization (WCO) in Brussels, and the Committee on Rules of Origin (CRO), under the auspices of the World Trade Organization in Geneva, have been undertaking work programme set out in the Agreement and which aims at harmonizing the non-preferential rules of origin. The Committees are to: (a) develop definitions of wholly obtained goods and of minimal operations or processes that do not by themselves confer origin to a good (article 9 (2) (c) (i); (b) elaborate upon substantial transformation expressed by change in HS tariff classification (article 9 (2) (c) (ii); and (c) develop - in cases where the exclusive use of the HS nomenclature does not allow for the expression of substantial transformation - supplementary criteria, such as ad valorem percentages and/or manufacturing or processing operations (article 9 (2) (c)(iii);. The harmonization work is still ongoing and thus the rules of origin themselves have not yet come into force.

16.15. *Application of the WTO Agreement on Rules of Origin.* The WTO Agreement on Rules of Origin, which will be obligatory for all WTO members, indicates such areas for their application as most-favoured-nation treatment, anti-dumping and countervailing duties, safeguard measures, origin marking requirements, quantitative restrictions and quotas. The Agreement specifically provides that the WTO rules of origin, after their adoption, will "include rules of origin used for government procurement and trade statistics" (article 1 (2).

16.16. *Status of work.* In 1999, the Technical Committee on Rules of Origin had concluded the technical review of the Harmonized Rules of Origin and these final results were forwarded to the Committee on Rules of Origin for consideration. As of 2011, these results were still under consideration by the WTO. In June 2010, the CRO had

172. Ibid., Recommended Practice 9.

173. Ibid., Recommended Practice 10.

174. Ibid., Standard 11.

175. Ibid., Chapter 2, Recommended Practice 2.

176. See Legal Instruments Embodying the Results of the Uruguay Round of Multilateral Trade Organizations, done at Marrakesh on 15 April 1994 (GATT secretariat publication, Sales No. GATT/(1994-7).

reached consensus on 349 of the 486 technical questions submitted by the Technical Committee but the remaining 137 questions (the most difficult ones) were still pending. The harmonization work programme could not be completed owing to sensitive trade policy and political aspects and the very important question of "implications" of the Agreement on Rules of Origin for other WTO Agreements.[177] On 11 November 2010, the Committee on Rules of Origin issued its latest draft consolidated text of non-preferential rules of origin which are contained in the document G/RO/W/111/Rev.6. and Corr.1. The text refers to HS96 and therefore needs to reflect the application of the current version of the HS (i.e., HS2012). There are currently 83 countries that have notified WTO of the application of non-preferential rules of origin.[178]

4.   Preferential rules of origin

16.17.   *Rules of origin in the case of preferential trade.* Preferential rules of origin are used to establish whether goods are eligible for special treatment under a trading arrangement between two or more countries or customs unions. Preferential (or reduced) rates of duty are applied to goods that are found to be the products or manufacture of a country defined as a preference country. The principal objective of preferential rules of origin is to ensure that benefits are restricted to those goods that originate and are traded within the particular preference area, i.e., those goods whose origin is from a particular specified country.

16.18.   *Requirements.* Each multinational or bilateral agreement has its own rules of origin. There is no work programme for the harmonization of preferential rules of origin. However, annex II of the WTO Agreement on Rules of Origin (entitled "Common Declaration with regard to preferential rules of origin"), provides the general principles and requirements applied to preferential rules of origin. These requirements include notification procedures. All members agree to provide to the WTO Secretariat, as soon as possible, their preferential rules of origin, including a listing of the preferential arrangements, judicial decisions and administrative rulings of general application relating to their preferential rules of origin, including any modification or new preferential rules of origin. In particular, members agree to ensure that: (a) in the case where the criterion of change of tariff classification is applied, such a preferential rule of origin, and any exceptions to the rule, must clearly specify the subheadings or headings within the tariff nomenclature that are addressed by the rule; (b) in the case where the ad valorem percentage criterion is applied, the method for calculating this percentage shall also be indicated in the preferential rules of origin; and (c) in the case where the criterion of manufacturing or processing operation is prescribed, the operation that confers preferential origin shall be precisely specified.

16.19.   It is advised that if a country's trade statistics are compiled using preferential rules of origin with respect to certain countries, an appropriate explanation is provided in the methodological note to the disseminated data.

5.   Compilation of country of origin for imports

16.20.   *Application of Specific Annex K of the revised Kyoto Convention.* Most countries broadly follow Specific Annex K of the RKC with regard to the definition of both wholly produced and substantially transformed goods. However, there is a significant divergence of views regarding the details of the application of the Specific Annex. Which goods can be considered wholly produced in a given country, and what kinds of transformations of the goods can be considered substantial, remains, in many cases, a matter of trade dispute.

177. In its 2009 annual report, the Committee on rules of Origin acknowledged that members expressed considerable differences of opinion regarding technical issues and aspects of the overall architecture of the draft scheme, and that manufacturing sector rules of origin were still a matter of specific concern.

178. See the note by the Secretariat containing the seventeenth annual review of the implementation and operation of the Agreement on Rules of Origin, conducted by the Committee on rules of Origin on 27 October 2011 (G/RO/71 of 2 November 2011).

16.21.   *National practices in defining wholly produced (obtained) goods.* It is a good practice to base national definitions of the wholly produced (obtained) goods on the RKC and elaborate the provisions in certain commodity groups that might be of particular interest to the compiling county.

16.22.   *National practices in defining substantial transformation.* As the RKC does not contain a detailed definition of the substantial transformation, especially with regard to the ad valorem percentage rule, it is good practice to elaborate a national definition of this concept and make it available to users in the trade statistics metadata. For example, in some regional blocs like the Common Market for Eastern and Southern Africa (COMESA), the definition of substantial transformation is based on the rules of origin contained in the RKC and is specified as value addition to the product exceeding 35 per cent.

16.23.   *Practical difficulties in determining the country of origin.* While having national rules of origin in place is important, countries still face numerous challenges in practice in respect of determining country of origin of imported goods. Difficulties arise for many reasons. For instance, the information on origin with respect to different transactions may not be of the same quality owing to variations in the requirements for producing documentary evidence. The requirement of presenting a certificate of origin of goods is defined by the tariff law of countries and does not apply to all goods entering or leaving a country. Further, compilers should be aware that IMTS 2010 (para. 6.28) recommends that the economic territory (and not the statistical territory) of trading partners constitute the basis upon which the statistics on trade by partner are compiled, of which free zones and other territorial elements are part.

C.   Use of country of last known destination in export statistics

16.24.   *Concept of country of last known destination.* IMTS 2010 (para. 6.13), defines the country of last known destination as "the last country - as far as it is known at the time of exportation - to which goods are to be delivered, irrespective of where they have been initially dispatched to and whether or not, on their way to that last country, they are subject to any commercial transactions or other operations that change their legal status".

16.25.   *The identification of the country of last known destination using customs records.* It is advised that the "country of destination", as required on the customs declaration and recorded by customs, be used as the partner for the purposes of export statistics, provided that customs rules require exporters to identify, as far as it is known to them, the country to which goods are to be ultimately delivered.[179] The country of destination may be taken as the country of last known destination if, at the time of exportation, no additional information is available regarding further movement of the goods. It is also advised that compilers cooperate with customs in developing and disseminating to exporters clear instructions regarding the reporting of such information. Compilers should be aware, however, that customs are not normally engaged in systematic verification of the correctness of information about the destination of most goods. The definition of partner country is to be based on its economic territory (see IMTS 2010, para. 6.28).

16.26.   *Use of non-customs sources.* In the absence of customs records, or if compilers deem them not reliable, it is advised that non-customs sources be examined. For example, "country of destination" may usually be found in the terms of delivery

179. See SAD Guidelines - E17, Box 17: Country of destination: Using the relevant Community code from Annex 38, enter in Box 17a the last country of destination of the goods to be exported as known at the time of export.

contained in the contract of sale, or derived from shipping or other commercial documents. Compilers may use enterprise surveys and reports of commercial banks and monetary authorities. Information contained in the markings on outer packaging of the goods may also be helpful. This work is very time consuming and it is good practice to restrict it to goods of a very high value or to specific controlled goods.

16.27.   *Change of origin and the country of last known destination.* During the delivery of goods sent from one country to another, the goods may enter a third country and undergo processing that will confer on them a new origin. It is advised that, in such a case, the exporting country record that third country as the country of last known destination.

16.28.   *Verification of country of last known destination.* In some cases trading partners' imports data may be helpful in the verification of provided information and in the identification of the final destination. If specific problems are identified, it is a good practise to inform and educate the traders about the importance of the correct entry of the partner information. Also, countries might consider making adjustments to the partner information, if there is evidence that, to a large extent, a country of transit has been indicated by a declarant as the country of destination (e.g., China, Hong Kong SAR; and the Netherlands). The systematic and continuous use of such methods may noticeably improve the statistics. Care should be taken to avoid double-counting and adjust for mark-ups in partner-country values.

D.   Use of country of consignment in import and export statistics

1.   Concept of country of consignment

16.29.   *Country of consignment of imports and exports.* Special attention should be given to the determination of country of consignment in view of the new recommendations contained in IMTS 2010 to compile this information. In general, the method of compiling data by the country of consignment offers the possibility of obtaining consistent statistics and reasonable comparability, since it promotes the symmetrical recording of the trade transactions by importing and exporting countries (see IMTS 2010, paras. 6.18-6.19). The combination of the information on country of origin and country of last known destination as the first partner country with the information on the county of consignment as second partner country should significantly improve the trading partner information and facilitate the reconciliation of partner information among trading partners, e.g., during trade negotiations.

16.30.   *Country of consignment for imports.* The country of consignment for the purposes of import statistics is the country from which goods were dispatched to the importing country, without any commercial transactions or other operations that change the legal status of the goods taking place in any intermediate country. If, before arriving in the importing country, goods enter one or more further countries and are subject to such transactions or operations, the last intermediate country where such transactions or operations were conducted should be taken as the country of consignment.

16.31.   *Country of consignment for exports.* The country of consignment for the purposes of exports statistics is the country to which goods are dispatched by the exporting country, without - as far as it is known at the time of exportation - being subject to any commercial transactions or other operations that change the legal status of the goods taking place in any intermediate country. If there are several intermediate

countries, then the first intermediate country into which goods enter after leaving the exporting country should be recorded as country of consignment.

2.   Determination of country of consignment

16.32.   *Determination of country of consignment.* The determination of country of consignment depends on a clear and practical definition of commercial transactions or other operations that do or do not change the legal status of the traded and/or shipped goods in intermediate countries. It is good practice to provide such a list of commercial transactions or other operations that change the legal status of goods. Change of ownership of the imported goods and their substantial transformation should be included in such a list. In the European Union practice, for instance, any halts not inherent in the transport of the goods are included in this list as well.

16.33.   *Difficulties in the determination of country of consignment.* The determination of country of consignment is not always straightforward in practice. For exports, there can be a lack of knowledge about the destination of goods at the time of export, as goods can be redirected while at sea or goods can be transhipped from the original country of consignment and therefore not included in that country's imports thus creating the incomparability of partner statistics. For imports, it is important that the country of consignment be not automatically identified as the country from which goods were shipped.[180] The transportation of goods from the country of consignment to the country of last destination may involve the use of multiple shippers and passage through several countries, so that at the time of the importation of goods, the country of consignment and the country of shipment may or may not coincide. Compilers should be aware that the country identified by the importer as the partner country will often be the country where the last shipment arrangements were made rather than the country from which the goods were consigned.

16.34.   *Use of customs and non-customs sources.* Compilers should ensure that the relevant customs records, if available, are collected, processed and incorporated in the trade statistics database. If customs records do not exist or are not complete (e.g., the country of consignment might not be included or "country of consignment" might not be a mandatory field in the customs declaration), non-customs sources should be used to the extent possible. It is good practice to advise customs authorities on the increased importance of information on country of consignment and to cooperate with them in finding ways to ensure better availability of this information in customs records. Countries that do not already compile country of consignment information in the case of exports are encouraged to study the feasibility of such a compilation.

16.35.   *Special categories of goods.* The country of consignment might be used as a sole partner attribution provided to users in cases where country of origin is unknown or is deemed not applicable by trade compilers. For example, in the case of antiques, used cars, aircraft or vessels, the use of country of consignment might be preferable. In such cases, it is advised that the partner-country attribution be unambiguous and clearly indicated as follows: (a) if country of origin is not used, the "country of origin" data field must be left blank while the "country of consignment" data field should contain the country of consignment name, or (b) if both country of origin and country of consignment are known, then both fields are filled with the appropriate country names (which can be the same or different).

180. The country of shipment (in the case of imports), is the country from which goods are shipped, whether or not commercial transactions or any other operations that change the legal status of the goods occur after the goods are dispatched from the exporting country. If such transactions do not occur, the country of shipment is the same as the country of consignment (IMTS 2010, para. 6.5). The country of shipment (in the case of exports) is the country to which goods are shipped, whether or not commercial transactions or any other operations that change the legal status of the goods are expected to take place before arrival of the goods in that country (IMTS 2010, para, 6.12).

E. Definitions of partner country in trade between members of a customs union

16.36. *Requirements for partner information in intra-union trade.* The partner attribution in the case of intra-union trade depends on requirements of the custom union's member States regarding the nature of their trade statistics. Those statistics may continue to be based on the same criteria as apply to trade with third countries, that is, on country of origin for imports and country of last known destination for exports. This attribution is easier to follow if customs controls of movements of goods between member States are not entirely removed, and customs records require identification of the country of origin and the country of destination. If such customs records do not exist, compilers need to use non-customs sources to compile their trade statistics, which will include identification of country of origin and country of last known destination. If member States are regarded as one economic territory, and information regarding origin and last known destination is not required for national use, the statistics of intra-union trade might apply another definition of partner for intra-union trade that is more suitable or adequate for customs union purposes (e.g., country of arrival or country of dispatch). However, a member State might decide to use different criteria for partner attribution in its national trade statistics than are applied to the data reported to the customs union secretariat, in which case the data available from the customs union secretariat and those from the national statistical office will be different.

16.37. *Partner attribution according to the community concept: Example from the European Union.* For the reporting of intra-union trade data of member States to Eurostat according to the community concept, the partner member State is the member State of consignment for arrivals and the member State of destination for dispatches (see also para. 10.9). The member State of consignment is defined as member State from which goods were dispatched to the reporting member State, without any halts or legal operations taking place in any intermediate member State that are not inherent in their transport. A halt is any temporary interruption of the physical movement of the goods before movement is continued to the final destination. A legal operation can be any commercial transaction or comparable operation covered by legislation (e.g., sale or processing under contract). Halts or legal operations related to transport of the goods include, for instance, a change of means of transport, preserving operations to keep the goods in good condition during transport, breaking up and assembly of packages and temporary storage. In practice, however, consignment is frequently approximated by shipment. "Member State of destination" refers to the last member State to which it is known, at the time of dispatch, that the goods are to be dispatched.

F. Partner-country coding for statistical purposes

16.38. *United Nations standard country or area codes for statistical use.* Countries are encouraged (see IMTS 2010, para. 6.28) to adopt the United Nations standard country or area codes for statistical use provided on the UNSD website.[181] This website provides names of countries or areas together with the three-digit numerical codes used by UNSD for data-processing purposes and the two- and three-digit alphabetical codes assigned by the International Organization for Standardization (ISO). The website also lists and gives codes for a number of geographical regions and economic, trade and other groupings of countries or areas. Compilers are advised to take note of this website and consider using the United Nations coding system for data-processing and reporting purposes if it is appropriate for their systems.

181. http://unstats.un.org/unsd/ methods/m49/m49.htm.

182. This is not applicable in cases when two (or several) countries consider themselves to be a single statistical territory (e.g., France and Monaco).

16.39.   *Trade with itself and trade with free zones (IMTS 2010, para. 6.29)*. It is possible that, in the case of reimports (imports of domestic goods that were previously recorded as exports), a country registers imports from itself as country of origin. Yet, it is neither recommended nor is it a common practice to record exports to itself as the country of last known destination, even if the return of the goods might be almost certain (e.g., after minor processing that does not change the country of origin). Countries applying the strict or relaxed definition of the special trade system may record trade (imports or exports) from and to their free zones (or premises for inward processing or customs warehouses). The recording of trade with its free zones (or premises for inward processing or customs warehouses) clearly indicates that the country does not use the general trade system.

16.40.   *Detailed partner breakdown*. Countries may wish, in national publications, to group together countries for analytical purposes. However, IMTS 2010 (para. 6.30) recommends that in their databases and in reporting to regional and international organizations, countries make their data available with complete and most detailed partner breakdown.[182] This will allow both national and international users to aggregate countries into economic and geographical groupings according to their own analytical requirements and will facilitate the estimation of trade for late reporting or non-reporting countries.

Chapter XVII
Mode of transport (MoT)

17.1.   *Introduction.* The present chapter elaborates on the recommendations contained in IMTS 2010, chapter VII, on mode of transport. It contains a description of good practices in respect to their implementation. Annex XVII.A contains a description of modes of transport for IMTS purposes. Owing to its importance, the recommendation to compile international merchandise trade statistics by mode of transport was reintroduced and strengthened in IMTS 2010. It had not been contained in the second revision of IMTS although it had been mentioned in the first revision.[183]

A.   Basic concepts

17.2.   *Recommendation.* Availability of trade data by mode of transport (MoT) is very important for many purposes, including monitoring international transport routes, formulating transportation policy, assessing the impact of trade on the environment and conducting other analytical efforts. In this context, IMTS 2010 (para. 7.1) recommends that:

(a). Countries compile and disseminate international merchandise trade statistics by mode of transport at the most detailed commodity level (*as a separate data dimension*),

(b). The mode of transport that should be recorded is the means of transport used when goods enter or leave the economic territory of a country.

It is a good practice to describe any diversions from these recommendations in the country's metadata.

17.3.   *Mode of transport and means of transport.* For the purposes of international merchandise trade statistics, mode of transport is understood to be the method of transport used for the carriage of goods.[184] It is a specific solution which makes use of a particular type of means of transportation such as aircraft, vehicle, vessel or other device used for the transport of goods or persons. The transport of a person or of cargo may involve one mode or several modes of transport, with the latter case being called multimodal transport. Each mode has its advantages and disadvantages, and will be chosen by traders on the basis of cost, capacity, route and speed.

17.4.   *Classification of mode of transport for use in the compilation and reporting of the trade statistics.* To allow international comparability to the best possible extent, IMTS 2010 (para. 7.2) provides a classification for use in the compilation and reporting of MoT trade statistics which is reproduced below.

    1.   Air

    2.   Water

          2.1   Sea

          2.2   Inland waterway

    3.   Land

          3.1   Railway

          3.2   Road

183. Studies in Methods, Series M, No. 52, Rev. 2 (United Nations publication, Sales No. E.98. XVII.16); and United Nations publication, Sales No. E.82. XVII.14, respectively.

184. See Sect. V.A of Economic Commission for Europe document TRADE/ CEFACT/2001/19 of 15 January 2001, entitled "Recommendation No. 19 (second edition): Codes for modes of transport", submitted to the Centre for Trade Facilitation and Electronic Business (UN/ CEFACT) for approval.

4.   Not elsewhere classified

4.1   Pipelines and cables[185]

    4.1.1   Pipelines

    4.4.2   Cables

4.2   Postal consignments, mail or courier shipments

4.3   Self-propelled goods

4.4   Other

B.   Implementation and data sources

17.5.   *National classifications of modes of transport.* IMTS 2010 (para. 7.2) encourages countries to use the main categories (one-digit) of the above classification and, if countries so wish, the detailed (two- or three-digit) categories. However, the above classification is not intended to limit the flexibility of countries with respect to implementing a detailed national classification according to their own requirements. Whatever classification is followed, it is recommended that countries clearly describe in their metadata the contents of the categories used. Depending on their national requirements, countries may wish to compile mode of transport at the one-, two- or three-digit level or create even more detailed breakdowns for use in the compilation and reporting of the trade statistics by mode of transport. Confidentiality rules may significantly affect the level at which MoT detail can be published.

17.6.   It is good practice to adopt a national classification that could be easily reconciled with the international classification, at least at the level of the main categories. In particular, it should be made clear whether postal consignments, mail or courier shipments and self-propelled goods are separately classified or included in the main categories of air, water and land. The category 4.4 "Other" is to be used when the available information does not allow an attribution of a given transaction to any of the specific mode-of-transport categories.

17.7.   *Description of mode-of-transport categories.* A description of MoT categories is provided in annex XVII.A to this chapter based on the Illustrated Glossary for Transport Statistics (4th ed. 2009),[186] prepared by the Intersecretariat Working Group (IWG Transport) comprising representatives of ECE, the International Transport forum and Eurostat. Countries can use these descriptions when defining the components of their national mode-of-transport classification.

17.8.   *Multimodal transport.* The term "multimodal transport" can be used in the case where goods are carried by at least two different modes of transport, from a place within or at the border of the exporting country, at which the goods are taken in charge by a transport operator to a place designated for delivery in the importing country[187]. This is in accordance with the definition of international multimodal transport in article 1(1) of the United Nations Convention on International Multimodal Transport of Goods (24 May 1980) (which, however, is not yet in force). If a country identifies th transport of certain goods as multimodal, it is good practice for it to provide in the metadata information of how multimodal transport is defined, identified and recorded. However, it should be pointed out that IMTS 2010 (para. 7.4) recommends the recording of multiple modes of transports, depending on a country's needs and circumstances. The recording of a separate category "Multimodal transport" is not suggested and accordingly not part of the suggested classification of MoT.

17.9.   *Predominant mode of transport.* In certain cases, the information on MoT, defined as means of transport when entering the economic territory and derived from

185. Breakdown of the category 4.1 into 4.1.1 Pipelines and 4.1.2 Cables can be applied if countries find it desirable and feasible.

186. Eurostat Methodologies and Working Papers (Luxembourg, Publications Office of the European Union, 2010). Available from http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-10-028/EN/KS-RA-10-028-EN.PDF

187. See the United Nations Conference on Trade and Development (UNCTAD) document entitled "Implementation of multimodal transport rules" (UNDTAD/SDTE/TLB/2) of 27 June 2011. Available from http://www.unctad.org/en/docs/posdtetlbd2.en.pdf

customs records, is not the most relevant information for analytical purposes; hence, some countries might wish to use the concept of the predominant mode of transport. IMTS 2010 (para. 7.4), suggests that the predominant mode of transport can, for example, be defined as the mode of transport that accounts for the majority of the transportation costs or the longest part of the route by distance. Countries should define such criteria and record predominant mode of transport in addition to the means of transport when entering and leaving the country as necessary (i.e., in the case of landlocked countries), taking into account their data needs and circumstances. It is good practice for the reasons and for the methodology of such a determination of MoT to be clearly explained in the trade statistics metadata.

17.10.   *Main data sources.* The main data sources for the compilation of trade data by mode of transport are the same as those for the compilation of other trade data, i.e., customs records and the non-customs data sources described in chapters II-IV. However, countries might explore the possibility of using additional sources. It should be noted that although there is a strong correlation between point of entry and mode of transport, the attribution of MoT cannot be based on the identification of point of entry only, and it is good practice to use mode of transport as indicated in customs records[188].

17.11.   *Potential additional data sources.* Some additional data sources (e.g., carrier- and shipper-based sources) may contain useful supplementary information and can be used for verification and estimation purposes.

17.12.   E*stimation of mode of transport data.* In many instances, adequate sources of data might be absent. If, however, there is a strong need for trade data by mode of transport, appropriate estimation procedures can be developed and used. It is suggested that sources of information for estimating MoT at different stages and levels of the compilation process be distinguished, depending on user requirements. MoT could be estimated at the initial data-collection stage on the microlevel based on additional documentation for individual transactions, or at later data compilation stages on the macrolevel, based, e.g., on enterprise surveys.

17.13.   *MoT and trade system.* Under the general trade system, goods are recorded when they leave the economic territory of a country, which coincides with the condition for the recording of mode of transport (means of transportation when goods enter or leave the economic territory of country). Countries following the special trade system would usually compile information on MoT based on the mode of transport when goods enter or leave the statistical territory, which could be, for example, the mode used to transport goods from a customs warehouse into a free circulation area. This might, if significant, provide a misleading picture of a country's MoT statistics. In this case countries might wish to consider presenting information on MoT in such a way as to take into account the fact that goods might have entered the statistical territory from free zones or customs warehouses. An appropriate explanation should be provided in trade statistics metadata.

C.   Country practices in the compilation of trade statistics by MoT

17.14.   *Country practices.* Counties' experiences in the compilation of MoT data differ for several reasons, including the use of different trade systems, availability of data sources, etc. Examples of country experiences in compilation of trade data by MoT, including both good practices and challenges, are provided below.

188. In Brazil, MoT data are obtained from the entries in the field "unit of the customs boarding or unloading" of electronic documents for export and import of SISCOMEX.

17.15.   *Country practice: United States of America.* The United States applies the recommended definition of MoT as the means of transport used when goods enter or leave the economic territory. Further details can be summarized as follows:

(a). The data for "all methods of transportation" include general exports and general imports by vessel, air, truck, rail, air mail, parcel post, and other methods of transportation;

(b). The data for general exports and general imports transported by vessel and air represent merchandise actually leaving or arriving in the United States aboard a vessel or an aircraft;

(c). Imports and exports of (*i*) vessels moving under their own power or afloat and (ii) aircraft flown into or out of the United States are included in the "all methods" data but excluded from the vessel and air statistics;

(d). Mail and parcel post shipments (*including those transported by vessel or air*) are included in the "all methods" data but excluded from the vessel and air statistics;

(e). Estimated low-value shipments are included in the "all methods" data but excluded from the vessel and air statistics;

(f). Imports out of United States customs bonded warehouses and foreign trade zones are included in the "all methods" data but excluded from vessel and air statistics;

(g). In some instances, shipments between the United States and countries abroad enter or depart through Canada or Mexico. Such shipments are recorded under the method of transportation by which they enter or depart from the United States regardless of the transportation mode between Canada or Mexico and the country of origin or destination. For example, if an item is shipped from China to Canada on a vessel, then shipped from Canada to the United States on a truck, the statistics would show an import truck shipment from China.

17.16.   *Country practice: Canada.* Canada follows the general trade system. The main features of the Canadian experience are:

(a). *Imports.* For imports, the mode-of-transport information refers to the last mode of transport by which the cargo was transported to the port of clearance in Canada and is derived from the cargo control documents of Canadian customs. Therefore, shipments from, for example, China destined for Canada may arrive at a port in the Western United States by marine mode and arrive in Canada via rail. Such shipments are recorded as imports from China by rail in Canada's merchandise trade statistics. Further, the recorded mode of transport may not be the mode of transport by which the cargo arrived at the Canadian port of entry, if the cargo was cleared by Canadian customs at an inland port. If, for example, the commodities imported from the United Kingdom of Great Britain and Northern Ireland arrived by ship in Toronto but were not cleared in Canada until they reached another city by truck, the mode reported in Canada's international trade statistics will be "truck".

(b). *Exports.* Exports by land modes of transportation frequently reflect Canada's trade with a second country entailing transshipment through a third country, generally the United States. For exports, the mode-of-transport information represents the mode of transport by which the international boundary was crossed. For Canada's exports through the United States to other overseas countries, the mode reported would be the mode used to cross the border between Canada and the United States. If, for example, export shipments that are destined for the United Kingdom travel by truck through Fort Erie, Ontario, and are then shipped by water from a United States port to the United Kingdom, the mode reported in Canada's international trade data will be "truck".

17.17.   *Country practice: Mexico.* Mexico follows the general trade system and compiles MoT trade statistics as follows:

(a).   *Imports:* For imports, the MoT information represents the last mode of transport by which the cargo was transported at the Mexican port of entry and is derived from the cargo control documents of Mexico customs. This may not be the MoT by which the cargo arrived to the port of clearance in Mexico, for those cases where the cargo was cleared by Mexico customs at an inland port;

(b).   *Exports.* For exports, the mode of transport information records the last mode of transport with which cargo crossed the customs border on its exit from the country;

(c).   The transportation authority, which is the Ministry of Communication and Transport, provides data at a general level on the transported volume by mode; this information supplements the data on value provided in the customs records.

17.18.   *Country practice: Germany.*

(a).   *Imports.* If imports are leaving the customs warehouse for free circulation, the mode of transport at the time of entering the customs territory of the European Union (*and not the mode used for transportation when leaving customs warehouse*) has to be reported in the customs declaration. In case the importer is not able to identify that mode of transport, he or she has to declare the presumable mode of transport;

(b).   *Exports.* Exports are treated accordingly (*presumable mode of transport when leaving the customs territory*).

17.19.   *Country practice: Brazil.* Statistics of foreign trade are released including port of loading and unloading and MoT. To determine the mode of transport for each operation, Brazil has adopted the criteria set by IMTS 2010, that is, the mode of transport used at the moment when goods enter or leave the country. Brazil has also adopted the IMTS 2010 recommendation to classify modes of transport as follows: sea, air, railway, road, pipeline, cables, inland waterway (divided into river and lakes), self-propelled goods, postal consignments, mail or courier shipments, and others. In practice, these data are obtained from entries in the field "unit of the customs boarding or unloading" of the electronic documents for export and import of SISCOMEX.

17.20.   *Quality issues.* Obtaining high-quality trade data by MoT is a challenging undertaking. In addition to the reporting errors that affect the general merchandise trade statistics, there are reporting errors that specifically affect data tabulated by MoT. In general, the businesses or individuals that report the data may not be the same individuals who physically convey the shipments. This can lead to inaccurate information about how a shipment is transported and where it enters or exits a country. It is good practice to develop various cross-checking procedures and to document them in trade statistics metadata.

17.21.   *Quality assurance in the United States of America.* The United States Census Bureau quality assurance procedures include determining whether reported MoT codes and ports are valid and performing relational checks between the ports and the method of transportation. With a view to future, the Census Bureau is exploring obtaining transportation information directly from the manifest, as reported by the carrier of the goods. To ensure quality, besides MoT and port relationship checking, the Census Bureau also performs relational edits on MoT/HS commodity and MoT/HS commodity/shipping weight. For example, a certain commodity such as coal cannot be shipped by air nor can the shipping weight of a commodity shipped by vessel exceed the maximum allowed.

17.22.   *The Census Bureau is substituting Canada's import statistics for data on United States exports to Canada.* In accordance with this data exchange, Canada requires

its importers to report the MoT by which the goods departed from the United States. However, Canada does limited edit checks of this field, which can lead to the collection of inaccurate information for exports to Canada. Additionally, Canada does not collect containerization information on the United States exports as part of the data exchange and, this being the case, all containerized value and shipping weights for exports to Canada are excluded.

D. Experiences in the dissemination of international merchandise trade statistics by MoT

17.23.   *Experience of the United States of America in the dissemination of international merchandise trade statistics by mode of transport.* The United States makes its international merchandise trade statistics by MoT available in the following publications:

(a). U.S. imports of merchandise provides import statistics in various data fields for Harmonized System (*HS*) commodities at the 2-, 4-, 6- and 10-digit level. Country and customs district data for value, quantity, method of transportation, shipping weights, import charges, duties etc., are provided on a monthly, year-to-date and annual basis;

(b). U.S. Merchandise Trade: Selected Highlights (*FT920*) provides data on value, charges, insurance and freight (CIF), and shipping weight for general imports and imports for consumption, by district of entry, district of unlading, world area, country of origin, and method of transportation. Final data are released monthly;

(c). USA Trade Online provides port statistics by six-digit HS and country for value, shipping weight, and method of transportation. State export statistics that include six-digit HS or four-digit North American Industrial Classification System (*NAICS*) and country are provided for value, shipping weight and method of transportation;

(d). U.S. exports by port and U.S imports by port provides export and import statistics by port of export and port of unlading, respectively, for commodities at the six-digit HS level for value, shipping weight, and method of transportation on a monthly, quarterly or annual basis;

(e). Trans-border statistics files: United States imports and exports from and to Mexico and Canada and United States imports and export transshipments through Mexico and Canada in disaggregated MoT are provided to the United States Bureau of Transportation Statistics (*BTS*). These data, which include separate details on land (e.g., truck, rail) and other modes (e.g., mail, flyaway aircraft), are published by the Bureau.

17.24.   *Cooperation between Canada, Mexico and the United States.* Box XVII.1 provides information on the North American Transportation Statistics Online Database (NATS-OD).

Box XVII.1

North American Transportation Statistics Online Database (NATS-OD)

The NATS-OD database[a] presents information on transportation and transportation-related activities among Canada, the United States and Mexico, both within individual countries and between countries. This database, presented in French, English and Spanish, is accessible in table and time-series formats, and covers 12 thematic areas, including transportation and the economy, transportation safety, transportation's impact on energy and the environment, passenger and freight activity, and transportation and trade.

The data contained in the NATS-OD database are products of the North American Transportation Statistics Working Group within the North American Transportation Statistics Interchange, a trilateral initiative among the transportation and statistical agencies of Canada, the United States and Mexico. Under way since 1991, the Interchange provides a forum for the exchange of information and for the discussion of topics and issues related to transportation statistics among the participating countries.

The primary participating agencies include Statistics Canada and Transport Canada (Canada); the Secretaría de Comunicaciones y Transportes (SCT) (Ministry of Communications and Transportation), the Instituto Mexicano del Transporte (IMT) (Institute of Transportation of Mexico) and the Instituto Nacional de Estadística y Geografía (INEGI) (National Institute of Statistics and Geography) (Mexico); and the Bureau of Transportation Statistics (BTS) (United States Department of Transportation) and the U.S. Census Bureau (United States). Other agencies within the three countries have participated and provided data and expertise.

Major objectives of the North American Transportation Statistics Working Group are to: (a) identify key information which will help provide a comprehensive view of transportation in North America, (b) characterize transportation activity and impacts across and between Canada, Mexico and the United States, (c) reveal specific data comparability differences among countries, (d) identify data and information gaps and (e) initiate discussions on reducing comparability differences and data gaps through cooperative activities.

The focus is on data, methodology and analysis that enable the provision of information needed to support a safe, environmentally sustainable and integrated transportation system for North America; for this reason, the three countries have developed comparable key indicators of transportation activity such as merchandise trade by MoT.

299. Available from http://nats.sct. gob.mx/nats/sys/index.jsp?i=3.

Annex XVII.A.
Description of modes of transport for IMTS purposes

Code	Heading	Description (tentative, for orientation only)
1	Air	Any movement of goods and/or passengers on an aircraft
2	Water	Any movement of goods and/or passengers undertaken wholly or partly at sea or on navigable inland waterways using merchant ships or inland water transport (IWT) vessels
2.1	Sea	Any movement of goods and/or passengers using merchant ships on journeys that are undertaken wholly or partly at sea. One-port transport (movements of goods shipped to offshore installations, or for dumping at sea, or reclaimed from the seabed and unloaded in ports) is included. While bunkers and stores supplied to vessels in port are excluded, bunker oil shipped to vessels offshore is included. Fluvio-maritime movements of goods by merchant ships are included. Movements of goods on vessels of inland waterways between seaports and inland waterway ports are excluded (they are included in inland waterway transport). Movements of goods carried internally between different basins or docks of the same port are excluded.
2.2	Inland waterway	Any movement of goods and/or passengers using IWT vessels that is undertaken wholly or partly on navigable inland waterways. Bunkers and stores supplied to vessels in port are excluded. When an IWT vessel is being carried on another vehicle, only the movement of the carrying vehicle (active mode) is taken into account
3	Land	Any movement of goods and/or passengers using a railway or road vehicles on a given railway or road network
3.1	Railway	Any movement of goods and/or passengers using a railway vehicle on a given railway network. When a railway vehicle is being carried on another railway vehicle, only the movement of the carrying vehicle (active mode) is considered. A railway network is understood as comprising all lines of communication made up by rail exclusively for the use of railway vehicles. A railway vehicle is a mobile equipment running exclusively on rails, moving either under its own power (tractive vehicles) or hauled by another vehicle (coaches, railcar trailers, vans and wagons)
3.2	Road	Any movements of goods and/or passengers using a road vehicle on a given road network. When a road vehicle is being carried on another vehicle, only the movement of the carrying vehicle (active mode) is considered
4	Not elsewhere classified	Any movements of goods not separately classified in headings 1, 2 and 3
4.1	Pipeline and cables	Any movement of liquid products in a given pipeline or cable network
4.1.1	Pipeline	Any movement of crude or refined liquid petroleum products or gases in a given pipeline network. Pipelines covering flow of water are covered here as well
4.4.2	Cable	Any movement of products in a given cable network, e.g., power lines carrying electricity
4.2	Postal consignment, mail or courier shipment	Any movement of goods via postal, mail or currier shipment
4.3	Self-propelled goods	As an example, an aircraft flown out of the compiling country under its own power should be classified as self-propelled
4.4	Other	To be used when available information does not allow a transaction to be attributed to any specific mode of transport category (see IMTS 2010, para 7.3)

Based on the Illustrated Glossary for Transport Statistics (4th ed. 2009), prepared by the Intersecretariat Working Group (IWG Transport) comprising representatives of ECE, the International Transport forum and Eurostat.

Chapter XVIII
Customs procedure codes

18.1.   *Introduction.* IMTS 2010 (paras. 2.19 and 8.6) recommends that information about the customs procedures applied to individual transactions be part of the data set provided by customs to the agency responsible for the compilation of trade statistics. It is good practice to include customs procedure code as an additional data field in the data set used for international reporting. The present chapter explains the significance as well as the limitations of this new data field, and describes experiences of countries that obtain and use this information.

A.   Customs procedure code as a new data field

18.2.   *Request for customs procedure code as a new data field.* Following the adoption of the revised recommendations contained in IMTS 2010, the United Nations Statistics Division and the Organization for Economic Cooperation and Development (OECD) revised their data request to countries[189] to include the following four new data items: (a) second partner country or area, (b) second value for imports (FOB), (c) mode of transport and (d) customs procedure code (or applicable transaction code) (see table XVIII.1 for details).[190] The TF-IMTS as well as the EG-IMTS have been informed about these new data items.

189.   UNSD and OECD cooperate in the collection of annual merchandise trade data. OECD requests the data from its member countries and immediately forwards the received data to UNSD. Starting in 2013, UNSD will take over responsibility for data collection for all countries, including OECD member countries.

190.   The revised data request is available from UNSD website at http://unstats.un.org/unsd/trade/IMTS/datacollection.htm.

Table XVIII.1
New data fields following the adoption of IMTS 2010[a]

Field name	Recommended field content
Second partner country or area	In national nomenclature; country of consignment for imports and country of consignment (destination) for exports
Second value for imports	Monetary value (in national currency or United States dollars); FOB
Mode of transport	The means of transport used when goods enter or leave the economic territory (in the encouraged nomenclature provided in IMTS 2010, para. 7.2 or national nomenclature)
Customs procedure code (or applicable transaction code)	Code of the customs procedure applied to individual transactions by customs; any applied procedure or transaction code if customs procedure codes are not available or if additional codes are used

a.   See table VIII.1 for further information.

B.   IMTS 2010 recommendation

18.3.   *Information about applied customs procedures.* IMTS 2010 (para. 2.19) recommends that information about the customs procedure applied to individual transactions (or the nature of transaction) be included in the data set for trade statistics

in order to facilitate the identification of re-exports and reimports but also of other types of trade, such as goods for processing, trade between related parties, goods on consignment etc. as far as possible. It further recommends that, if the customs is not the agency compiling trade statistics, this information be regularly included in the data set provided by customs to the agency responsible for the compilation of trade statistics of a country. IMTS 2010 (para. 8.6) reiterates this recommendation and recommends that information about the customs procedures applied to individual transactions be part of the data set provided by customs to the agency responsible for the compilation of international merchandise trade statistics.

C.   Importance of compilation and international reporting

18.4.   *Importance of the information on customs procedure codes.* Information on the custom procedures applied to individual transaction are of critical importance for the compilation of IMTS 2010, as those procedures indicate whether certain transaction should be included in or excluded from trade statistics (IMTS 2010, paras. 8.5 and 8.6). For example, the ASYCUDA system uses customs procedure codes for determining the trade type (system) and flow.[191] Further, customs procedures might be used for the separate identification (recording) of certain types of trade transactions such as those involving goods for processing and intra-firm trade (see chaps. XX and XXI for further information). In general, the customs procedure applied to an individual transaction frequently contains information about the purpose of the transaction, which is useful for analytical purposes.

18.5.   Often, the information on customs procedure codes is not included in the data set provided by customs to the trade statisticians, possibly because, in the past, this information not was often seen as suitable or relevant for statistical purposes. However, owing to globalization, goods production processes are increasingly split up across many countries. Therefore, there is now a very strong need to obtain additional information about the nature of the trade transactions so that the impact of trade on and its relationship to employment, growth and the environment can be analysed.

18.6.   Limitations of information and compilation issues. Most countries broadly follow the revised Kyoto Convention (RKC) and apply certain standard customs procedures.[192] However, countries have usually developed their own, often extensive, set of customs procedures which suit their administrative needs, and might apply multiple procedures to the same transaction. Hence, the information on the application of customs procedures might not automatically, or for all countries, result in any consistent and therefore usable statistical information. Also, it might be difficult to make the national information internationally comparable. One practical consideration is that the differentiation of trade transactions by customs procedure codes might significantly increase the data set.

18.7.   *Minimum goals for the future.* The development of the information on customs procedures into relevant and internationally comparable data is expected to take several years. The minimum goal in the near future would be for all countries to be able to identify re-exports, reimports, and goods for processing in their trade data, and to make this information available to all users. An important intermediate step in this regard would be to create an inventory of the customs procedures that are currently applied by individual countries, and to make it publicly and conveniently available to users.

191. The Automated System for Customs Data (ASYCUDA) is a computerized customs management system which covers most foreign trade procedures. For further details, see chap. VIII and annex XVIII.A at the end of this chapter.

192. See chapter II, sects. B and C, of this Manual.

D. Customs procedures applied by countries

18.8.   *Revised Kyoto Convention.* The RKC identifies a set of customs procedures, and provides standards and recommended practices regarding those activities. The majority of countries are believed to apply the main customs procedures identified in the RKC. However, there is at this time little information on which customs procedures are applied by individual countries.

18.9.   *Customs regime codes used in merchandise trade statistics of China.* China Customs developed an extensive set of customs procedures to suit the needs for customs control and trade statistics. The customs procedure code has 4 digits, of which the last 2 digits correspond to the customs regime code that identifies 19 different types of trade for the purpose of compilation of China's international merchandise trade statistics (see table XVIII.2)

Table XVIII.2
Customs regime codes used in the international merchandise trade statistics of China

Code	Description
10	Ordinary trade
11	Aid or donation between Governments or by international organizations
12	Other donation
13	Compensation trade
14	Processing and assembling (inward processing, type I)
15	Processing with imported materials (inward processing, type II)
16	Goods on consignment
19	Border trade
20	Equipment for processing trade
22	Contracting projects
23	Goods on lease
25	Equipment or materials imported as investment by foreign-invested enterprises
27	Outward processing
30	Barter trade
31	Duty-free commodities on payment of foreign currency
33	Customs warehousing trade
34	Entrepôt trade by bonded area
35	Equipment imported into export processing zone
39	Other

18.10.   *Customs procedure codes (CPC) used in the Philippines.* The CPC (four-digit code plus three-digit extension) is found in box 37 of the import entry and internal revenue declaration. See Table XVIII.3 for the list of four-digit codes used in the Philippines.

Table XVIII.3
Customs procedure codes (*CPC*) **used in the Philippines**

Code	Description
1000	Permanent export of domestic origin
1021	Permanent export after temporary export for customs outward processing procedure
1022	Permanent export after temporary export for return in unaltered state
1100	Permanent export of duty and tax-free import
1240	Permanent export of duty and tax-paid import
2100	Temporary export under customs outward processing procedure
2200	Temporary export for return of goods in unaltered state
3052	Re-export after customs inward processing procedure
3053	Re-export after temporary admission for return in unaltered state
3071	Re-export after customs warehousing procedure
4000	Direct entry for home use
4052	Entry for home use after temporary import procedure
4053	Entry for home use after temporary admission for return in unaltered state
4071	Entry for home use after customs warehousing procedure
4088	Consumption entries transshipped
4100	Direct import under drawback procedure
4500	Informal entry (commercial goods)
4588	Informal entry after transshipment (commercial goods)
4600	Informal entry (non-commercial goods)
4688	Informal entry after transshipment (non-commercial goods)
4900	Consumption entries short-shipped
5200	Temporary import for customs inward processing procedure
5300	Temporary import for return of goods in unaltered state
5371	Temporary import for return in unaltered state after customs warehousing
6021	Reimport after temporary export for customs outward processing procedure
6022	Reimport after temporary export for return of goods in unaltered state
7100	Direct entry for customs warehousing procedure
7152	Entry for customs warehousing after temporary import for inward processing
7171	Change of warehouse
7188	Warehousing entries transshipped
7271	Withdrawal permit (warehouse to store)
7300	Temporary import for constructive warehousing
7700	Transfer from warehouse to another warehouse
7800	Transhipment entry to warehouse
7900	Entry for customs warehousing short-shipped
8800	Transhipment

18.11.   *Harmonization of customs procedure codes in the Common Market for Eastern and Southern Africa (COMESA).* COMESA has achieved, for the majority of its member countries, a harmonization of customs procedures and has enabled this information to be automatically included in the data set provided to statistical agencies. Based on this

dataset, countries are able, for example, to provide their data following both the special and the general trade system. For further details see annex XVIII.A.

18.12.   *European Union practice.* In the European Union, the following elements of information are compiled: (a) customs procedure code, (b) statistical procedure code, and (c) nature of transaction code. The customs procedure code defines the difference between general and special trade, while the transaction code determines other factors like change of ownership. See annex XVIII.B for the list of nature-of-transaction codes used in the Extrastat system of the European Union.

Annex XVIII.A.

Harmonization of customs procedure codes in the Common Market for Eastern and Southern Africa (COMESA)

18.13.   *Background.* The COMESA Common Statistical Rules (CSR), which were adopted by the Council of Ministers at Lusaka in April 1997, stipulate the use of recommended COMESA customs procedure codes (CPC) to determine the flow of goods by trade types. By 2007, out of 19 COMESA member States, 9 had migrated to ASYCUDA++ and 5 others are at the various implementation stages. Thus, COMESA found it necessary to revise the provisions of the CSR to align it with the ASYCUDA++ format.[193]

18.14.   *Composition of the customs procedure code.* The complete set of the ASYCUDA++ seven-digit CPC consists of a four-digit extended procedure code and three-digit additional/national codes for national purposes. The extended procedure code is made up of two parts, the requested procedure and the previous procedure. The requested procedure comprises the first two numbers of the four-digit extended procedure. It represents the customs procedure that is being asked for. The previous procedure comprises the last two digits of the four-digit extended procedure and represents any previous customs procedure under which the goods concerned have been entered. Both the requested and the previous procedures are derived from the general procedures shown in box XVIII.A.1 and which are based on the Standard CPC Regimes Type or Model of Declaration (see box XVIII.A.2). For example, goods for import into a bonded warehouse would be entered under extended procedure 7100, which comprises requested procedure "71" (Warehousing) and previous procedure "00" (No previous procedure). The list of extended procedures is provided in box XVIII.A.3. Special national rebates, etc., are handled by the last set of three digits that make up the complete set of the ASYCUDA++ seven-digit CPC. These additional/national codes follow, as closely as possible, national laws of member States.

18.15.   *COMESA customs procedure codes.* The combination of extended procedure and additional/national codes results in about 350 customs procedure codes recommended for use by COMESA member States. Table XVIII.A.1 provides, as example, the custom procedure codes for the Standard CPC Regimes Type or Model of Declaration of Exportation ("EX 1").

193. See the COMESA report entitled "COMESA Regional CPC Consultancy Project: October-December 2007", authored by R. Magadzire and J. Manirambona.

Box XVIII.A.1

General procedures

10	Direct/outright exportation
20	Excise
21	Temporary export for outward processing/repairs
22	Temporary export for return in an unaltered state
30	Re-exportation
40	Importation for home use
51	Temporary importation for return in an unaltered state
52	Temporary importation for inward processing/repairs
60	Reimportation
71	Warehousing
78	Export processing zones/free trade zones
80	Removal in bond (inward transit)
81	Removal in transit (through transit)/transhipment
90	Other import procedures being travellers imports

Box XVIII.A.2

Standard CPC Regimes Type or Model of Declaration

EX 1   Exportation
EX 2   Temporary export
EX 3   Re-export
EXC 2   Excise
IM 4   Entry for home use
IM 5   Temporary importation
IM 6   Reimportation
IM 7   Warehousing/free trade zones
IM 8   Removal in bond/removal in transit (transit/transshipment)
IM 9   Other import procedures being travellers imports (private importations)

Box XVIII.A.3

List of extended procedures

1000   Direct permanent export
1040   Direct permanent export after entry for home use
1052   Direct permanent export after temporary importation for inward processing
1071   Direct permanent export for excisable goods ex-warehouse
1078   Exportation of manufactured /processed goods from an export processing zone/international free trade zone
2000   Entry for excisable goods
2100   Temporary exports for outward processing
2171   Temporary exports for outward processing of goods ex-warehouse
2200   Temporary exports for return in an unaltered state
2271   Temporary exports for return in an unaltered state of goods ex-warehouse
3040   Re-export after entry for home use
3051   Re-export after temporary import
3052   Re-export after customs inward processing procedure
3071   Re-export after warehousing
3078   Re-exportation of goods from an export processing zone/international free trade zone (export in bond)
4000   Entry for home use (general)
4051   Entry for home use after temporary import and return in an unaltered state
4052   Entry for home use after temporary import for inward processing

4071	Entry for home use ex-warehouse
4078	Entry for home use, ex-export processing zone/free zone, general entry
4080	Entry for consumption ex-removal in bond
4081	Entry for consumption ex-removal in transit
5100	Temporary import for return in unaltered state
5200	Temporary import for customs inward processing procedure
5271	Temporary import for customs inward processing procedure ex-warehouse
5280	Entry for inward processing ex-removal in bond
6010	Reimportation after outright exportation
6021	Reimport after temporary export for outward processing procedure
6022	Reimport after temporary export for return of goods in an unaltered state
7100	Direct entry for customs warehousing procedure
7171	Re-warehousing of goods at the same port
7180	Entry for customs warehousing procedure after removal in bond
7181	Entry for customs warehousing procedure after removal in transit
7800	Entry of goods into an export processing zone/international free trade zone
8000	Removal of goods in bond
8071	Removal of goods in bond ex-warehouse
8100	Removal in transit
8180	Removal of goods in transit ex-removal in bond
8181	Transshipment of goods in transit under customs control
9000	Private importations
9071	Private imports ex-warehouse goods, general entry
9080	Private imports ex-removal in bond goods, general entry

a.   Key to trade types: 2: applicable in the case of both special and general trade types; S: applicable in the case of special trade type, only

Table XVIII.A.1
Harmonized CPCs: example, EX 1 (*exportation*)

ASY++ code		Trade type	Standard Description
1000	000	2	Exportation of goods from open market
1000	105	2	Exportation of goods by the Government or Government organizations
1000	110	2	Exportation of goods by diplomatic missions/foreign embassies/diplomatic personnel
1000	115	2	Exportation of goods under customs/trade agreements entered into by the Government
1000	120	2	Exportation of goods where industrial drawback of duty is to be claimed
1040	130	2	Exportation of goods after entry for home use under national manufacturing schemes
1052	000	2	Exportation of compensating products after temporary imports for inward processing
1071	000	S	Exportation in bond of locally manufactured goods subject to excise duty (export in bond)
1078	000	2	Exportation of manufactured/processed goods from an export processing zone/international free trade zone

Annex XVIII.B.

Nature of transaction codes for Extrastat

A	B
1. Transactions involving actual or intended transfer of ownership from residents to non-residents against financial or other compensation (except the transactions listed under 2, 7, 8)	1. Outright purchase/sale 2. Supply for sale on approval or after trial, for consignment or with the intermediation of a commission agent 3. Barter trade (compensation in kind) 4. Financial leasing (hire-purchase)[a] 9. Other
2. Return and replacement of goods free of charge after registration of the original transaction	1. Return of goods 2. Replacement for returned goods 3. Replacement (e.g., under warranty) for goods not being returned 9. Other
3. Transactions involving transfer of ownership without financial or in-kind compensation (e.g., aid shipments)	
4. Operations with a view to processing[b] under contract (no transfer of ownership to the processor)	1. Goods expected to return to the initial country of export 2. Goods not expected to return to the initial country of export
5. Operations following processing under contract (no transfer of ownership to the processor)	1. Goods returning to the initial country of export 2. Goods not returning to the initial country of export
6. Particular transactions recorded for national purposes	
7. Operations under joint defence projects or other joint intergovernmental production programmes	
8. Transactions involving the supply of building materials and technical equipment under a general construction or civil engineering contract for which no separate invoicing of the goods is required and an invoice for the total contract is issued	
9. Other transactions which cannot be classified under other codes	1. Hire, loan, and operational leasing longer than 24 months 9. Other

Compilation of data on trade in selected categories of goods

Chapter XIX
Scope of IMTS

19.1.   *Introduction.* The present chapter is based on chapter I of IMTS 2010 on scope and time of recording. This chapter elaborates on the implementation of the general guideline for recording, in IMTS 2010, all goods that add to or subtract from the stock of material resources of a country by entering (imports) or leaving (exports) its economic territory. Section A provides an interpretation of the general guideline for the recording of goods as contained in IMTS 2010. Section B focuses on the definition and comparison of categories of goods that might be difficult to distinguish, such as goods on consignment and goods for processing, etc. Section C discusses trade in categories of goods where the application of the concept of economic territory requires further explanation, such as trade in ships and aircraft. Sections D deals with the issues of cross-border trade and smuggling; and Section E, with the customs and statistical threshold, treatment of non-response, confidential data and the omission of data. Chapters XX-XXIV deal with additional categories of goods that are within the scope of IMTS but that are difficult either to identify separately or to compile.

A.   The general guideline

19.2.   *Recommendation.* As a general guideline, it is recommended that international merchandise trade statistics record all goods that add to or subtract from the stock of material resources of a country by entering (imports) or leaving (exports) its economic territory. The general guideline is subject to the clarifications provided in chapter I as well as other chapters of IMTS 2010 and, in particular, to the specific guidelines set out in IMTS 2010, chapter I, section B.

19.3.   *Interpretation of the general guideline.* The recommendation establishes two criteria for the recording of goods. First, goods have to physically enter or leave the economic territory and, second, the goods need to add or subtract from the stock of material resources of a country. The interpretation of this general guideline depends on what is to be understood as a good, what is to be considered the economic territory, and what it means for goods to be part of the stock of material resources of a country. IMTS 2010 provides definitions of all three terms (IMTS 2010, paras. I.5 to I.7). The discussion of specific categories of goods in this and subsequent chapters of part four, on the compilation of data on trade in selected categories of goods, touches upon these three definitions.

B.   Comparison of specific categories of goods

19.4.   *Table XIX.1* below summarizes the definition and comparison of categories of goods that might be difficult to distinguish.

Table XIX.1
Definition and comparison of specific categories of goods[a]

Category of good	Definition	IMTS 2010	Distinguish from	Additional considerations
Goods on consignment (IMTS 2010, para. 1.17)	These are goods intended for sale but not actually sold when they cross the border	Include	Goods being simply transported through a country or temporarily admitted or withdrawn are to be excluded (see IMTS 2010, paras. 1.41-1.44)	Goods on consignment can be returned but their identification as returned goods might be difficult
Goods for processing with or without change of ownership (IMTS 2010, paras. 1.19-1.21)	Goods for processing are goods that are sent abroad or brought into a country under a specific arrangement between the involved parties (which may or may not include the change of ownership) and for specific operations as defined by the statistical authorities of the compiling country	Include and identify separately	Goods for repair and maintenance are to be excluded but to be separately recorded (IMTS 2010, para. 1.57)	Identify separately goods for processing where no change of ownership takes place; identify separately re-exports and reimports
Goods for storage/goods transferred from or to a buffer stock organization (IMTS 2010, para. 1.27)	A buffer stock organization is one that maintains a stock of certain commodities and sells or buys them in order to influence supply and demand on the world market	Include	Goods being simply transported through a country or temporarily admitted or withdrawn are to be excluded (see IMTS 2010, paras. 1.41-1.44)	
Goods simply being transported through a country (IMTS 2010, paras. 1.41-1.42)	Goods are considered as simply being transported through a country if they (a) enter and leave the compiling country solely for the purpose of being transported to another country, (b) are not subject to halts not inherent to the transportation and (c) can be identified when both entering and leaving the country	Exclude	Goods that add to or subtract from the stock of material resources of a country by entering (imports) or leaving (exports) its economic territory	Goods simply being transported include goods under "in transit" or "in transshipment" customs procedures but are not limited to them
Goods temporarily admitted or dispatched (IMTS 2010, paras. 1.43-1.44)	At the time of admission/dispatch, it is known that their intended stay in the receiving country is temporary (as defined by the statistical authority of a country) and after their stay they can be withdrawn/returned in the same state (except for normal wear and tear). This category includes, but is not limited to, goods identified in the Kyoto Convention and the Convention on Temporary Admission (Istanbul Convention) as goods covered by the "temporary admission subject to re-exportation in the same state" customs procedure	Exclude	Goods for processing and goods under financial lease are to be included (see IMTS 2010, paras. 1.19-1.21 and 1.28)	It may not be known whether admitted or dispatched goods are expected to be brought back within a limited time period. Countries may wish to use one year (or less) of stay as an approximation for temporary admission

Category of good	Definition	IMTS 2010	Distinguish from	Additional considerations
Goods for repair or maintenance (IMTS 2010, para. 1.57)	This category comprises goods temporarily crossing borders for repair or maintenance abroad. Such activities reinstate or maintain the quality of the goods and do not result in the creation of a new product	Exclude but identify separately	This category does not include goods temporarily admitted or dispatched (see IMTS 2010, paras. 1.43 and 1.44), which are to be excluded, or goods for processing (see IMTS 2010, paras. 1.19-1.21), which are to be included	The identification of goods for repair or maintenance should be determined in cooperation with balance-of-payments compilers

a   **Note:** Re-exports (and reimports) are part of exports (imports) and not a specific category of goods for inclusion or exclusion in the sense of this table, as they are always to be included. Re-exports are exports of foreign goods that were previously recorded as imports and reimports are imports of goods that were previously exported. It is recommended that re-exports and reimports be separately identified (see IMTS 2010, paras. 2.16-2.18). Goods for processing constitute the category of goods operation upon which usually entails a re-export and reimport unless the processing operations conveys origin or the processed goods remain (e.g., are sold) in the country where the processing takes place (see chap. XX for details). Goods on consignment can be returned and should in this case be identified as re-exports (in the country of initial import) and reimports (in the country of initial export) at return.

19.5.   *Example involving goods on consignment.*[194] In a typical case involving goods on consignment, goods are sent to a marketplace specific for that type of goods in another country for the purpose of their being sold. Such marketplaces can exist for diverse goods, such as live animals, cars and crude oil. The marketplace brings together buyers and sellers. The physical inspection of the goods at local or global distribution centres or changes in market conditions might result in the goods' not being sold and subsequently returned. There might be many other situations and circumstances in which goods are sent to another country to be sold but are returned after not being sold.[195]

19.6.   *Example involving goods for processing.* Global manufacturing and global production chains exist for many products such as cars and electronic devices such as mobile phones). In all such cases, parts of the production process and the manufacturing of the components of the final product take place in several countries. In this sense, all trade transactions that precede the shipment of the final product can be regarded as constituting trade in goods for processing.

19.7.   *Example involving goods for storage.* Certain important commodities such as oil and gas and wheat and rice are frequently stockpiled at specific locations for the purpose of future distribution and use. For example, some small island States store large amounts of fuels to ensure that visiting ships and aircraft can be properly refuelled. While these supplies might be fully under the control of a foreign entity, they nevertheless form part of the material resources of the country.

19.8.   *Example involving goods simply being transported through a country.* Large trading places such as Rotterdam (for oil) and Dubai and China, Hong Kong SAR (for merchandise) are frequently the destination of goods that are then forwarded to another destination. It can be difficult to determine whether these goods are entering the country on consignment, for storage or only as goods in transit.

19.9.   *Example involving goods temporarily admitted or dispatched.* This category includes, but is not limited to, goods identified in the revised Kyoto Convention (RKC) and the Istanbul Convention[196] as goods covered by the "temporary admission subject to re-exportation in the same state" customs procedure. Such goods include display equipment for trade fairs and exhibitions; art exhibits, commercial samples and pedagogic material; animals for breeding, show or racing; packaging, means of transport, containers and equipment connected with transport; and equipment for the working of lands adjacent to the border by persons resident abroad. In cases where

194.   Goods on consignment in this Manual refer to goods on consignment as defined in IMTS 2010. Countries might have additional and divergent definitions of goods on consignment and a specific customs procedure for those goods which might or might not be in line with the above statistical meaning of the term given in IMTS 2010. In the revised Kyoto Convention (RKC), the term "consignment" is used to refer to a single shipment rather than to a general standard customs procedure, except in the special case of the "Relief consignments" procedure covered in Specific Annex J (Chapter 5).

195.   See IMTS 2010, para. 4.15 (f) for the valuation of returned goods.

196.   The Convention on Temporary Admission, signed in Istanbul on 26 June 1990, provided a means of bringing together, and simplifying, various instruments governing temporary admission of goods.

movements of goods are not covered by a specific customs procedure, the statistical authorities should establish criteria for determining whether the movement of goods should be considered temporary.

19.10.   *Example of goods for repair or maintenance.* Ships and aircraft frequently undergo repair and maintenance in other countries which is to be recorded as a service transaction. Regular repair or maintenance might be difficult to distinguish from refitting or refurbishing, which results into an essentially new product whose import and subsequent export need to be included in IMTS (see also subsequent chaps. XX and XXIII).

C.   Economic territory and categories of goods

19.11.   The application of the concept of economic territory requires further explanation in the case of trade in ships and aircraft, bunkers, stores and enclaves/exclaves.

19.12.   *Ships and aircraft.* As mentioned in IMTS 2010 (para. 1.29), ships and aircraft, which are goods that are mobile by definition, might never enter the economic territory of the reporting country. However, they are nevertheless to be viewed as part of the material resources of a country if the owner is a resident of that country. This can be seen as a convention that allows for the recording of ships and aircraft that is most meaningful and, despite its difficulties, most practical. The attribution of ships and aircraft to the material resources of a country could also be based on the degree of physical presence and maintenance arrangements which, however, would be less meaningful, given the importance of ownership and probably much less practical.

19.13.   *Bunkers and stores.* As indicated in IMTS 2010 (para. 1.32), the recording of bunkers and stores does not present much difficulty, either conceptually or practically, if these transactions take place within the own economy, e.g., in the case of refuelling of foreign aircraft and ship, as the supplies are apparently leaving the economic territory on board of the foreign vessels and ships. However, such transactions also need to be recorded as imports by the country where the economic owner of the ship resides, despite the fact that these supplies most likely will never cross the geographical-economic border of these countries. Conceptually, ships and aircrafts need to be viewed as part of the economic territory of the country where the economic owner resides. This should be obvious, as these ships and aircraft contribute to the value added/gross domestic product (GDP) of the countries where the economic owner resides and hence all inports required to generate this value added should be attributed to that country as well.

19.14.   *Enclaves.* IMTS 2010 (para. 2.10) specifies that the economic territory also includes territorial enclaves in the rest of the world. These are clearly demarcated land areas (such as embassies, consulates, military bases, scientific stations, information or immigration offices, aid agencies, central bank representative offices with diplomatic immunity, etc.) located in other territories and used by Governments that own or rent them for diplomatic, military, scientific, or other purposes with the formal agreement of Governments of the territories where the land areas are physically located. Goods supplied by and to enclaves of foreign Governments are to be excluded and treated under trade in services (see IMTS 2010, para. 1.49 (c)).

D.   Cross-border trade and smuggling

19.15.   *Three cases to distinguish.* Goods acquired by all categories of travellers, if significant as defined by national law (often referred to as shuttle trade), are to be included (IMTS 2010, para. 1.16). This includes used goods such as cars (IMTS 2010, para. 1.37) or produce, and special surveys and estimation methods might be required to compile information on this trade. If those goods enter the economic territory illegally (e.g., through smuggling or as stolen vehicles), they should be excluded but recorded separately (IMTS 2010, para. 1.59). Goods in amounts or values that do not exceed limits established by national law are to be treated as part of trade in services (IMTS 2010, para. 1.49 (a).

19.16.   *Fictitious trade.* While smuggling reduces the coverage of trade statistics, other fraudulent activities can artificially inflate recorded trade. The case of the declaration of a trade value too high for exports, e.g., to receive a subsidy, raises a valuation issue (see chap. XIV) and a matter of statistical quality assurance (see chap. IX). However, in some cases (for instance, in the so-called carousel fraud in the European Union), a series of trade transactions of significant value is created to enable value added tax fraud to be committed without the goods necessarily ever moving.[197] It is good practice for compilersto stay in close contact with the responsible tax and customs authorities in order to properly remove such fictitious trade transactions, once identified, from the data.

197. European Commission, "VAT fraud: frequently asked questions", press release (MEMO/01/230), Brussels, 19 June 2001.

E.   Customs and statistical threshold; treatment of non-response

19.17.   *Customs and statistical threshold.* The customs threshold can be defined as a threshold specified in value or quantity under which customs does not require a goods declaration to be completed. Such thresholds are applied by many countries for the goods acquired by travellers (see IMTS 2010, para 1.49 (a) and for goods sent by postal and courier services. Statistical authorities might adopt the customs threshold as their statistical threshold for practical reasons. If the trade that takes place under the statistical threshold is economically significant, as determined by the statistical authorities of the compiling country, it should be estimated and included in the trade statistics (see IMTS 2010, para. 1.3). Box XIX.1 provides information on the different thresholds applied in the European Union Intrastat system and box XIX.2 describes a practice for estimation of trade below threshold.

Box XIX.1

Thresholds applied in the European Union Intrastat system

Exemption threshold

The exemption threshold as defined in article 10 (3) of Regulation (EC) No. 638/2004 of the European Parliament and of the Council of 31 March 2004, is a mandatory threshold, i.e., each member State shall set the thresholds below which parties responsible for providing information (PSIs) are exempted from providing any Intrastat information.

The value of the trade of a party responsible for providing information is considered to be above the thresholds if:

(a.)   The value of trade with other member States during the previous year exceeded the applicable thresholds; or

(b.)   The cumulative value of trade with other member States since the beginning of the year of application has exceeded the applicable thresholds. In this case, information should be provided from the month in which the thresholds were exceeded.

Simplification threshold

Application of the simplification threshold as defined in article 10 (4) of Regulation (EC) No 638/2004 is optional, i.e., member States may apply a simplification threshold. The member State has the option of selecting the type of simplification that is implemented:[a]

(a.)   Exemption of traders from providing information about the quantity of the goods;

(b.)   Exemption of traders from providing information about the nature of transaction;

(c.)   Possibility of reporting a maximum of 10 of the relevant Combined Nomenclature (CN) sub-headings and regrouping other products according to partner Member State under code 9950 00 00.

Small transaction threshold

Application of the small transaction threshold, as defined in article 10 (6) of Regulation (EC) No 638/2004, is optional. Depending on the decision of individual member States, PSIs may group together transactions with individual values less than the small transactions threshold. Article 13 (4) of Commission Regulation (EC) No. 1982/2004 of 18 November 2004 implementing Regulation (EC) No. 638/2004 of the European Parliament and of the Council of Community Statistics relating to the trading of goods between member States and repealing Commission Regulations (EC) No 1901/2000 and (EEC) No 3590/92 (see http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32004R1982&from=EN)", fixes the threshold at 200 EUR. Traders may report just the partner member State and the value of goods using product code 9950 00 00. National authorities may require an authorization for the application of this simplified reporting.

Statistical value threshold

The statistical value threshold as defined by article 13 (2) of Regulation (EC) No. 1982/2004 is set as mandatory in those member States that collect the statistical value. The threshold is usually applied to the collection of the optional data elements as well.

a.   See Eurostat, "National requirements for the Intrastat system: 2011 edition".

Box XIX.2

Estimation of trade below the threshold: experience of the European Union (Germany)

Exporters and importers are exempted from the declaration of intra-European Union trade if their yearly exports/imports do not exceed a certain value. The estimation of the missing data follows a "top down-procedure". The total value of the trade below threshold can be estimated with the help of the relevant tax data. The total value is then broken down by commodities (at the HS two-digit level) and partner countries according to the structure of the enterprises just above the threshold. The idea behind this is that the trade structure of the companies near the threshold should be quite similar. The quantities are calculated proportional to the share of the estimated values in the total values.

19.18.   *Treatment of non-response and simplified customs declaration.* In general, non-response refers to the situation when an entity responsible for providing information about trade transactions does not respond to the request for the information. Non-responses are usually associated with surveys, but can occur in respect to other sources as well. Simplified customs declarations refer to certain transactions where only part of the usually required information is requested by customs. In both cases—non-responses to enterprise surveys, and absence of the necessary information due to the application of simplified customs declaration —countries are encouraged to estimate and include such flows in their foreign merchandise trade statistics following the IMTS 2010 recommendations if they are economically significant, as determined by the statistical authority of the compiling country (see also para. 2.28 of this Manual).

However, in the case where goods should have been declared to customs but the traders failed to do so and, in fact, the goods were moved in or out of the compiling country illegally, such movement of goods would constitute smuggling and should be excluded from the international merchandise trade statistics (see para. 19.15 above).

F.   Confidential data and incomplete coverage due to data omission

19.19.   *Confidential data.* Some countries consider certain commodity and partner information as confidential owing to security concerns or other considerations. Examples include information on imports of military or other sensitive goods and information on exports of oil and gas. IMTS 2010 (para. 10.3) recommends that data considered confidential be included at the next-higher level of commodity or partner detail that ensures the required confidentiality. Confidential trade flows are within the scope of the international merchandise trade statistics and the application of confidentiality should not result in under-coverage (see chaps. X and XXVI for further details and good practices).

19.20.   *Omission of data.* There are examples where information on trade transactions that are not covered by regular customs recording is omitted from merchandise trade statistics, although information is provided and included for balance-of-payments statistics. It might be the case that the available information does not allow the inclusion in merchandise trade statistics at the detailed commodity and partner data levels. However, in line with the general guideline on the scope of IMTS 2010, this trade should be included at the total level in order that full coverage may be provided.

Chapter XX
Goods for processing

20.1.   *Introduction.* The present chapter defines and provides examples of goods for processing (sect. A), while also explaining why certain transactions and activities are excluded from this category (sect. B). Information on the treatment of goods for processing in 2008 SNA/BPM6 is provided in section C. Challenges in the identification of trade in goods for processing, including goods for processing where no change of ownership takes place, are described in section D. Section E provides examples of country experiences in the identification of goods for processing. This chapter is linked in particular to chapter XXI, which covers trade between related parties, and chapter XXIII, which discusses the recording of trade in ships and aircraft.

20.2.   *Importance of identifying goods for processing.* The issue of goods for processing has gained increased attention in recent years, as the production of goods is now frequently spread out across multiple countries, in what are often described as global value chains. This is having significant impact on employment and on the value added generated in the countries that participate in the production process, and raises important issues about the long-term competitiveness of specific sectors of national economies. Therefore, the separate identification and provision of further information on goods for processing are of great analytical importance. The urgent need to improve the availability and the quality of data on goods for processing is also a consequence of the need to identify, for the purposes of national accounts and balance-of-payments systems, goods for processing where no change of ownership of the goods takes place, in view of the recent change in the statistical treatment of such goods in those systems. It is expected that, over time, most countries will be able to provide more information on goods for processing and to improve its quality. However, owing to the issues detailed below, that information will often have limitations of which users should be made aware in the metadata.

A.   Definition and examples of goods for processing

20.3.   *General definition of goods for processing.* Goods for processing are goods that are sent abroad or brought into a country under a specific arrangement between the involved parties (which may or may not include the change of ownership) and for specific operations as defined by the statistical authorities of the compiling country (see IMTS 2010, para. 1.19). In principle, any good that is crossing borders and is intended for use in the production of a new or improved product, or any good that is expected to undergo certain specific operations in another country, might be treated as a good for processing (see sect. B for exclusions). However, customs and statistical authorities in many countries adopt various versions of a more narrow definition of goods for processing, which in most cases would allow for the identification of such goods. It is good practice to adopt a clear and operational definition of goods for processing which can be systematically applied, and to include that definition in the trade statistics metadata.

20.4.   *Specific definitions of goods for processing based on customs procedures.* Many countries have adopted definitions of goods for processing based on specific

198. See revised Kyoto Convention (RKC), Specific Annex F, Chapter 1, definition E3./F2. See also chaps. II and XVIII of this Manual.

customs procedures, such as "inward processing", under which certain goods can be brought into a customs territory conditionally relieved from payment of import duties and taxes, on the basis that such goods are intended for manufacturing, processing or repair and subsequent exportation.[198] To the extent that it is beneficial for traders to use specific procedures that are reserved for goods for processing, such goods are identified in a highly reliable manner by customs procedure codes. Customs procedures such as "inward processing" and "outward processing" provide clear definitions of goods for processing. However, depending on national regulations and practices, "free zone" and "drawback" procedures, for example, could also include goods for processing. In general, specific customs procedures for goods for processing are put in place as part of the trade and economic policies of a country and in direct support of certain economic activities.

20.5.   *Limitations of the use of customs procedures.* Customs procedures might not provide either sufficient information about, or a reliable definition of, goods for processing, as in many cases, using such procedures could be perceived as non-beneficial by traders owing, e.g., to the reduction or elimination of duties. It might be preferable for traders to clear goods for processing for free circulation at import and as regular exports when they leave the country.[199] In that case, there may be no means of identifying imports for processing based on customs records. Identifying exports for processing or re-exports of processed goods may be even more difficult. Also, for trade within a customs union, there might be no customs declarations and procedures that could identify goods for processing.

199. Also, according to most-favored-nation agreements, goods can be exempted from import duties and may be admitted through the customs procedure for goods declared for home use (free circulation); hence, the customs procedure used would not necessarily be an indication of a processing activity.

20.6.   *Other definitions of goods for processing.* In the absence of relevant custom procedures, goods for processing are defined based on economic or other criteria which might reflect specific information requirements (see the example provided in box XX.1 below).

a. See annex XVIII.B for the list of nature of transaction codes for Extrastat.
b. Commission Regulation (EU) No. 113/2010 of 9 February 2010, annex II, footnote 2; Commission Regulation (EC) No. 1982/2004 of 18 November 2004, annex III, footnote 2; and Commission Regulation (EU) No. 96/2010 of 4 February 2010 amending Regulation (EC) No. 1982/2004, annex III, footnote 2.

Box XX.1

Definition and identification of goods for processing in the European Union

European Commission Regulation No. 1982/2004 defines processing as operations (transformation, construction, assembling, enhancement, renovation…) with the objective of producing a new or really improved item (annex III, footnote 5). It is specified that this does not necessarily involve a change in the product classification. However, the statistical recording of goods for processing through a so-called nature-of-transactions code in the extra- and intra-EU trade system of the European Union is limited to processing under contract without transfer of ownership to the processor.[a] This means that processing activities on a processor's own account are not covered.[b] A proper distinction of processing without change of ownership is important for BOP and national account purposes. For this purpose it is useful to limit the definition for goods for processing to processing under contract.

20.7.   *Description of processing under contract.* Processing under contract means that no change of ownership takes place. The ordering party provides the primary or intermediate product to the subcontractor responsible for the processing and stays the owner of these products. The subcontractor sends the processed good after processing back to the ordering party or out to another trader to whom the ordering party has sold the processed good.

20.8.   *Operations considered processing.* The following operations are frequently considered to be processing but countries might   treat some other operations as processing as well:[200]

- Manufacturing/assembly of goods (e.g., semiconductors)
- Oil refining, gold refining, etc.
- Conservation (e.g., by the addition of preservatives)
- Treatment (e.g., against parasites or rust)
- Mixing goods of different qualities to produce goods of a new quality
- Labelling of goods, providing the labels are part of a sale transaction; if not, labelling is a service
- Bottling of liquid (e.g., wine from barrels)
- Canning of goods (e.g., tinned food)
- Making up of textiles into products (e.g., clothing, handbags, curtains)
- Dilution or concentration of liquids (e.g., orange juice)
- Uranium enrichment

B.   Transactions and activities that are not goods for processing

20.9.   *Goods for repair and service operations.* Processing should be clearly delimited from simple service operations or repair. A repair is defined as "the restoration of goods to their original function: this may involve some rebuilding or enhancements".[201] The following examples may facilitate the identification and delimitation of repair and service operations:[202]

(a). Repairs:

- Simple replacement of part of an item indicates that a repair transaction might have been carried out; on the other hand, if it results in an really improved item, repair is a process
- Repair of damage to goods incurred during transport
- Repainting should be treated as repair/maintenance; however, the painting of unpainted goods should be treated as processing

(b). Services:

- For aircraft,[203] technical maintenance activities that are carried out owing to legal requirements (e.g., controls, mandatory periodic replacements)
- Testing, adjusting, regulating or certification of goods (e.g., aircraft, machines, apparatus, vehicles)
- Simple ironing, washing, cleaning, drying operations
- Simple packaging operations
- Simple sorting, sifting, weighing, dividing and filtering of goods

200. This list should not be considered prescriptive or complete; rather, it is a reference list of activities that could be regarded as constituting processing, depending on a country's circumstances.

201. Annex I of Commission Regulation (EEC) No 3046/92 of 22 October 1992 laying down provisions implementing and amending Council Regulation (EEC) No 3330/91 on the statistics relating to the trading of goods between Member States (see http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:31992R3046&qid=1418840294812&from=EN).

202. In the past, this list of examples has been in use within the European Union. While it might require further review and elaboration, it appears to be largely acceptable to most countries.

203. For further details on the recording of aircraft (and ships), see chap. XXIII.

20.10.   *Difficulties.* In practice, many borderline cases might exist where repairs and service operations can be difficult to differentiate from processing. Such borderline cases encompass, for example, a repair in which, as replacement, part of a new model with better performance is used, and the partial refitting of a ship or aircraft during repair. Cases that involve high-value goods such as ships and aircraft can have a significant impact on the value of imports and exports and should therefore be reviewed on an individual basis. The users should be informed appropriately about their recording.

C.   Treatment of goods for processing in the 2008 SNA/ BPM6

20.11.   *Goods for processing without change of ownership.* IMTS 2010 (paras. 1.19-1.20) recommends that goods for processing be recorded when they enter or leave the economic territory, irrespective of whether a change in ownership takes place. However, the recording of transactions in the balance of payments is based on the principle of change of ownership between residents and non-residents: Goods supplied to another economy for processing without a change of ownership and returned to the economy of the owner after processing are not recorded as a goods transactions in the balance-of-payments statistics compiled according to BPM6. Instead, the BPM6 (see paras. 10.22 (f) and 10.62-10.71) records a manufacturing service on physical inputs owned by others to reflect the relationship between the owner and processor and only the fee charged by the processor is included under this item. The fifth edition of the Balance of Payments Manual,[204] imputed a change of ownership in the case of goods for processing, but BPM6 reversed this practice, thereby establishing a major conceptual difference from merchandise trade statistics.

20.12.   *Recording of the sale of goods to a third country after processing in BPM6.* If the goods are sold to a third economy after processing, then the value of the goods (including the value of processing) is recorded as an export of the economy of the owner and an import of the third economy; the value of the processing is recorded as an export of services of the processing economy and an import of services of the economy of the owner (see BPM6, paras. 10.22 (f) and 10.62-10.71).

20.13.   *Definition of goods for processing in BPM6.* Manufacturing services on physical inputs owned by others cover, inter alia, processing, assembly, labelling and packing undertaken by enterprises that do not own the goods concerned. The manufacturing is undertaken by an entity that does not own the goods and that is paid a fee by the owner. In these cases, as the ownership of the goods does not change, no general merchandise transaction is recorded between the processor and the owner. Examples of processes that are often undertaken under arrangements for manufacturing services on physical inputs owned by others include oil refining, liquefaction of natural gas, assembly of clothing and electronics, assembly (excluding assembly of prefabricated constructions, which are included in construction), labelling and packing (excluding cases of packing incidental to transport, which is included in transport services) (see BPM6, paras. 10.62-10.63).

204. Washington, D.C., International Monetary Fund, 1993.

D.   Identifying trade in goods for processing, with or without change of ownership, and the implications for the balance-of-payments compilation

20.14.   *Recommendation to identify trade in goods for processing.* IMTS 2010 (para. 1.20), recommends that goods for processing and goods resulting from such processing ("compensating products" in customs terminology), are to be included in the merchandise exports and imports of countries at their full (gross) value. It encourages countries to explicitly identify in their trade statistics (preferably by special coding) goods for processing and goods resulting from such processing where no change of ownership takes place (para. 1.21). Further, IMTS 2010 (paras. 2.19 and 8.6) recommends that information about the customs procedure applied to individual transactions (or the nature of transaction) be included in the data set for trade statistics in order to facilitate the identification of re-exports and reimports but also of other types of trade, such as goods for processing, trade between related parties, goods on consignment, etc., as far as possible.

20.15.   *Identifying goods for processing.* Customs procedures can provide a very reliable means of identifying goods for processing. However, if countries do not have customs procedures that are specific for goods for processing or if traders do not use those procedures, as it might be more convenient not to use them, the information on goods for processing from customs recording might be incomplete and inaccurate (see also para. 20.4). Distinguishing goods for processing from goods for repair and service operations can present a further difficulty. Also, customs records would usually not indicate whether there is a change of ownership and whether the transaction takes place between related parties. Therefore, compilers are encouraged to use additional means, such as special surveys or studies or linking custom records with information about the traders, to overcome these difficulties to the extent possible.

20.16.   *Avoiding double-counting in the balance of payments.* International merchandise trade statistics are the main source of data on trade in goods for the balance of payments and national accounts. In order to obtain the value of total goods on a balance-of-payment basis from merchandise trade statistics, BOP compilers have to undertake several adjustments, among which the following three concern goods for processing:

(a).   Subtracting goods sent for or returned after processing without a change of ownership

(b).   Adding goods acquired from other economies than the own for processing abroad as imports (*BPM6, para. 10.65*) (i.e., additional materials used in the processing of the goods);

(c).   Adding goods sold abroad after processing in other economies as exports (*BPM6, para. 10.66*).

Only in case (*a*) are the transactions within the scope of international merchandise trade statistics, and they would usually be included in the customs recording. Goods under (b) and (c) never cross the border of the reporting country. Compilers of balance of payments and national accounts would require additional sources to capture the required information regarding the transactions indicated in (b) and (c).[205]

20.17.   *Implications for users.* The figures for imports and exports of "Total goods" in the BPM6 Goods and Services Account are expected, at least for some countries, to be significantly different from the figures for total imports and exports published in trade

205. For an example, see Chan Ka-lin, "Development of trade in goods and services statistics in Hong Kong" (Census and Statistics Department, China, Hong Kong Special Administrative Region), presentation at the Global Forum on Trade Statistics, Geneva, 2-4 February 2011.

statistics, probably often reflecting the role of goods for processing without change of ownership but other differences as well. Similar differences are expected for the sub-item "Re-exports". Further, the joint presentation of detailed data on trade in goods and trade in services will require explanations of why the detailed data do not add up to a total figure for trade. The agencies responsible for the dissemination on trade in goods on an IMTS and balance of payment/national accounts basis should agree on a uniform dissemination strategy which would entail uniform labeling and the provision of a reconciliation table.

E.   Country experiences

20.18.   *Goods for processing: example from China.* Processing trade accounts for a large share of Chinese exports and imports (about 50 per cent of exports and 30 per cent of imports).[206] The General Administration of Customs of the People's Republic of China, which is the responsible agency for merchandise trade statistics, defines goods for processing based on the customs procedure of inward processing, under which certain goods can be brought into China's customs territory for manufacturing or processing with subsequent exportation. Two types of customs regimes are differentiated: type I, whereby the imported input remains the property of the supplier and type II, whereby the ownership of imported inputs is transferred to producers of China. The placement of goods under the inward processing procedure requires authorization and customs monitors the processing operation. The external trade statistics reflect collection of information at the enterprise transaction level.

20.19.   *Goods for processing: example from China, Hong Kong SAR.* An example regarding the compilation of information on the outward processing of China, Hong Kong SAR, in the mainland of China in provided in paragraph 4.19.

20.20.   *Goods for processing: example from Iceland.*[207] The metal industry, which is a major industry in Iceland, imports raw material to be processed and exports goods after processing. Few companies are involved, and importers are obligated to indicate on the customs declaration whether the good imported is for processing. Raw material imported for manufacture is exempted from excise tax and duties (according to customs regulations). This provides an incentive for enterprises to identify goods for processing on the import declaration. Some enterprises buy the raw material from abroad and sell the finished product to abroad (change of ownership); others make agreements with foreign enterprises to process raw material into finished products; the foreign enterprises provide the raw material and sell the good after processing (no change of ownership). There is a high prevalence of goods for processing in Iceland's trade data for goods and services.

20.21.   *Goods for processing: example from the Philippines.* The National Statistical Office of the Philippines has not yet included the customs procedure code in the processing of the trade data. Therefore, so-called consigned goods are considered to be goods for processing. Semiconductors and garments are examples of consigned goods. Consigned goods are determined based on the following steps:

(a).   Confirm that "FOB value of imported raw materials" in box 40 of the export document has an entry. This item must always have an entry if the goods exported are consigned goods. FOB value of consigned goods equals labour cost plus FOB value of imported raw material;

(b).   Validate the value declared in box 40 with the attached invoice, and look for the value of consigned raw materials, consigned items, consigned inputs or processed

206.   See Hongman Jin, "China's Practice in Statistics of Goods for Processing" (Statistics Department, General Administration of Customs of China), presentation at the Global Forum on Trade Statistics, Geneva, 2-4 February 2011.

207.   See A. Ó. Svavarsdóttir, "New manuals of trade in goods and trade in services: Goods for processing in Iceland" (Statistics Iceland), presentation at the Global Forum on Trade Statistics, Geneva, 2-4 February 2011.

items, or the value of imported materials or processing cost. The value should coincide with the value declared in box 40;

(c). Ascertain whether the CMT or CMP value written in the export document. FOB value of consigned goods equals CMT/CMP (*labour cost*) plus FOB value of imported raw material. Some export documents do not have an entry for box 40. In this case, the attached invoice and notes written in the document serve as the basis for categorizing consigned goods. The list of exporters of consignment goods is also used. Goods exported from an exporter on this list are categorized as consigned goods. However, the list is updated only when the exporter changes its line of commodity.

20.22.   *Example from Morocco: compilation of transactions accomplished as part of temporary importation for active refinement with and without payments.* The information on transactions performed under the regime of temporary admission for active refinement is obtained from the customs declarations (the single declaration of goods (DUM) filled out by merchants engaged in any operation of importation or exportation of the goods. The merchant is required to indicate on the single declaration of goods the customs regime under which the goods will be accepted into the national economic territory. One can differentiate between two types of regimes of active refinement:

(a). Active refinement without payment: this regime allows the acceptance on the customs territory (*with a hold on import taxes and duties*) of certain goods intended to be re-exported in a given time frame after having been subjected to a transformation; goods imported under this regime are not subject to a financial transfer to the foreign purveyor, who remains the owner;

(b). Active refinement with payment: goods imported under this regime are subject to a financial transfer to the foreign purveyor; the importer becomes the owner.

20.23.   Foreign trade statistics include transactions on goods performed as part of the temporary importation for active refinement whether there is a transfer of ownership or not (active refinement with or without payment). Concerning active refinement with payment, the value of imported raw materials and that of re-exported goods after transformation are reported on the single declaration of goods. As for active refinement without payment, in addition to the single declaration of goods, which contains only the value of the transformation, there is an audit file containing the value of the imported raw material, which is received by the Office of Exchange. The staff of the Office of Exchange undertakes the determination of the raw value for every re-exportation. The value of re-exportation consists of the value of the raw material that has been subjected to the transformation and the value added incorporated in the final product.

F.   Additional issues

20.24.   *Valuation.* In merchandise trade statistics, goods for processing before and after processing are recorded at their gross value or full transaction value according to the general valuation principle for IMTS (see IMTS 2010, para. 4.15 (e). This valuation of goods before and after processing may significantly influence the statistical results for certain categories of goods as the value of some goods with high values (e.g., aircraft) before processing may be several times higher than the value after processing. Users should be informed in the metadata how certain transactions of high value are recorded.

Chapter XXI

Goods that cross borders as a result of transactions between related parties

21.1.   *Introduction.* The present chapter elaborates the concept of trade transactions between related parties as set out in paragraph 1.22 of IMTS 2010, and discusses the importance of identifying these transactions. The means of identifying trade between related parties are discussed and a country example is provided. This chapter is related to the chapter XX on goods for processing, as goods are frequently sent to another country for processing at affiliates or branches belonging to the same enterprise.

21.2.   *Recommendation on separately identifying trade between related parties.* As trade between related parties is an important dimension of international trade, there is a need to obtain more information on this kind of trade. While trade between related parties has always been included within the scope of IMTS 2010, and in this sense is not different from trade between unrelated parties, IMTS 2010 encourages countries to separately identify (code) such transactions and the types of the relationships in order to be able to review their valuation and to provide more detailed information on this transactions to users. It is acknowledged, however, that depending on their specific data needs and overall compilation strategies, rather than identify such goods in their regular trade data compilations, countries may find it more appropriate to estimate their share in imports and exports by conducting periodic surveys of companies that have foreign affiliates or are affiliates of the foreign companies.[208] Countries should describe their practices in this respect in their metadata to ensure proper use of their statistics and to assist in international comparisons.

A.   Definition of "related parties" and examples of trade between related parties

21.3.   *Definition of "related parties".* IMTS 2010 (para. 1.22) encourages countries to use the definition of related parties as given in article 15 (4) of the WTO Agreement on Customs Valuation (see box XXI.1), which provides provisions for the appropriate valuation of goods traded between related parties as the prices paid between related parties might be influenced by their relationship.[209] Countries might diverge from this recommendation and use another definition of related parties such as the OECD benchmark definition for foreign investment (BD4).[210] Countries should state in their metadata which definition is used.

208.   Some countries view it as more appropriate to estimate the share of intra-firm trade by surveys conducted every two or three years than to collect that information in the frame of regular foreign trade statistics, in particular as this information may not be needed on a monthly basis.

209.   Long-term studies of inter-company pricing have shown that the relationship between parties can have an impact on the valuation of transactions. However, it might be more useful to have information on whether the trade is valued according to some transfer pricing agreement. As transfer pricing does not always follow the OECD guidelines, countries might have transfer pricing policies outside those guidelines.

210.   See Organization for Economic Cooperation and Development: OECD Benchmark Definition of Foreign Direct Investment: Fourth Eidition 2008 (Paris, 2008). "Related parties" can also be defined according to the BPM6 (para. 6.12) and OECD benchmark definitions for foreign direct investment (BD4, paras. 11 and 31) as parent corporations and their direct investment enterprise (affiliates/branches). A direct investment enterprise is an incorporated or unincorporated enterprise in which a direct investor who is resident in another economy owns 10 per cent or more of the voting power (for an incorporated enterprise) or the equivalent (for an unincorporated enterprise). The WTO definition of related parties is in general seen as the most operational definition from the customs perspective.

Box XXI.1.

WTO definition of "related parties"

Article 15 (4) of the WTO Agreement on Customs Valuation

For the purposes of this Agreement, persons shall be deemed to be related only if:

(a.)   they are officers or directors of one another's businesses;

(b.)   they are legally recognized partners in business;

(c.)   they are employer and employee;

(d.)   any person directly or indirectly owns, controls or holds 5 per cent or more of the outstanding voting stock or shares of both of them;

(e.)   one of them directly or indirectly controls the other;

(f.)   both of them are directly or indirectly controlled by a third person;

(g.)   together they directly or indirectly control a third person; or

(h.)   they are members of the same family.

21.4.   *Examples of trade between related parties.* The most basic example of trade between related parties is trade between the parent corporation and its direct investment enterprise in another country. Such trade is frequently motivated by favourable production conditions in that country (e.g., lower costs of inputs or a favourable tax regime) or related to market access or to the distribution of the goods. However, trade between related parties is frequently part of much more complex global production and distribution processes which stretch over many countries. A special case is that of trade of goods for processing (see chap. XX), whereby goods are brought into a country for specific operations under a specific arrangement between the involved parties (they may or may not be related), and which may or may not include the change of ownership of the goods.

B.   Purposes of identifying trade between related parties (including valuation)

21.5.   *Valuation quality control.* Customs has a legal obligation to ensure the valuation of imports, which are subject to ad valorem duties, according to the WTO Agreement on Customs Valuation. However, while not covered by this agreement, in general customs still aims to ensure the correct valuation of all imports and exports. The responsible statistical agency either accepts the customs valuation or makes necessary adjustments to determine the appropriate statistical value of imports and exports using additional sources or estimation (see chap. XIV). The value of goods declared by related parties can be influenced by their relationship, as shown by long-term studies of inter-company prices. Therefore, information on whether any given transaction takes place between related parties or not would facilitate significantly the monitoring and assessment of valuation practices and provide the basis for making any adjustments to the declared values, as deemed appropriate by the responsible statistical authority.

21.6.   *Understanding multinational enterprises and the causes of trade.* The activities of multinational enterprises are widely seen as a key factor in the global economy. These enterprises account for a large share of value added, employment and exports and imports in many countries and for a large share of global trade. They are considered responsible for the development of global value chains and the spreading out of production processes over many countries, thereby accounting for a large part of the increase of global trade. In the past, trade statisticians had no detailed

information on the trade carried out by multinational enterprises. The development of trade by enterprise characteristics (TEC), which is achieved by linking trade data with information from the business register (see chap. XI), provides insights into the trade of large enterprises. However, the systematic identification of intra-firm trade would allow a much more comprehensive and more detailed analysis of global trade and the activities of multinational enterprises, including their impact on national growth and employment.

21.7.   *Level of detail needed.* As described below, there are different options for obtaining information on the trade between related parties. These options might provide information on the trade between related parties at the total level only or at the transaction level. For valuation purposes, information on transaction level is required. However, it might be sufficient to limit the request for this information to large transactions. For the analysis of the activities of multinational enterprises, aggregate figures such as the ones suggested as part of foreign affiliates statistics (FATS) might be sufficient. However, only detailed commodity-based data concerning trade between related parties will allow a detailed understanding of this trade.

C.   Means of obtaining information on trade between related parties

21.8.   *The customs declaration and accompanying documentation.* Information on whether a trade transaction takes place between related parties is usually not available on the customs declaration (see Table VIII.2). Further, the examination of accompanying information might not provide sufficient indications of trade between related parties. However, countries can require traders to provide such information on the declaration (see the example from the United States provided in para. 21.13 below). In this case, the information technology systems (such as ASYCUDA, UNI-PASS, SISCOMEX, TRIM, etc.) used in different customs administrations worldwide would have to be adapted to allow regular compilation of this information. At this time, concerns in most countries about the response burden, the feasibility of obtaining reliable information, etc., appear to outweigh arguments emphasizing the need for this information. A common concern in respect of obtaining this information is that the traders or brokers that complete the transactions might not know the nature of the relationship between the parties for which the trade takes place, and that even the trading enterprises might not be aware of their relationship, in particular if there are frequent changes in the ownership structure. Further, statistical offices and customs may believe that the reasons advanced for obtaining this information at a detailed level are not sufficiently strong or not view this as a priority.

21.9.   *Supplementary enterprise surveys and studies.* In many countries, the trade transactions in a specific economic sector are concentrated among a few large multinational enterprises. Given their effect on domestic value added and employment, these enterprises should be well covered in the existing business statistics and identified by statistics compilers. These enterprises could be the subject of special surveys, and could be requested to provide information on their trade with their foreign affiliates or parent enterprise(s), at either the aggregate or the detailed level of the customs declaration. Such information could be collected on a regular basis (surveys) or for adhoc purposes (specific studies).

21.10.   *Foreign affiliates statistic (FATS).* Figures on total and intra-group exports and imports of goods and services by foreign affiliates are currently produced by a limited number of countries. However, more countries are expected to begin the compilation of such data following the recommendations on FATS adopted by the United Nations Statistical Commission and published in Manual on Statistics of International Trade

211. United Nations publication, Sales No. E.10.XVII.14.

212. Regulation (EC) No. 716/2007 of the European Parliament and of the Council of 20 June 2007 on Community statistics on the structure and activity of foreign affiliates.

213. Addigional information is available from http://epp. eurostat.ec.europa.eu/portal/ page/portal/european_ business/special_sbs_topics/ eurogroups_register.

214. See United Nations Statistics Division, "Report on the results of the first round of worldwide consultation", October 2008, p. 9. Available from http:// unstats.un.org/unsd/trade/ imts/sc/trade_09.htm.

215. The Foreign Trade Division (FTD) of the United States Census Bureau releases aggregated related party data through an annually published press release, available from http://www. census.gov/foreign-trade/ Press-Release/related_party/ index.html. Additional related party data, which are not published in the annual press release, can be obtained from the FTD Related Party Database (http://sasweb.ssd. census.gov/relatedparty).

in Services 2010 (MSITS 2010, chapt. IV).[211] For example, EU member States plan to improve their FATS in the near future under the EU-level FATS Regulation.[212] Regarding the identification of trade between related parties, it would be good practice to disaggregate exports and imports into a few broad categories where trade with related enterprises could be distinguished from trade with unrelated parties (MSITS 2010, para. 4.60), as such data would be highly useful in the analysis of globalization issues. However, FATS do not include statistics on the parent enterprise, and it appears to be difficult to obtain detailed information on total and intra-group trade at the product level. The practice of Italy, developed under the framework of the FATS EU Regulation, shows that some interesting figures on total trade by foreign affiliates at the product level can be obtained by merging, at the company level, the list of foreign affiliates with the list of foreign trade operators.

21.11.   *Linking customs declarations with transnational enterprise registers.* Although currently, this is mostly a theoretical possibility, linking customs declarations with a transnational enterprise register may become feasible in the future. If countries adopted the model of a seamless integrated data pipeline, it would allow the linkage of export declarations with their corresponding import declarations (see para. 8.8). Further, if the declarations were linked to a transnational business register, it would be possible to identify the exporting and importing enterprise of a trade transaction. The transnational business register would contain the information about the relationships of its entities and thereby allow the identification of intra-firm trade. However, countries will first need to agree and establish a functioning transnational enterprise register, such as the European Union EuroGroups Register.[213]

21.12.   *Conclusions.* The objectives of identifying trade between related parties are in general supported by countries.[214] However, there are significant challenges in respect of compilation, which would make obtaining this information in the near term a difficult or unrealistic undertaking for many countries. Requesting an indication of intra-firm trade on the customs declaration, if possible, can be considered best practice (see the example from the United States below). Overall, the implementation of this encouragement to identify intra-firm trade might depend on national needs and priorities.

D.   Good practices

21.13.   *Experience of the United States of America: Definition of "related parties".* Related party, or intra-firm trade, refers to shipments between United States companies and their foreign subsidiaries as well as trade between United States subsidiaries of foreign companies and their affiliates abroad. For export transactions, firms are "related" if either party owns, directly or indirectly, 10 per cent or more of the other party (see Section 30.6 (10) of the Foreign Trade Regulations). This definition of related party corresponds exactly to that used by the Bureau of Economic Analysis in its annual surveys of multinational activity. For imports, firms are "related" if either owns, controls or holds voting power equivalent to 6 per cent of the outstanding voting stock or shares of the other organization (see Section 402 (e) of the Tariff Act of 1930).

21.14.   *Compilation and publication of data by the United States Census Bureau.* Related party data are compiled of administrative records from official United States import and export merchandise trade statistics. Related-party shipments are identified by the indicators "R", for related, and "N", for non-related, which are required for all export transactions and most import transactions. Selling prices are used as a basis for determining the value of shipments; but in general, it is required that the goods sold between related parties be valued as if the transactions were carried out between unrelated parties.[215]

Chapter XXII
Pipeline trade and trade through fixed power lines

22.1.   *Introduction.* The present chapter discusses the characteristics of transactions in which goods are delivered continuously across borders through pipelines (oil, gas and water) or through fixed power lines (electricity).[216] The same goods delivered across borders by other means (e.g., oil in barrels, liquefied gas in special containers, bottled water or electricity stored in various power cells, etc.) are not covered in this chapter. Nevertheless, some issues raised in this chapter concern such goods even if they are not delivered by pipeline. The chapter discusses the challenges and good practices involved in measuring these transactions. It is linked to chaps. III and IV on the use of non-customs sources, as well as chapter VII, which discusses the integration of data from different sources.

22.2.   *Importance.* International transactions in gas, oil and water which are delivered by pipelines and electricity which is delivered by fixed power lines are not always recorded by the customs authorities of some countries. However, these transactions constitute an important part of international trade in goods and should be properly recorded following all applicable recommendations contained in IMTS 2010. Countries are encouraged to establish appropriate procedures to ensure that records of this trade are as accurate as possible. It is also important that trading partners in such transactions record these flows using the same methods so as to improve international comparability (see IMTS 2010, para. 1.24).

216. The present chapter focuses exclusively on the transactions in goods and does not discuss, in any manner, the recording of the services that are entailed by or associated with the delivery of the goods. However, the value of certain services is included in the valuation of goods according to FOB and CIF (see chapt. XIV, on valuation, for further information).

A.   Characteristics of trade in electricity, gas, oil and water

22.3.   *Reasons for the potential lack of recording by customs.* International trade transactions in electricity, gas, oil and water are not always recorded by the customs authorities of some countries, which may relate to the fact that these goods do not pass through the regular entry and exit points within the purview of customs. Another reason might be that in many countries, the trade in gas and oil takes place through government authorities or special entities that are not obliged to submit customs declarations. Also, goods transmitted by fixed lines neither allow nor require the same physical custom inspections that are or can be performed on all other goods.

22.4.   *Variety of international distribution arrangements.* There can be very different commercial or non-commercial distribution arrangements for goods delivered by pipeline or by fixed lines (electricity) in various countries. On the one hand, the transmission of the goods can be governed by a single contract between one producer or consortium of producers and one company or consortium of companies which are responsible for the further distribution in the importing country, with the pipeline/fixed line being owned by the parties of the contract. On the other hand, if trade of electricity, gas or oil is fully liberalized in and between countries, individual producers can deliver to individual consumers across a pipeline or fixed line that is not owned by any party of the contract. Obviously, data compilation will be affected by these different arrangements.

22.5.   Quantity and transaction value. A continuous transmission of these goods has the consequence that the physical border crossing of a specific quantity is not necessarily connected to a specific transaction, as is the case for other goods. Hence, the association of quantities with specific transactions is known only by the trading partners and specified in the contract or invoice while the actual delivered quantities are known only from the actual readings of the transmission meters.

22.6.   Recommendation on valuation. Electricity, gas, oil and water are to be valued net of any delivery charges not included according to FOB- or CIF-type valuation. Such charges may or may not appear separately on the invoice. In the absence of adequate customs records, it is recommended that countries obtain the transaction value of these goods directly from the buyers and sellers. However, if only the overall value including delivery charges is available, such charges should be identified (e.g., using other sources of information and estimation) and subtracted in order to obtain the statistical value of these goods. Delivery charges should be valued at market prices, but it is acknowledged that markets for such services often do not exist and prices for such services are either set administratively or based on some cost calculation. It is recommended that trading partners in such transactions should value and record these flows in a uniform manner so as to improve international comparability (IMTS 2010, para. 4.15 (c).

22.7.   Complexity of pipeline and electricity networks and frequent buying and selling transactions. A special characteristic of goods delivered by pipelines or fixed power lines, particularly gas and electricity, is that many countries might be connected to the same distribution system, which can make it difficult to determine the partner country and to identify transit trade. Also, the complexity of the pipeline and power network system itself can make it difficult to keep track of the physical flows. Another special characteristic of trade in electricity, gas and oil is that those goods are often bought and sold without any physical movement of the good taking place (merchanting). The purely financial transactions can be very difficult or impossible to distinguish from trade transactions which affect the stock of material resources of the involved countries.

B.   Data sources and compilation issues

22.8.   The use of customs declarations as main data source. In some countries, the information available from the customs declarations provides accurate information on the pipeline trade in gas, oil and water, and/or on the fixed-line trade in electricity. In this case, additional data sources are used only to confirm and supplement, if necessary, the customs data. However, as indicated in paragraph 22.3 in many countries there are no customs records at all or if they do exist, they are not adequate. .

22.9.   Information on prices. Customs declarations might not always reflect correctly actual physical movements of oil, gas, water or electricity (e.g., the time of border crossing or the quantities delivered might be different than indicated) but usually they do contain information on the prices on the basis of which these goods can be valued. Commodity exchanges are another source of information relevant to the valuation of such goods. However, the prices on these exchanges relate more often to those quantities that are traded at the stock exchanges to cover additional expected needs and therefore might apply to some future transactions rather than serve as an indication of the actual price agreed between the buyer and seller in respect of the goods that actually crossed borders in any given reference period.

22.10.   Information on quantities provided by grid operators as an additional source. Grid operators, who are responsible for the electric lines and the pipelines through

which the goods are transported, have information on the quantities of electricity, oil and gas that are crossing the border between the country and a neighboring country. Grid operators are not often parties to the trade transactions and can therefore be viewed only as a supplementary data source. Nevertheless, in some countries the grid operators might be the only data source regarding the physical movement of the goods (in terms of "when" and "where") of which the traders in these goods might have lost track.

22.11.   Combining information from customs declarations and other sources. A possible approach to the compilation of data on trade through pipelines and fixed power lines is to derive the statistical value from the price information available in customs declarations and/or other sources and to decide whether or not the customs declarations sufficiently reflect the physical movement across the border. Comparing the information from the grid operators with the customs declarations can guide this decision. For example, if the quantity information given in the customs declarations deviates significantly from the quantity information reported by the grid operators, the physical movement should be measured on the basis of the information available from grid operators, provided that the necessary verification, in particular regarding the compliance of that information with the IMTS definition of scope and accuracy of measurements, is systematically performed.

22.12.   Trade transactions and merchanting. Compilation of trade statistics reflecting any buying and selling of these goods would give a distorted picture of trade, as they often change ownership (are bought and sold) many times without being physically moved across borders. Normally, it is not possible for compilers of trade statistics to ascertain if and when the goods actually crossed the border physically. Therefore, the information on physical border-crossing derived from the grid operators, if available, is usually preferable to information regarding purchases and sales.

22.13.   Specific compilation issues. Two frequently mentioned compilation issues are the identification of transit trade and the determination of partner country.

C.   Country experiences

22.14.   Trade in goods delivered continuously through pipelines: experience of China. It is required that goods delivered continuously through pipelines or fixed power lines across borders, such as electricity, water, gas and oil, be declared monthly, as normal goods, to customs by the companies who sign the contracts for the import or export of those goods. The volume and value of the previous month are to be accumulated if the other statistical items, such as partner country and customs regime, are the same. The customs officer should verify the declaration form, and may check the value by reviewing the contract. Normally, the price is a fixed one, and customs officers may look at the meter measurement to check the quantity (in the case where pipeline trade inspection agreements exist). Statisticians collect the data for statistical purposes after the customs procedures are completed. For example, if a Chinese company is exporting electricity to China, Hong Kong SAR, the company is required to declare the accumulated quantity and value to customs by month and within 10 days. If a company exports electricity to China, Hong Kong SAR, and China, Macau SAR, the company is required to complete two separate declaration forms, one for each of these trading partners.

22.15.   *Trade in gas and electricity: experience of the United States of America.* The United States has encountered difficulties in obtaining accurate import information on pipeline shipments of natural gas. Meter readings of pipeline operators are not

sufficiently reliable for statistical purposes owing to factors such as the location of meters and inconsistencies in how meters are read by the pipeline operators. Through an agreement with Statistics Canada, the United States Census Bureau receives Canada's data on exports of natural gas to the United States and includes them as data on imports from Canada. Statistics Canada uses administrative data for monthly estimates owing to timing problems and revises the data when actual totals become available. Similarly for trade in electricity, the United States receives data on exports and imports from its trading partner Canada.

22.16.   *Scope and compilation: experience of Germany.* Energy, electricity, gas and oil, as well as water, are often regarded as specific goods in trade statistics owing to their particular mode of transport (i.e., through electric lines or pipelines), how they are traded and their fiscal treatment. In the European Union, only electricity and gas that are transported through electric lines or pipelines are considered specific goods. Gas that is not transported through pipelines, whether it is in the gaseous or in the liquid state, is treated like all other goods. The specific rules for electricity and gas transported through pipelines are based on their highly specific physical characteristics. In Germany, information on trading of electricity is collected from the limited number of grid operators, which have proved to be the most reliable data source by far for measuring the quantities crossing the border. However, grid operators do not have any information on prices. Therefore, average values for each partner country is calculated using the declarations of the traders. Moreover, those values are cross-checked with the mirror figures of the partner countries.

22.17.   *Production of external trade statistics on natural gas and electricity: experience of Italy.* A new approach to the compilation of external trade statistics on electricity and natural gas in the gaseous state was developed by ISTAT of Italy and implemented for the first time in connection with the final revision of data for 2010 and the first intermediate revision of data for January-August 2011. This was motivated by the increasing prevalence of data-quality problems in 2011 as well as by the need to guarantee consistent time series with a limited structural break (see annex XXII.A for further details).

Annex XXII.A.

Experience of Italy in the production of external trade statistics on natural gas and electricity

22.A.1. *Background.* For the development of the new approach in Italy. The increase in the relevance of the European electricity market as the reference market for commercial and financial transactions, and the introduction of some relevant changes in national fiscal regulation, have led to a dramatic rise in measurement problems associated with the compilation of external trade statistics in natural gas and electricity based on customs data. The key measurement problems associated with customs declarations are due to the increasing relevance of international operations not associated with the physical movements of the goods across national borders and, from the respondent side, to the lack of information on the partner country as defined by EU regulation and compilation manuals. These measurement issues have generated some relevant data-quality problems in provisional figures already published by ISTAT on the external trade of electricity and natural gas. In particular, these provisional data were affected by overestimation and incorrect allocation of trade by partner country. The reference data sources used to benchmark customs data against external trade "real figures" in volume are Terna S.p.A., Italy's national grid operator for transmission and dispatching of electricity, and Snam Rete Gas S.p.a, Italy's natural gas operator.

22.A.2. *Methodology.* In the new data production system, figures on total exports and imports of natural gas in the gaseous state and electricity measured as physical quantities are collected monthly from reliable sources, while for the other data required by European statistical regulations (total trade in values and breakdown of volumes and values by partner countries), new estimation procedures have been designed, tested and implemented. Table XXII.A.1 provides the list of new information sources (for a description of the methodological approach, see box XXII.A.1).

22.A.3. *Conclusions.* The revisions of the trade values of natural gas and electricity due to the introduction of the new estimation methodology were quite considerable. The introduction of this new data production system for external trade in electricity and natural gas has produced the following benefits:

- Increase in the data quality of national figures
- Improvement in mirror study comparisons
- Reduction of the statistical burden on the respondents from 2012 onward

Table XXII.A.1
Data sources used for the compilation of external trade in electricity and natural gas in the gaseous state

National or international data providers	Description of information available in the data sources	Availability of information on "partner country"	Codified variables
Terna S.p.A. (the national grid operator for transmission and dispatching of electricity)	"Commercial" external trade of electricity measured in physical units (gigawatt-hours (GWh)	No, concerning only entry and exit points at the national borders	Q (E)
European electricity markets (GME, Epex Spot, Power Exchange Central Europe, OMEL)	Average monthly single price (PUN) on the Italy's electricity market and average monthly electricity prices on the main European markets	Yes	P (E)

ENTSO (European Network of Transmission System Operators for Electricity)	Electricity trade between European countries measured in physical units	Yes	W (E)
Enerdata	Electricity country surplus/deficit	Yes	W (E)
Snam Rete Gas S.p.a (the natural gas transporter, monitoring entry and exit points for natural gas)	External trade of natural gas measured in physical units (gigajoules (GJ))	No, concerning only entry and exit points at the national borders	Q (G)
Ministry of Economic Development	Natural gas external trade by partner country	Yes	W(G)
ISTAT-customs agency	Import and export unit values for natural gas	Yes	P (G)

Box XXII.A.1

Methodology for estimation of monthly trade in electricity and natural gas, Italy

(a.)   Quantity flows by partner country

In the case of Italy's external trade in electricity and natural gas in the gaseous state, quantity data by partner country are not directly available from the reference data source. Therefore, they are estimated on the basis of physical quantities crossing each point of entry or exit at the borders of Italy and a weighting structure which connects each entry and exit point with a set of partner countries, as follows:

$$q_i^t = \sum_{j=1}^{J} w_{ij}^t q_j^t$$

where represents trade quantity in period t with partner country i {1, …, I}, while represents trade quantity in period t through the entry or exit point j { 1, …, J}. The weights represent the share of the trade through entry or exit point j that is allocated to partner country i.

Notice that each partner country i can be associated to more than one entry and exit point j, and thus the analysis of external trade flows by entry and exit points leads to a more accurate decomposition of trade in volumes by "real" partner countries.

For electricity, an in-depth investigation of trade flows through the European network was carried out in order to estimate the weight structure, , considering national electricity surplus and deficit as constraints. This approach allows discrimination between "real" partner countries and other countries which are totally or partially crossed by physical flows of electricity through the network but are not relevant according to statistical definitions. A similar approach was adopted for the estimation of quantities of trade in natural gas by partner country, but the weights were directly obtained from data provided the Ministry of Economic Development.

(b.)   Monthly prices

a.   The comparison shows that unit values associated to custom declarations lie in an interval defined by the PUN as upper limit and by the partner-country national price as lower limit, with a progressive convergence to the partner-country national price. Main traders confirmed this price behaviour.

Owing to differences in the availability and reliability of data from the respective sources, the estimates of monthly prices associated with trading transactions involving electricity and natural gas follow two different approaches.

$$P(E;t)_i^{imp} = \alpha \cdot PUN(t) + (1-\alpha) \cdot PUN^{FOREIGN}(t)_i.$$

For natural gas, unit values computed from custom data are used as price indicators. In the case of electricity, a preliminary comparison of time series for unit values of ISTAT's sources, average monthly national single price (PUN) on Italy's electricity market, and average monthly electricity prices picked up from the main European markets has been carried out.[a] Electricity import prices from "statistical country" i have been defined as a weighted average of the average monthly single price (PUN) on the Italy's electricity market and the average monthly electricity prices on the main European markets, as follows:

Instead, export prices have been defined as the average monthly electricity prices on the main European markets, as follows:

$$P(E;t)_i^{exp} = PUN^{FOREIGN}(t)_i.$$

Chapter XXIII
Ships and aircraft

23.1. *Introduction.* The present chapter discusses the problem of identifying and recording trade in ships and aircraft[217] and indicates the means through which this trade can be captured in an internationally comparable way. Possible data sources are discussed, as well as the issue of leasing. The available data indicate that there is a need to improve the statistical recording of ships and aircraft.[218] This chapter is linked with chapter XX as the refitting of a ship or aircraft can be viewed as a good for processing. The compilation of data on trade in aircraft and ships frequently requires the use of non-customs sources. Therefore, this chapter is linked with chapters III and IV, on the use of non-customs sources of data, and also with chapter VII, which discusses the integration of data from different sources.

A. Difficulties encountered in the measurement of trade in ships and aircraft

23.2. *Physical movement and change of ownership.* The compilation of trade statistics is based on the physical movement of goods across borders which is captured by customs records. Large parts of trade in ships and aircraft do not physically pass through customs, and customs often does not receive any declarations. Further, it is not necessarily obvious when a physical movement of a ship or aircraft is part of a trade transaction. Therefore, IMTS 2010 recommends in exceptional cases, such as that of trade in ships and aircraft, when the general guideline is not applicable or not sufficient, to use the criterion of change of ownership to determine whether certain goods should be recorded.[219]

217. Rigs for oil production might be included in this category of goods as well. For example, in the European Union, transactions in oil rigs are treated in the same way as transactions in vessels if these structures are floating as opposed to being fixed. For the treatment of fixed installations or installations in general, see para. 6.8.

218. For 2009, countries reported collectively US 141 billion in exports of ships (Standard International Trade Classification (SITC) section 793) but only US 57 billion in imports. While trade has increased dramatically, this pattern has persisted for many years. The registration of ships under so called flags of convenience in a limited number of relatively small countries appears to be a major reason why imports are underreported globally. Some of these countries do not report their trade data internationally. However, if the registration of ships is open to owners that are not resident in these countries those ships registered under foreign owner should not be included in their trade statistics in any case. For 2009, countries reported over 41 billion in exports of ships (SITC group 793) to only three countries: Panama, Marshall Islands and Liberia, which either do not show any such imports or do not report trade data. The worldwide trade in aircraft (SITC group 792) shows global exports as having systematically exceeded imports by a wide margin until 2008, but the margin was not as large as that for ships (the figure for exports for 2009 was distorted owing to the lack of detailed commodity reporting of a major exporting country). See 2009 International Trade Statistics Yearbook, vol. II, Trade by Commodity (United Nations publication, Sales No. E.11. XVII.3 H). Available from http://comtrade.un.org/pb/

219. See IMTS 2010, para. 1.4. Categories of goods where the criterion of change of ownership can be applicable for the recording of international merchandise trade transactions are ships and aircraft (para. 1.29), satellites and their launchers (para. 1.33), power lines, pipelines and undersea communications cables (para 1.36) and mobile equipment that changes ownership while outside the country of residence of its original owner (para. 1.39).

Box XXIII.1

Ownership, institutional unit and residence

- *Ownership.* Two types of ownership can be distinguished: legal ownership and economic ownership. The legal owner of entities such as goods and services, natural resources, financial assets and liabilities is the institutional unit entitled in law and sustainable under the law to claim the benefits associated with the entities. The economic owner of such entities is the institutional unit entitled to claim the benefits associated with the use of the entity in question in the course of an economic activity by virtue of accepting the associated risks. (2008 SNA, para. 10.5). Every entity (i.e., every good such as an aircraft) has both a legal owner and an economic owner, though the economic owner and the legal owner of an entity (e.g., an aircraft) can be the same (ibid., para. 10.6). A legal owner may contract with another unit for the latter to accept the risks and rewards of using the product in production in return for an agreed amount that has a smaller element of risk in it. Such an example is when a bank legally owns a plane but allows an airline to use it in return for an agreed sum. (ibid., paras. 2.46-2.49 and 3.21-3.29)

- *Institutional unit.* An institutional unit is an economic entity that is capable, in its own right, of owning assets, incurring liabilities and engaging in economic activities and in transactions with other entities (ibid, para. 4.2).

- *Residence.* The residence of each institutional unit is the economic territory with which it has the strongest connection, in other words, its centre of predominant economic interest (ibid., paras. 4.10-4.15).

- *Clarification:* A resident institutional unit can be partially or entirely owned by a non-resident institutional unit and a change of ownership can take place between the parent and its affiliate resident in another country.

220. System of National Accounts 2008 (2008 SNA), European Commission, International Monetary Fund, Organization for Economic Co-operation and Development, United Nations, World Bank; available in PDF format at the website of the United Nations Statistics Division at http://unstats.un.org/unsd/nationalaccount/sna2008.asp.

Change of ownership is defined in accordance with the 2008 SNA[220] and BPM6[221] as change of economic ownership. When the criteria of change of ownership is used for the recording of goods in IMTS 2010, an export of a good should be recorded when the economic ownership changes from a resident unit to a non-resident unit and an import recorded when the change is from a non-resident to a resident unit. However, the application of these criteria requires a data source that will provide reliable information on the change of ownership of ships and aircraft. While national (or international) ship and aircraft registers are in general viewed as possible sources of such information, they might not, as is explained further in the next section, be available or provide the required information (for terminology see Box XIII.1).

23.3.   *Processing versus repair and services transactions (without change of ownership).* Ships and aircraft can enter a country for outfitting or partial refitting, sent by a foreign owner who retains ownership. There is the practical issue of obtaining information on such transactions on both the side of the sending (exporting) country and the side of the service-providing or processing country. However, apart from the practical issue of how to capture these transactions, there is also a need to decide whether a given transactions is a repair or other service, or a processing transaction (see chapt. XX for details). If it has been determined that a ship or aircraft is sent for processing and assuming that the general guideline can be applied, an import would have to be recorded when the good enters the country and an export when the good leaves the country after processing. The recording of a goods transaction requires valuation at gross value, meaning valuation at the full transaction value of the ship or aircraft. Given the high value of some aircraft and ships, the merchandise trade statistics of countries can be strongly affected by only a few of such transactions. Therefore compilers are advised to inform users in the metadata about such transactions and

221. International Monetary Fund, Balance of Payments and International Investment Position Manual, Sixth Edition (BPM6) (Washington, D.C., 2009). Available from http://www.imf.org/external/pubs/ft/bop/2007/bopman6.htm.

Box XXIII.2

Recording of trade in an aircraft: example of Canada

A company in country A buys an aircraft built in Canada, which is treated as a domestic export of Canada. After several years of use, the original aircraft is traded in for a newer model. The original aircraft is returned to Canada for refurbishment and subsequent sale to country B. The return of the aircraft is treated as a Canadian reimport and the subsequent sale treated as a domestic export.

their treatment.[222] Further, countries might consider cooperating with their trading partners regarding the recording of these transactions in order to achieve uniformity in recording and to improve international comparability. This is of particular importance as the sending (exporting) country might not have any information at all about such transactions, while the service-providing or processing country should be well aware of large outfitting and refitting activities taking place in its economic territory.

23.4.   *Recording of partner country.* Aircraft and ships, when used in one country and then exported to another country, will always retain the same country of origin. This is the case for almost all other used goods (see chapt. XVI for details). IMTS 2010 (para. 6.26) recommends that the country of consignment be recorded for imports as second partner attribution, alongside country of origin. Compilers and users might view that the country of consignment provides more useful information on the trade of ships and aircraft (and other used goods). Therefore, it is good practice to provide this kind of partner information in addition to, and not as replacement for, the data on compiled on a country-of-origin basis (for country experience see Box XIII.2).

B.   Existing possibilities for obtaining information on the trade in ships and aircraft

23.5.   *Customs records and national ship and aircraft registers.* When aircraft and ships cross the borders of countries as items of trade and the appropriate customs records are created, those records should be used as the main source of information. However, in some countries, international trade in aircraft and ships may not be recorded by customs even if those items cross borders; also, customs records may be incomplete or non-existent if those items do not cross customs borders.[223] Under such circumstances, many countries turn to national aircraft and ship registers for evidence of a trade transaction, using change of ownership as indicated in the register as the basis for the compilation of trade statistics. However, not all countries have national aircraft and ship registers and some might not use existing registers for statistical purposes. Further, the registers might not cover all transactions between residents and non-residents,[224] or might not be sufficiently updated, or the information might not be suitable or sufficient for use. In particular, such registers might contain information on the legal owner while it is information on the economic ownership that is required. Therefore, in addition to registers, countries might have to consider using additional sources such as accounts of companies or reviewing leasing contracts or management contracts (for vessels) to establish economic ownership.

23.6.   *International requirements for the registration of aircraft.* Various national and international statutory instruments govern civil aviation and the registration of aircraft. Of particular international importance is the Convention on International Civil Aviation, which specifies the principles to be recognized by signatories.[225] The Convention states that aircraft shall hold the nationality of the country in which they are registered.[226]

222. Compilers of IMTS might wish to exclude the retrofitting or outfitting transactions on the basis that they entail only a temporary movement of a good and that including them would distort the trade statistics. There can be borderline cases and it is for the national compiler to decide whether the transaction constitutes processing, or a service or repair. However, to exclude processing activities involving ships and aircraft in general cannot be recommended. It should be considered that other processing operations also entail the recording of high values for imports and exports while the actual value added may be relatively minor. The individual value of such transactions might be very small compared with the value of a ship or aircraft but the value of the sum of such transactions can easily equal or exceed the value of the trade in ships and aircraft.

223. A similar situation might exist in the case of trains which regularly cross borders. Also, in this case, it might be necessary to use the change of ownership and not the crossing of the border as the criteria on determining whether a trade transaction is to be recorded. Enterprises that own and/or operate or produce and sell trains should be able to provide information about the acquisition and sale of trains.

224. For example, in the European Union, fishing vessels are in general not registered in the national ship registers, as indicated by the results of an EU questionnaire.

225. See the Convention on International Civil Aviation. Available from http://www.icao.int/publications/pages/doc7300.aspx. There are currently 191 contracting States parties to the Convention.

226. Convention on International civil Aviation, part I, chap. III, article 17.

It also states that aircraft may not be legally registered in more than one country,[227] and that every aircraft used for international air transport must be marked with its nationality and registration number.[228] At the national level, those global rules mean that every aircraft is entered in the national register when it is licensed for transport. In the case of imported aircraft, registration can occur only upon the applicant's producing appropriate documentation; in particular, the applicant must produce proof of acquisition of ownership. However, at least in some countries, not only the acquirer (legal owner) but also the economic owner/operator can be the applicant. Also, proof of cancellation or non-registration is required, which ensures that an aircraft has actually been registered in one country only, thus ruling out duplication or incorrect recording.

23.7.   *International requirements for the registration of ships.* As a measure for enhancing ship safety and security, the International Maritime organization (IMO) introduced in 1987 the IMO ship identification number scheme, which became mandatory for all ships as of 1 January 1996 and which is managed by IMO and IHS Fairplay (previously called Lloyd's Register - Fairplay).[229] Its was to aim assign a permanent number to each ship for identification purposes. That number would remain unchanged upon transfer of the ship to other flag(s) and would be inserted in the ship's certificates. Further, in 2004 [230], the IMO Unique Company and Registered Owner Identification Number Scheme was introduced as a measure to enhance maritime safety, security and environmental protection, and to facilitate the prevention of maritime fraud. Its purpose is to assign a permanent number for identification purposes to each company and/or registered owner managing ships of 100 gross tonnage and above engaged on international voyages.[231] The IMO Unique Company and Registered Owner Identification Number Scheme is managed, in parallel with the IMO Ship Identification Number Scheme (resolution A.600(15) and procedures for the implementation thereof (Circular letter No.1886/Rev.3), without charge by IHS Fairplay.

23.8.   *Request for additional documentation.* The statistical authority should use available customs information and aircraft and ship registers for obtaining the maximum amount of statistical information possible and, if necessary, should request the owners named on the register or the leaseholder named on the financial lease to submit separate foreign trade statistics declarations. The last-mentioned step may have to be implemented through the enactment of legislation specifying the obligation of each party (the registration authority, owners, leaseholders) to provide information.

C.   Improving the international measurement of trade in ships and aircraft

23.9.   *Best possible use of available data sources.* In the absence of customs records, the use of national registers for ships and aircraft is the established practice in many countries. Countries need to review the contents and completeness of their national registers (including their law of the flag etc.) and they might use available international registers and special surveys of ship and aircraft operators to identify economic ownership and change of economic ownerships for ships and aircraft.[232] Relevant information could also be available from accounts of companies and from the review of leasing contracts or management contracts (for vessels). However, it appears that countries are not availing themselves at this time of the option of reviewing leasing contracts or agreements on the management and operation of ships and aircraft to determine economic ownership.

23.10.   *Need for reliable criteria to identify change of ownership.* Countries should establish reliable criteria for the identification of change of economic ownership

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227. Ibid., article 18.

228. Ibid., article 20.

229. See International Maritime Organization, Circular letter No. 188/Rev.3 of 11 December 2006 on the implementation of resolution A.600(15): IMO ship identification number scheme.

230. See International Maritime Organization, Circular letter No.2554/Rev.1, 7 February 2007 on implementation of the IMO Unique Company and Registered Owner Identification Number Scheme (resolution MSC.160(78).

231. However, fishing vessels might not be registered in this standard way.

232. In the case of ships, the flag administrations (national registers) establish a regular and standardized electronic data exchange procedure with HIS Fairplay on a fleet basis which includes data not only on the company/registered owner but also on the ships. The information is made available to IMO members on the Global Integrated Shipping Information System (GISIS).

of ships and aircraft and provide information in this regard in their metadata. On the national level, such criteria should be established in cooperation with national accounts and balance-of-payment compilers. However, an international approach and agreement on such criteria are required in order that uniform treatment of transactions and international comparability of data may be achieved. For example, reliable criteria could be established in the form of a list of different types of leasing contracts and agreements on the operations of the ships and aircraft, to be analysed in respect of whether they entail a transfer of risks and rewards, as required for change of economic ownership. For aircraft, leasing plays a predominant role, while for vessels, different kinds of agreements concerning their operation and management are relevant.

23.11. *An international approach regarding the identification of change of ownership and the recording of trade in ships and aircraft.* International cooperation and the development of a common approach and common criteria for the identification and recording of change of ownership offer possibilities for improving the statistical recording of trade in ships and aircraft. For example, as a first practical step, countries could pool and compare their information on major transactions using universal ship or aircraft identification or production numbers. However, countries might not have sufficient access to such information on national level or it might be preferable for other reasons to follow the existing national approach.

23.12. *Conclusions.* The task of compilers of merchandise trade statistics is to identify non-reported transactions and to verify reported transactions. The development of a more comprehensive set of case studies, as currently conducted by Eurostat, can assist countries in performing this task.[233]

D. Leasing of ships and aircraft

23.13. F*inancial and operating leasing.* A financial lease is one where the lessor, as legal owner of an asset, passes the economic ownership to the lessee, who then accepts the operating risks and receives the economic benefits from using the asset in a productive activity. In return, the lessor accepts another package of risks and rewards from the lessee (2008 SNA, para.17.304). Under a financial lease, the legal owner is shown as issuing a loan to the lessee, with which the lessee acquires the asset (ibid.). An operating lease is one where the legal owner is also the economic owner and accepts the operating risks and receives the economic benefits from the asset by using it in a productive activity (ibid., para. 17.301; see also paras. 17.302-17.303 and 17.305-17.309).

23.14. F*inancial leasing.* One indicator of a financial lease is that it is the responsibility of the economic owner to provide any necessary repair and maintenance of the asset (ibid., para. 17.304). Very often, the nature of the asset subject to a financial lease may be quite distinct from the assets used by the lessor in his productive activity, for example a commercial airliner legally owned by a bank but leased to an airline (ibid., para. 17.305). A financial lease will typically be for several years and in practice, the duration of a lease has been and can be used in some cases as indication of whether a lease is financial (of one year or more) or operating (of less than one year).[234] However, the duration of the lease as such does not determine whether the lease is to be regarded as an operating or financial lease (see 2008 SNA, para. 17.308.). In some cases, a large complex such as an airport or even a building may be leased for short periods, perhaps only one year at a time, but on condition that the lessee takes all responsibility for the asset, including all maintenance and cover for exceptional damage, for example (ibid.). The allocation of risks and rewards associated with the use of an asset provides the

233. Eurostat, "Methodological questions from member States relating to the trade in ships and aircraft", internal document, 28 November 2011.

234. See IMTS 2010, para. 1.28.

ultimate criterion for deciding whether a lease is to be considered financial (and the good to be included in trade statistics) or operational (ibid., paras. 17.301-17.309).

23.15.   *Examples of financial and operational leasing.* It is only in the case of financial leasing that a change of economic ownership takes place. "Dry" leasing is a leasing arrangement whereby the lessor provides an aircraft without crew, insurance, supporting equipment, maintenance, etc., to the lessee. It is required that the lessee put the aircraft on its own air operator's certificate (AOC)[235] and provide the aircraft registration. While based on these characteristics, a dry lease would usually be a financial lease, a dry lease can also be structured so as to constitute an operational lease. A "wet" lease is an operating leasing arrangement whereby the lessor provides the aircraft, one or more complete crews (including engineers), all maintenance for the aircraft and insurance (ACMI). The period of a wet lease can range from one month to, usually, one to two years. Any arrangement of less than one month's duration can be considered adhoc charter.

23.16.   *Sale and leaseback.* Another frequent leasing agreement for aircraft is sale and leaseback. Under this agreement, an airline would sell an aircraft to a financial investor under the agreement to rent it back immediately. Most of the time, the sale and leaseback agreement amounts to an operating lease, which means the initial sale must be recorded as a trade transaction if it takes place between a resident and non-resident. However, there might be also cases in which the leasing agreement that follows the sale has to be viewed as a financial lease; hence, no sale or goods transaction is to be recorded, as the seller gives up only his legal but not his economic ownership (see BPM6, para. 5.57, which provides examples of situations that would normally lead to a lease's being classified as a financial lease).

E.   Country experiences in the compilation of data on trade in ships and aircraft

23.17.   *Compilation of data on trade in aircraft: experience of Morocco.* Information related to the importation of airplanes and their equipment is collected from Morocco's customs services (the Office of Exchange) and from its main airline company. The Office of Exchange collects a customs declarations (single declaration of goods (DUM) of all the transactions related to the importation of planes. These statements include the following: customs office where the declaration was lodged, customs regime, year, declaration number, number of articles, date of recording, date of reception, location and trade registry of merchant, corporate name, country of origin, country of provenance, currency and value in currency, total value, total gross weight, total net weight, HS code, net weight of a unit, value of a unit, supplementary unit, and code of supplementary unit. At the same time, these data are cross-checked with information contained in reports transmitted by Morocco's aforementioned airline to the Department of Foreign Trade Statistics of the Office of Exchange for balance-of-payments purposes. These reports specify the transaction (importation) financing modalities. In this respect, it should be added that the airline company sometimes uses leasing for its acquisitions of planes. Only planes subject to leasing contracts of one year or longer are regarded as having changed ownership and only for those planes is a trade transaction recorded.

23.18.   *The experiences of Italy and Norway in the compilation of data on external trade in ships and aircraft.* The experience of Italy in compiling external trade in ships and aircrafts is presented in annex XXIII.A. The background, methodology and data sources are explained and conclusions as well as two illustrative examples are provided. Annex XXIII. B. presents the experience of Norway in the compilation of information on the trade in ships.

235. Air operator's certificate (AOC) is the approval granted by a national aviation authority (NAA) to an aircraft operator for its use of the aircraft for commercial purposes. This requires the operator to have personnel, assets and system in place to ensure the safety of its employees and the general public (see Convention on International Civil Aviation, Annex 6, entitled "Aircraft operations, maintenance and general aviation").

Annex XXIII.A.

Compilation of data on external trade in ships and aircraft: experience of Italy

23.A.1.   *Background.* In 2010, European legislation took on board United Nations directives concerning the use of "economic ownership" as the key concept to be used in defining external trade of vessels and aircraft. In order to comply with the new legal framework, Italy put in place an adhoc procedure designed to determine the best classification and measurement of external trade for this kind of goods.

23.A.2.   *Methodology.* The first assumption made by Italy in implementing this new definition has entailed the adoption of the economic concept of operator as a reasonably good proxy for identifying the economic owner:

- For vessels, the operator is the natural person or the legal unit responsible for the commercial decisions concerning the employment of a ship and the one who decides how and where that asset is employed. The direct beneficiary of the profits from the operations of the asset may also be responsible for purchasing decisions on bunkers and port services.

- The term "air operator" refers to a natural person residing in a member State or a legal unit established in a member State that uses one or more aircraft in accordance with the regulations applicable in that member State, or a European Union air carrier, as defined in European Union legislation (Council Regulation (EEC) No. 3922/91 of 16 December 1991 on the harmonization of technical requirements and administrative procedures in the field of civil aviation).

23.A.3.   *Partner-country identification.* The partner country is the place where the operator is established. This definition may have some flaws, but in most cases, it has proved to be the best proxy available. The assumption that the operator is a good proxy for the new concept of economic owner paves the way for the adoption of additional data sources for the correct classification and measurement of external trade of vessels and aircrafts.

23.A.4.   *Data sources.* Given the complexity of the definition and measurement of trade in vessels and aircrafts, it was recognized that a single data source could not comply with the legal requirements (involving, for example: different managements of vessels/aircraft registers and completeness of data source). Consequently, a set of different data sources were identified: standard customs data, the Fairplay World Register[236] of ships and, where possible, multilateral cooperation and exchange of information between partner countries. Finally, a case-study approach has been used, in order to optimally exploit the integration of all the available information.

23.A.5.   *Conclusions.* The results are twofold: only statistically relevant transactions are recorded; and problems of over- and underestimation, linked to each single source, are overcome. For example, customs information may overestimate the data when a sale or acquisition takes place without a change of economic ownership; vice versa, there may be an underestimation when a transaction according to the concept of economic ownership occurs without the obligation of providing a customs/fiscal declaration (for example, without a sale/acquisition of the vessel itself); in this latter case, the Fairplay World Register of ships is most useful. It must be noted that the above procedure is highly advantageous in terms of quality but highly time-consuming at the same time. Hence, for smaller transactions (in terms of value), only customs data, data from the Fairplay World Register of ships and, possibly, direct contacts with the respondents are integrated, while a total casestudy is carried out for larger transactions.

236. The Fairplay World Register is an international database developed and maintained by IHS Fairplay for maritime safety (according to international agreements) and business purposes, based on direct contact with the respondents, profiling of complex multinational corporations and publicly available information (e.g., from the Internet and newspapers).

23.A.6.   *Two illustrative cases.* In the first case, a shipbuilding company in Italy sold a super-luxury cruise ship to a company established in an offshore country and regularly presented a customs declaration. However, the economic owner was another company based in Italy, which used the ship to organize cruises. This transaction was excluded from Italy's foreign trade data, because the seller and the new economic owner were established in the same country. In the second case, a shipbuilding company in Italy sold a super-luxury cruise ship to a multinational corporation established in the United States of America. However, the operator of the asset was a company belonging to the same corporation established in the United Kingdom of Great Britain and Northern Ireland. Hence, a transaction between Italy and the United Kingdom was recorded. In both cases, all the above mentioned sources were crucial to decision-making.

Annex XXIII.B.

Compilation of data on external trade in ships and aircraft: experience of Norway

23.B.1.   *Use of ships registers in Norway.* In Norway, the external trade of ships, aircrafts and movable drilling rigs is not properly covered by data from customs. Concerning ships, estimates based on change of ownership are used as an alternative. Statistics Norway regularly receives information from Norway's shipping registers (NIS and NOR) about new registrations, cancellations and other changes in the registers. Based on this information, a letter and a form are sent to the registered owner, asking for additional information. For exports (sale of ships), identification of the former owner, name of new owner, home country and new flag State, date of change of ownership, type of ship, gross tons and actual price are requested. For imports (purchase of ships), the name of previous owner, home country, previous flag State, date of change of ownership, type of ship, gross tons and, last, actual price are requested. Frequently, ships and aircrafts are leased, requiring clarification on whether a change of ownership took place.

23.B.2.   *Leasing: approach of Statistics Norway.* It is difficult to secure information on when a leasing agreement was established. Consequently, Statistics Norway is, to a large extent, dependent on occasional information. However, in regard to the handling of financial and operational leasing, Statistics Norway makes a pragmatic judgement based on (a) who has the equipment registered in his balance sheet (and pays for all maintenance and repairs) and (b) the length of the period of the contract (one year or more). If the length of the period is more than one year and it is not the lessor who pays all expenses, the transaction is considered to be export or import of goods. Otherwise, it is registered not as trade in goods but as trade in services. (See Box XXIII.B.1 for definitions).

Box XXIII.B.1

Differentiating between operating and financial leasing

Operating leasing and financial leasing represent two different forms of ownership. Under an operating lease, a lessor owns the equipment and pays for all necessary investments. The lessor retains the residual value of the equipment and takes it back when the leasing period expires. When using financial loan products such as financial leasing, overdrafts and loans, the borrower himself is the owner of the equipment and finances 100 per cent of its value. In operating leases, therefore, the value of the equipment is kept off the balance sheet and the leasing costs are posted in their entirety as direct costs linked to the use of the equipment. In financial loan products, the equipment is carried on the balance sheet and the company itself must administrate and allocate all costs and depreciations linked to the equipment in order to produce a correct picture of overall financial implications. Operating leasing also provides external invoice control. The lessor, who owns the equipment, pays all accounts and determines whether it is in accordance with the agreements signed. The lessee simply receives periodic invoices for the lease.

23.B.3.   *Data compilation.* The data on trade of ships, including transport and procedure codes, are manually registered in the Statistics Norway general trade database. It will normally take about two months to collect data, sometimes even longer. However, the data are registered in the month of the change of ownership. This exercise does not cover trade of ships of Norway registered in foreign registers if the trade ends up registered in another country's register. However, it is assumed that such activity is very limited, and at the moment it is ignored.

23.B.4.   *Ships of Norway under foreign flag.* Regarding the issue ships of Norway under foreign flag, Statistics Norway used to depend on information (electronic data) from Lloyd's Fairplay Register. However, this has been discontinued based on the consideration of the costs and benefits of subscribing to the monthly updates, which means that new effective sources are sought after. Equasis, a free source, might be used. [237] Statistics Norway is also considering establishing a small annual survey of large shipping companies in order to obtain an alternative estimate of the magnitude of this activity. This work has not been yet concluded.

237. http://www.equasis.org/

Chapter XXIV

Other special categories of goods and compilation for national accounts and balance-of-payments purposes

24.1. *Introduction.* The present chapter is intended to briefly describe the characteristics and measurement of certain additional categories of goods where the application of the general guideline can pose difficulties and/or where their compilation is relevant and of special interest for national accounts (NA) and balance-of-payment (BOP) compilers. Further, it discusses how IMTS and BOP compilers could work together in capturing the trade in these goods. The differences in recording in IMTS and balance of payments of certain categories of goods or transactions are described.[238] While this chapter is complementary to chapter XIX which focuses on the scope of IMTS in general terms and to chapters XX-XXIII, which cover specific categories of goods, it adds a new dimension, as it systematically discusses the relationship between the compilation for merchandise trade and that for national accounts/balance of payment purposes. However, where applicable, this relationship is also discussed in the other chapters of part four of the Manual (see, in particular, chapter XX on goods for processing).

238. For a detailed description of the conceptual differences between the recommendations for IMTS (IMTS 2010) and those for balance of payments (BPM6), see IMTS 2010, annex F, which also contains a reconciliation table between IMTS and total goods on a balance-of-payment basis.

A. Goods to be recorded similarly in IMTS and BPM6/ National Accounts

24.2. *Goods and services.* The identification and compilation of trade in certain categories of goods pose similar or related challenges for compilers of merchandise trade and balance-of-payments/national accounts statistics. The present section lists categories of goods that are to be recorded in IMTS and BPM6 identically. Compilers of IMTS and BPM6 can benefit from each other's experiences and practices in the identification of these goods (e.g., in the distinction between financial and operating leasing) and the use of additional data sources. As, often, transactions not included under goods trade need to be included under services trade, BPM6 compilers would be interested in knowing how the goods transactions are differentiated from the related services transactions in IMTS in order to avoid double-counting or under-coverage (e.g., in the case of media, whether or not recorded). Hence, it is a good practice if both work closely together. (See Box XXIV.1 for definitions).

Box XXIV.1

Definition of goods for the purpose of IMTS 2010

For the purpose of IMTS 2010, and in reference to the 2008 SNA, goods are defined as physical, produced objects for which a demand exists, over which ownership rights can be established and whose ownership can be transferred from one institutional unit to another by engaging in transactions on markets, plus certain types of so-called knowledge-capturing products stored on physical media that can cross borders physically.[a]

c. See IMTS 2010, para. 1.5. See also IMTS 2010, annex A, paras. A.2-A4, and 2008 SNA, paras. 6.15 and 6.22.

24.3.   *Goods acquired by all categories of travellers,* including non-resident workers, to a significant scale as defined by national law, are to be included in IMTS (see IMTS 2010, paras. 1.16 and 1.49 (a) and in BPM6 under goods (see BPM6, paras. 10.19-10.20), while goods below the threshold have to be recorded as part of travel services (BPM6, paras. 10.86-10.90) .

24.4.   *Media, whether or not recorded (see IMTS 2010, paras. 1.18, and annex F, para. F.5).* It is recommended that media whether or not recorded be included in IMTS 2010, except for media used for carrying customized software or software written for a specific client or originals of any nature, although exclusion of such media may not be possible in practice. Such exclusions should be based on the definitions recommended in BPM6 and should be established in close cooperation with the compilers of balance-of-payments and international trade in services statistics (see BPM6, table 10.4; and MSITS 2010, table III.1). It is recognized, however, that the exclusion of such media may not be possible in view of (a) the prevailing customs practice of classifying both non-recorded and recorded media in one classification heading without any further differentiation and (b) the absence of other reliable and cost-effective data sources for systematic identification. BPM6 includes in general merchandise only non-customized packaged software and video and audio recordings on physical media, such as disks and other devices, with a licence for perpetual use (see BPM6, paras. 10.17 (c) and 10.143-10.144).

24.5.   *Goods under financial and operating leasing (see IMTS 2010, paras. 1.28 and 1.51).* There are two kinds of leases in common usage: financial leases and operating leases. Goods are considered to be under financial lease if the lessee assumes the rights, risks, rewards and responsibilities in relation to the goods and can, from an economic point of view, be considered the de facto owner.[239] Goods under financial leases should be included in international merchandise trade statistics. An operating lease is any lease that does not have the above characteristics. Goods under operating leases should be excluded from international merchandise trade statistics. In practice, it may be difficult to differentiate between these two types of leases.[240] Therefore, in some cases, the duration of the lease can be used as an indication of whether the lease is financial (of one year or more) or operating (of less than one year). The issue of differentiating goods under financial leases and operating leases is described in chapter XXIII for ships and aircraft, as leasing transactions for these categories of goods, in particular aircraft, are very common. (for country experience see Box XXIV.2).

24.6.   *Fish catch, minerals from the seabed and salvage (see IMTS 2010, paras.1.31, and annex F, para. F.19).* These goods landed from vessels of one country in national ports of another country or acquired by vessels of one country on the high seas from vessels of another country are in the scope of IMTS 2010 for both exports and imports and should be recorded where economically or environmentally significant. It is recognized that data collection in respect of this category of goods may be challenging, in particular for transaction taking place outside own economic territory. However, countries are encouraged to develop over time the necessary data-collection and/or estimation procedures in view of the important policy needs; the balance of payments has always included these goods and BOP compilers might have appropriate compilation and estimation methods in place (for country experience see Box XXIV.2).

239. See IMTS 2010, annex A, para. A.11.

240. See also BPM6, para, 5.57.

Box XXIV.2

Example: compilation of data on fish caught by Norwegian vessels outside the custom territory of Norway and landed in national ports of other countries

Fish caught by Norwegian vessels outside Norway's custom territory and landed in ports of other countries is not declared at the Norway's customs. However, the Ministry of Fisheries and Coastal Affairs administers a system of fish export taxes which requires registration of all catches, even those caught outside Norway's custom territory.

The Directorate of Fisheries is responsible for controlling the fish exports and ensuring that the fishing vessels comply with the rules. Fishing vessels have to report to the Fishermen's Sales Organization Council, which reports in turn to the Directorate of Fisheries.

Customs is responsible for collecting the tax but does not have all information needed to produce trade statistics. Thus, Statistics Norway has established an agreement with the Directorate of Fisheries by which Statistics Norway receives a monthly report covering all export of fish caught outside the territory of Norway and landed abroad. The data include information on the date of landing, landing port and country, and the type of fish, weight and value. The data are received two months after the month of landing. Minor control over data quality is exercised by Statistics Norway.

24.7.   *Waste and scrap (see IMTS 2010, paras. 1.38 and 1.58).* Waste and scrap, including products that are dangerous to the environment, should be recorded and classified under the appropriate commodity heading if their commercial value is positive. Waste and scrap having no commercial value are to be excluded but should be separately recorded using appropriate quantity units. It is recognized that data collection under this item may be challenging, since, for example, the value may not be easily available when entering or leaving the country; however, countries are encouraged to develop over time the necessary data-collection and/or estimation procedures. Waste and scrap having no commercial value need to be recorded in the balance of payments under services as a waste treatment and de-pollution service and under environmental transactions (MSITS 2010, paras. 3.245 and 3.298).

24.8.   *Goods for repair or maintenance* (see IMTS 2010, para. 1.57) are excluded from trade in goods and to be recorded separately, as these transactions have to be included as repair and maintenance services in the balance of payments. Compilers of both IMTS and BPM6 face the challenge of differentiating these goods from goods for processing (see chaps. XIX and XX and para. 23.3 for details).

24.9.   *Additional categories of particular relevance to merchandise trade and balance-of-payments/national accounts compilers.* Balance-of-payments compilers have a strong interest in ensuring that all relevant merchandise trade transactions are included in their statistics. Therefore, when important trade transactions, such as for electricity, gas or oil, ships and aircraft or military goods, are not included in the information obtained from customs and trade statistics, the balance-of-payment compilers use additional sources to obtain this information. It is a good practice for international merchandise trade statistics and balance-of-payments compilers to work closely together in the compilation of this information from additional sources, and to ensure that relevant trade transactions are included in both merchandise and balance-of-payment statistics.

24.10.   *Goods bundled with services (see IMTS 2010, para. 4.15 (g).* Often, the sale of goods is bundled with the provision of certain services, such as for maintenance or installation. The appropriate recording of these transactions is not a question of scope (i.e., whether or not to include the transaction), but rather of valuation. Goods bundled with services should be valued as follows: the statistical value applies only to the goods,

and the value of any services associated with them should be excluded from IMTS 2010, except for the services that are included according to the FOB- and CIF-type valuation of goods. However, in practice this might prove difficult for certain goods such as media (see IMTS 2010, para. 1.18). Goods bundled with services might be identified by their increased unit value.

B.   Goods to be recorded differently in IMTS and BPM6/ national accounts

24.11.   *Conceptual differences and data compilation.* The main conceptual differences in the recording of international transactions in goods between IMTS 2010 and the BPM6/2008 SNA are described in IMTS 2010, annex F. This chapter briefly discusses the possible collaboration of IMTS and BPM6 compilers on the compilation of these goods.

24.12.   *Goods for processing with or without change of ownership (see IMTS 2010, paras. 1.19-1.21 and F.4).* These transactions are to be included in IMTS as trade in goods, while in the BPM6 the initial trade transaction is to be recorded as trade in services. Chapters XX and XXI discuss the possible identification of goods for processing and the trade between related parties in IMTS.

24.13.   *Returned goods (see IMTS 2010, paras. 1.23 and F.6).* If exported goods are subsequently returned, they should be included in imports and identified as reimports when they are returned. Similarly, goods imported and subsequently returned should be included in exports and identified as re-exports when they are returned.[241] If returned goods can be identified by IMTS compilers, e.g., via the special customs procedure code, this information should be made available to BPM6 compilers in order to allow them to void the initial transactions in their recording, as required by BPM6.

24.14.   *Migrants' effects (see IMTS 2010, paras. 1.26 and F.7).* Migrants' effects are to be included in IMTS if they are of a significant scale, while they should be excluded from trade on a BPM6 basis, as no change of ownership takes place. The exclusion of this transaction in BPM6 would be greatly facilitated if the goods would be specifically identified in the statistical recording of the customs transactions.

24.15.   *Goods entering or leaving the economic territory of a country illegally (see IMTS 2010, paras. 1.59 and F.8).* It is recommended that these transactions (which may include legal as well as illegal goods)[242] be excluded from IMTS and separately recorded. BPM6 includes in general merchandise illegal goods as well as smuggled goods that are otherwise legal (BPM6, paras. 10.17 (i) and 10.17 (j). Customs and BOP compilers should work together to assess the quantity of smuggled goods, e.g., BOP compilers might have an indication from their surveys that travellers are not properly declaring their goods.

24.16.   *Goods lost or destroyed after leaving the exporting country but before entering the importing country and after ownership has been acquired by the importer.* It is recommended that these goods be excluded from IMTS of the importing country but to be separately recorded (see IMTS 2010, paras. 1.60 and F.9). To support the proper recording of these transaction in the balance of payments, IMTS compilers should provide this information to BOP compilers.

24.17.   *Goods imported for construction projects by non-resident enterprises (see IMTS 2010, para. F.10).* Such goods, where these operations are not sufficiently substantial to constitute a branch of the enterprise, are not recorded as trade in goods in BPM6 (see BPM6, para. 10.22 (d) but are recorded as exports and imports in IMTS. The specific

241. There are different cases of returned goods, such as goods returned due to poor quality and goods on consignment (see IMTS 2010, para. 1.17 above) that are not sold or returned.

242. The illegal entry or exit from the economic territory may refer to both legal and illegal goods, i.e., it is not necessarily the goods themselves, but the manner in which they enter or leave the economic territory, that is illegal.

identification of these goods in the statistical recording of the customs transactions would be useful to BPM compilers.

24.18.   *Goods transferred from or to a buffer stock organization.* It is recommended that such goods be included in IMTS (see IMTS 2010, paras. 1.27 and F.11). BPM6 excludes goods temporarily exported or imported, such as goods for storage, if no change of ownership takes place (BPM6, para. 10.22 (e). However, these goods are to be recorded if they are sold while being abroad (BPM6, para. 10.17(g). The specific identification of those goods in the statistical recording of the customs transactions would be useful to BPM6 compilers.

C.   Common metadata to be provided by IMTS and balance-of-payments compilers

24.19.   *Publication of a reconciliation table.* It is a good practice for IMTS and BPM6 compilers to provide, as part of their metadata, a reconciliation table between IMTS and total goods on a balance-of-payments basis (see IMTS 2010, annex F, table F.1, as a possible example). It is advised that this table be accompanied by appropriate metadata regarding the recording of the relevant transactions.

24.20.   *Development of a reconciliation table: Cooperation towards adjusting balance-of-payments statistics and foreign trade statistics in the Eurpean Union.*[243] On the initiative of Eurostat, a Task Force on the reconciliation between Balance of Payments and Foreign Trade Statistics (TF BoP/FTS) was set up consisting of representatives of European Union member States in the areas of balance-of-payments statistics and foreign trade statistics. The task force was established to meet the need for data delivered from foreign trade statistics to balance-of-payment statistics to be conceptually adjusted. In light of this, one goal was the formulation of so-called reconciliation tables which would enable all European Union member States to make the necessary adjustments to foreign trade data to enable them to fit the system of balance-of-payments statistics using European Union- consistent methods and practices(see box XXIV.3 for details).

243. Description provided by Germany.

Box XXIV.3

Development of a reconciliation table in the European Union

The methodological and conceptual differences between the two systems in the area of cross-border trade in goods were identified. In particular:
- There was a comparison of the fundamental methodological approaches to foreign trade statistics (recording all goods that add to or subtract from the stock of material resources of a country by entering or leaving its economic territory) and to balance-of-payments statistics (recording the change of ownership between residents and non-residents)

- Any differences between the European Union concept and the national concept were identified

- Different valuation methods were identified (CIF/FOB or FOB/FOB), as well as methods for calculating the conversion factors used to switch between both concepts

- The methods for compiling data on processing trade, repairs and maintenance where identified

- There was an examination of the treatment of specific goods and movements (e.g., change in economic ownership of vessels and aircraft).

Furthermore, specific compilation problems (e.g., impacts of changes in customs law) were discussed. A model of the reconciliation table was developed by the Task Force.[a]

a. The table is not provided in this Manual, since it is highly complex and aligned with the situation specific to the European Union.

PART FIVE.

Metadata and dissemination

Chapter XXV
Metadata

25.1.   *Introduction.* The present chapter is based on IMTS 2010, chapter IX, on data quality and metadata. It describes all the information on the trade data that should be considered metadata. It explains that metadata are relevant for the correct understanding of the content, coverage and limitations of the data, and provides guidance on the correct interpretation of the trade statistics. Metadata exist at various levels of detail: at the overall level, metadata indicate the nature of the coverage of the trade statistics, and how data are collected and processed; at the next levels, information can be given on the main data variables, such as commodity classification, country nomenclature and country coverage, or valuation, and on specific trade flows. This chapter provides advice on and examples of how best to present and disseminate the metadata.

A.   Basic concepts

25.2.   *Definition and role of metadata.* Metadata are "data about data" which enable and facilitate sharing, querying, understanding and using statistical data over the different stages of collection, compilation and dissemination, and at their various levels of aggregation (i.e., from microdata to macrodata). They encompass administrative facts about the data (who has created them and when), and definition of concepts applied, as well as description of how data were collected and processed before they were disseminated or stored in a database (see IMTS 2010, para. 9.20). Not only are metadata important for users, but they also play a crucial role in the statistical production process, as common standards and definitions should be followed to the extent possible throughout all statistical domains in order to facilitate the linking and integration of statistical information.

25.3.   *Structural metadata.* Structural metadata are identifiers and descriptors which are essential for discovering, organizing, retrieving and processing statistical data sets.[244] They can be thought of as the "labels" that need to be associated to each data item in order for it to have any meaning at all. In the context of international merchandise trade statistics, structural metadata include items such as unit of measurement, time period, commodity code, identification of reporting and partner countries (country codes), identification of trade flow, etc. Structural metadata also include the information required to link data points across periods in order to obtain meaningful time series.

25.4.   *Reference metadata.* Reference metadata are of a more general nature and "may refer to specific statistical data, to entire data collections or even to the institution that provides the data".[245] More specifically, in the context of international merchandise trade statistics, reference metadata items include: (a) explanations of the concepts and definitions adopted and their practical implementation (e.g., coverage and valuation); (b) details on the methodologies used for the generation of the data (e.g., specification of data source(s), description of the sampling framework in the context of survey-based data, description of data validation and editing techniques, etc.); and (c) information describing the various quality dimensions of the resulting international merchandise

244.   See Statistical Data and Metadata Exchange, "SDMX content-oriented guidelines" (2009), annex 4, entitled "Metadata common vocabulary".

245.   Ibid., p.6

246. Ibid., annex 4.

trade statistics (e.g., relevance, accuracy, timeliness, methodological soundness, coherence and accessibility).[246]

25.5.   *Metadata and data quality.* There is a bidirectional relationship between metadata and data quality. On the one hand, metadata provide details on the various quality dimensions of international merchandise trade statistics, as stated in the previous paragraph. On the other hand, the availability of adequate metadata to users is in itself a quality component through its role as an indicator of the accessibility of international merchandise trade statistics (see IMTS 2010, paras. 9.17 and 9.21). Compilers should aim to provide users with all the metadata required to understand both the strengths and the limitations of the international merchandise trade statistics they produce, documenting in a timely manner all methodological aspects underlying the data that are relevant for their proper use and interpretation (e.g., definitions, classifications, scope, confidentiality issues, etc.).

25.6.   *Institutional arrangements for metadata compilation.* To reduce the burden associated with trade metadata projects, it is good practice for compilers to closely cooperate with the specific units responsible for ensuring within the national statistical system that metadata are produced, that they adhere to a standard format and that they are properly maintained and updated.

B.   Presentation and dissemination of metadata

25.7.   Layered presentation of metadata. *Compilers of international merchandise trade sta*tistics must make sufficient metadata available to enable both the least and the most sophisticated users to readily assess data and their quality (see IMTS 2010, para. 9.22). It is good practice to structure metadata in layers of incremental detail while providing clear links between high-level and specific metadata concepts. Such a layered presentation allows the needs of diverse groups of users, who may have different levels of statistical expertise, to be met.[247]

247. See OECD, Data and Metadata Reporting and Presentation Handbook (Paris, 2007), p. 22, para. 6.3.2.

25.8.   *Presentation of structural and reference metadata.* IMTS 2010 (para. 9.22 (b) recommends that structural metadata be presented as an integral part of the international merchandise trade statistics database in such a way as to be extractable together with any data item and published as part of statistical tables. On the other hand, reference metadata could be presented in the form of a detailed explanatory note describing the scope, coverage, and quality of a data set and be made available electronically alongside the database or in special publications (para.9.22 (a).

25.9.   *Use of standardized metadata concepts.* It is recommended that the dissemination of metadata related to international merchandise trade statistics be carried out in compliance with the approach adopted by a given country to metadata across all areas of economic statistics (IMTS 2010, para. 9.25). Whenever feasible, therefore, it is good practice for compilers of international merchandise trade statistics structure to present their metadata using standardized concepts that are relevant across statistical domains (e.g., by adopting cross-domain concepts derived from the SDMX framework or the OECD Glossary of Statistical Terms). The aim should be to promote harmonization of statistical information and its related high-level metadata across various institutions and statistical domains, even if some specific metadata concepts are not applicable or are organized differently in different domains or institutions.

25.10.   *Linking data and metadata.* As metadata are generated and processed during every step of the compilation process, there is a strong need for a metadata management system to ensure that the appropriate metadata retain their links with

data. IMTS 2010 recommends that metadata dissemination be an integral part of the dissemination of international merchandise trade statistics (IMTS 2010, para. 9.25). A good practice in this regard is to actively link metadata to the statistical data they describe, and vice versa,[248] by implementing metadata-driven systems and management systems for metadata throughout the various stages of the statistical production process. There are several information model specifications that can contribute to achieving this goal (most notably SDMX and DDI[249]). While such specifications are designed to enable performance of different functions, they can be used together in the same system, or complement each other, in the compilation and exchange of data and metadata.[250]

25.11.   *Metadata registries.* A metadata registry is a central repository (usually a database itself) with information that allows linking the detailed definitions (semantics) and the codes (representations) of the metadata items used to describe a particular statistical data set. The Euro-SDMX registry is an example of a metadata registry (which implements the SDMX registry specifications)[251]. It is good practice for compilers of international merchandise trade statistics to put special emphasis on the development, maintenance and dissemination of metadata registries at the national and international levels in order to improve the harmonization, standardization, use, reuse and interchange of their metadata.[252]

25.12.   *Access to metadata.* Compilers of international merchandise trade statistics should make every effort to ensure that users have ready access to metadata through multiple dissemination channels, both in printed and in electronic format (whereby Internet dissemination plays a key role). As a general rule, as metadata is considered as having a high public good component, their on-line dissemination should be free of charge, regardless of whether the international merchandise trade statistics they describe are disseminated for a fee according to the compiling organization's policies.[253]

C.   Metadata items relevant for international merchandise trade statistics

25.13.   *Structural metadata items for international merchandise trade statistics.* The following are typical structural metadata items that belong to the trade values and quantities in each international merchandise trade statistics dataset (see IMTS 2010, para. 9.23):

(a).   *Reporting country:* identification of the country that reported the given data set;

(b).   *Reference period:* identification of the specific month, quarter, year, etc.;

(c).   *Trade flow:* whether the data refer to exports, imports, re-exports, etc.;

(d).   *Commodity code:* identification of the commodity or commodity group;

(e).   *Commodity description:* stand-alone descriptors of the commodity codes at any level of aggregation;[254]

(f).   *Commodity classification:* name of the classification used to report the data (*e.g.,* HS2007, SITC Rev. 4, national classification, etc.*);

(g).   *Partner country or region:* identification of the partner country or region;

(h).   *Country or region classification* (*e.g., alpha-2 or alpha-3 ISO country codes; United Nations standard country or area codes for statistical use,[255] etc.*), including information on the country-composition of geographical regions;

(i).   *Currency unit:* identification of the currency unit (*e.g., national currency, United States dollars, etc.*) in which trade values are expressed;

(j).   *Mode of transport;*

248.   Ibid.

249.   The Data Documentation Initiative (DDI) is an effort to create an international standard for describing data from the social, behavioural, and economic sciences.

250.   See, e.g., A. Gregory, P. Heus and J. Ryssevik, "Metadata", Working Paper No. 57 (German Council for Social and Economic Data (RatSWD), March 2009).

251.   See par. 9.32 on the Euro-SDMX Metadata Structure (ESMs). Eurostat's Metadata Server (RAMON) is available at http://ec.europa.eu/eurostat/ramon/index.cfm?TargetUrl=DSP_PUB_WELC .

252.   The International Organization for Standardization / International Electrotechnical (ISO/IEC) International Standard 11179-1 provides a more general discussion of metadata registries.

253.   See OECD, Data and Metadata Reporting and Presentation Handbook, p. 22.

254.   The Harmonized System (HS) often does not provide stand-alone descriptors of individual commodity codes, as the titles of the HS headings and subheadings often do not describe their scope (inasmuch as they use, e.g., such titles as "others"), and/or refer to other headings and subheadings as well as to sections, chapters or headings notes. While not as precise as the legal text, standalone descriptors provide an easily accessible and concise indication of the scope of the HS codes.

255.   Available from http://unstats.un.org/unsd/methods/m49/m49.htm.

(k). *Weight unit:* identification of the weight unit in which trade quantity data (*net weight data*) are expressed;

(l). *Supplementary quantity unit:* identification of the unit of measurement, by HS code, in which supplementary trade quantity data are expressed;

(m). *Valuation:* identification of whether trade values are expressed in FOB or CIF terms;

(n). C*ustom procedure code* (*or applicable transaction code*).

25.14.   *Reference metadata items for international merchandise trade statistics.* The following items are typically part of the reference metadata associated with international merchandise trade statistics (see IMTS 2010, para. 9.23):

(a). *Legal framework and institutional arrangements* (e.g., references to relevant laws and regulations, role of all institutions involved in compilation, etc.);

(b). *Underlying concepts and definitions* (e.g., definition of statistical territory and trade system used, definition of statistical value, scope of international merchandise trade statistic and their relationship to national accounts and balance-of-payments statistics, etc.);

(c). *Description of data sources used and methodology of data integration* (e.g., customs declarations and related customs records, non-customs administrative sources, enterprise surveys, and a brief description of how data obtained from these sources are merged to create an integrated data set);

(d). *Description of data-collection and data-processing procedures* (e.g., frequency of data collection, description of specific procedures used for data collection, validation, editing, aggregation, etc.);

(e). *Estimation methods* (e.g., estimation of value of trade below customs and statistical thresholds, CIF-FOB adjustments, estimation of quantities, etc.);

(f). *Dissemination policy* (e.g., release and revision schedules);

(g). *Additional explanations and footnotes concerning the data, as required* (e.g., explanatory notes on revisions, breaks in series, application of confidentiality rules, treatment of special categories of goods, etc.);

(h). *Quality reporting.*

D.   Country practices

25.15.   *Example from the United States of America.* Metadata on the international merchandise trade statistics of the United States is made available online at the United States Bureau of the Census website in a Guide to Foreign Trade Statistics.[256] This resource provides a detailed description of the United States Foreign Trade Statistical Program, and includes information on the legal framework ("Authority"), data sources, concepts and definitions (e.g., commodity classifications, coverage, valuation, quantity measurement, date of recording, etc.), data-processing procedures (e.g., seasonal adjustment, constant dollar adjustment), estimation methods for low-valued statistics, quality reporting (e.g., non-sampling errors, comparability issues, etc.), and data revision policies. This metadata dissemination resource also includes contact information and other sources of information about the United States Foreign Trade Statistics Program.

25.16.   *Example from Italy.* At ISTAT, the main foreign trade statistics dissemination tool is the web-based system Coeweb which allows free of charge downloads and contains a wide range of standardized and customized statistical tables and a special section for metadata. In particular, great efforts are made to improve accessibility of metadata by enriching the sections devoted to users' support in respect of issues like

256. See www.census.gov/foreign-trade/guide/sec2.html

commodity and geographical classifications (including correlation tables which are updated yearly), methodologies related to specific issues (such as electricity and gas) and documentation on regulations and national law. The version in English is available for many issues. Methodological warnings are presented in dynamic footnotes to downloadable tables (about 5,000 notes) presenting users with possible caveats in respect of the interpretation of data and inviting them to access more in-depth information at the specific metadata section.

25.17. *Example from Brazil.* Metadata pertaining to Brazil's international merchandise trade statistics are available in Portuguese, English and Spanish through the online AliceWeb2 system (http://aliceweb2.mdic.gov.br/). Concepts and definitions in respect of the main variables are given directly below:

(a). *Export:* corresponds to a good shipped to the outside, without return;

(b). *Import:* corresponds to the entry of a good originating from outside, without return;

(c). *Commodity:* for the purpose of the classification of goods, Brazil has, since 1996, used the common classification of Mercosur (*NCM*), which is also used by other countries of the block (Argentina, Paraguay and Uruguay), which is based on the Harmonized Commodity Description and Coding System;

(d). *Country of destination (for exports):* for the purpose of dissemination of export statistics, the country of destination is the last country known at the time of the exportation, to which goods are to be delivered, irrespective of where they have been initially dispatched to and whether or not, on their way to the last country, they are subject to any commercial transactions or other operations that change their legal status;

(e). *Country of origin (for imports):* for the purpose of disseminating statistics on imports, the country of origin is the country where the agricultural products were grown, the minerals extracted or the manufactured goods produced in whole or in part. In the case of manufactured goods, the country of origin is where the last phase of processing was completed and the product adopted its final form (a concept defined by the Kyoto Convention);

(f). *Economic bloc:* the countries are grouped by economic blocks following the formation of geo-economic regions and international agreements. A country may be part of more than one economic bloc;

(g). *State (unit of the federation):* for the purpose of disseminating statistics on exports, the State is the unit of the Federation where agricultural products were grown, minerals were extracted or manufactured goods were produced in whole or in part. In the case of manufactures, "State" is the State that has completed the last stage of the manufacturing process in which the product takes its final form (concept of origin). In the case of imports, "State" is defined as the State of the tax residence of the importer;

(h). *Mode of transport:* in the case of exports, this refers to the means of transportation used from the last place from which the goods are shipped abroad. In the case of imports, it refers to the means of transportation used at the first point of entry of goods into national territory. In accordance with the framework of the Mercosur countries, Brazil records the following modes of transport: sea, river, lake, air, postal consignments, mail or courier shipments, railway, road, pipelines, transmission line (*cables*) and self-propelled goods;

(i). *Port:* for exports, this refers to the port or airport where the shipment of goods takes place, or the last place from which the good leaves the country. In the case of imports, it is the port or airport where the goods are unloaded or the first place at which the goods enter the country.

Box XXV.1

Towards the implementation of SDMX and DDI for IMTS: Experience of Mexico

The SDMX standard is designed for exchanging statistical data and metadata between two or more partners. Of particularly interest is the fact that in Mexico, which is a federal country, SDMX can support both a national information sharing system and its links to other information sharing systems at the international level. Following the decision to adopt the SDMX standard, the Mexico's National Institute of Statistics and Geography (INEGI) started developing the infrastructure required to make data and structural metadata available through web services. Tools developed by Eurostat as well as the support of OECD have been of great help in the accomplishment of this task.

The data (and related metadata) for a given statistical domain are structured in SDMX according to a Data structure definition (DSD), which describes the structure of a particular statistical data flow through a list of dimensions and a list of attributes (and their associated codes).

Mexico is working on the adoption of SDMX technology in statistical projects in various statistical domains. However, in January 2011, INEGI decided, in partnership with OECD's Statistics Directorate, to give priority to the conversion of the "annual trade by commodity" data flow to SDMX. By the beginning of 2012, this data flow was released by INEGI for testing purposes in a web service, and it is expected that feedback will be received from OECD. The data structure definition for this data flow will include dimensions such as frequency, reference country, trade flow (exports, imports, etc.), commodity code (from the HS2007 classification), valuation (in FOB or CIF terms), partner country or region, and reference period. It will include attributes like unit of measurement and observation status.

The issue of metadata is also covered in Mexico through the implementation of the Data Documentation Initiative (DDI) as a fundamental tool for the integration of metadata for international merchandise trade statistics. The project is carried out with the support and advice of the World Bank. The policy of INEGI is to use both standards as linchpins for the metadata of the national statistical projects, thus strengthening the national system of statistical and geographical information.

Chapter XXVI
Dissemination

26.1.   *Introduction.* The present chapter is based on chapter X, on dissemination, of IMTS 2010. It describes the factors to be taken into consideration when establishing the dissemination policy for international merchandise trade statistics at the responsible national agency. These factors include: variables to be made available; timeliness; coherence between disseminated data sets; statistical confidentiality; revision policy; users needs; formats and means of dissemination; and dissemination of metadata and information on data quality. The last section of the chapter addresses issues related to the dissemination of statistics on international trade in goods combined with the dissemination of statistics on international trade in services.

A.   Role of data and metadata dissemination

26.2.   *Importance of dissemination.* The availability of official statistics in general and statistics of international merchandise trade in particular is one of the cornerstones of public confidence in good government, as such statistics can inform debate and decision-making both by Governments and by the wider community. In this context, IMTS 2010 highlights the importance of countries' adherence to the United Nations Fundamental Principles of Official Statistics [257] which state, inter alia, that:

(a). Official statistics "provide an indispensable element in the information system of a democratic society, serving the Government, the economy and the public";

(b). These statistics should be "made available on an impartial basis by official statistical agencies to honour citizens' entitlement to public information";

(c). The statistical agencies should "facilitate a correct interpretation of the data" and therefore have "to present information according to scientific standards on the sources, methods and procedures of the statistics";

(d). The statistical agencies "are entitled to comment on erroneous interpretation and misuse of statistics".

26.3.   In the light of these Principles, the dissemination of trade data and metadata is an integral part of the national programme of trade statistics and should be carried out with great care and attention to the needs of users, while at the same time ensuring adequate confidentiality of data providers.

B.   Factors to consider in data and metadata dissemination

26.4.   Compilers of international merchandise trade statistics are advised to consider the following factors in designing and implementing data and metadata dissemination strategies. Each of these factors will be subsequently discussed:

(a). Variables to be made available;

(b). Timeliness of data and metadata dissemination;

(c). Coherence between disseminated data sets;

(d). Statistical confidentiality;

257. The Principles are available at http://unstats.un.org/unsd/methods/statorg/FP-English.htm

(e). Revision policy;

(f). Groups of users and their specific needs;

(g). Formats and means of dissemination.

1.   Variables to be made available

26.5.   *Minimum set of data and structural metadata items to be disseminated.* IMTS 2010 provides certain recommendations and encouragements in respect of what kinds of data and structural metadata items should be disseminated. They can be summarized as follows: countries should release international merchandise trade statistics for four trade flows (exports, re-exports, imports and reimports), detailed by six-digit HS codes and by categories of goods recommended for separate identification, with respect to each trading partner, using appropriate criteria for partner attribution, in terms of applicable statistical value and quantity units and by mode of transport. Table XXVI.1 lists a suggested set of data and structural metadata items to be disseminated, as well as their possible values.

Table XXVI.1
Set of possible data and structural metadata items to be disseminated

Variables	Possible values
Reference period	E.g., identification of year for annual data, identification of year and month for monthly data, etc.
Trade flow	Exports, re-exports, imports, or reimports
Commodity or commodity aggregate	Six-digit HS commodity code, four-digit HS heading, HS Chapter, etc.
Commodity classification	E.g., HS 2012, HS 2007, etc.
Country of last known destination (for exports)	E.g., ISO alpha-3 country code
Country of origin (for imports)	E.g., ISO alpha-3 country code
Country of consignment (both for exports and imports)	E.g., ISO alpha-3 country code
Mode of transport	E.g., air, water, land and their subdivisions
FOB value	Monetary value
CIF value	Monetary value
Currency unit	E.g., national currency, United States dollars, etc.
Quantity (net weight)	Physical quantity (in kilograms)
Supplementary quantity	Physical quantity (in supplementary unit of measurement)
Supplementary unit of measurement	E.g., liters, etc.
Custom procedure code (or applicable transaction code)[a]	Code of the customs procedure applied to individual transactions by customs; any applied procedure or transaction code if customs procedure codes are not available or if additional codes are used

a. This information is requested to obtain additional information about trade transactions for statistical purposes such as on re-exports, reimports, goods for processing and intra-firm trade. However, national practices in the use of customs procedures vary considerably and it might not always be possible to derive the desired information.

26.6.   *Dissemination of new items recommended or encouraged by IMTS 2010.* It is good practice to disseminate newly recommended and encouraged data items (e.g., imports valued FOB, in addition to imports valued CIF) in such a way as not to confuse users. Table XXVI.2 presents dissemination requirements for aggregate trade flows by partner country and mode of transport, while Table XXVI.3 presents requirements

for detailed trade data in accordance with IMTS 2010 recommendations (R) and encouragements (E).

Table XXVI.2
Dissemination matrix: aggregate data and structural metadata

Trade flow	Reference period	Country of last known destination	Country of origin	Country of consignment	Mode of transport	Value, FOB	Value, CIF	Currency
Exports	R	R		E	R	R		R
Re-exports	R	R		E	R	R		R
Imports	R		R	R	R	E	R	R
Reimports	R		R	R	R	E	R	R

Table XXVI.3
Dissemination matrix: detailed data and structural metadata

Trade flow	Reference period	Commodity code	Country of last known destination	Country of origin	Country of consignment	Mode of transport	Value, FOB	Value, CIF	Currency	Quantity (net weight)	Supplementary quantity	Supplementary quantity unit	Customs procedure code
Exports	R	R	R		E	R	R			R	R	R	E
Re-exports	R	R	R		E	R	R			R	R	R	E
Imports	R	R		R	R	R	E	R	R	R	R	R	E
Reimports	R	R		R	R	R	E	R	R	R	R	R	E

2.   Timeliness

26.7.   *Timeliness of first data releases.* Timeliness is defined in IMTS 2010 (para. 10.7) as the length of time between an event (the end of the reference period) and the availability of statistical information about this event. IMTS 2010 encourages countries to issue the first releases of data as follows: (a) monthly totals of exports and imports within 45 days after the end of the reference month, at least by major trading partners and basic commodity breakdown; (b) quarterly data within 60 days after the end of the reference quarter; (c) annual data within 90 days after the end of the reference year.

26.8. *Advance release calendar.* IMTS 2010 (para. 10.5) further recommends (a) that countries announce in advance the precise dates at which those statistics will be released and revised and (b) that this advance release calendar is posted before the beginning of each year on the website of the national agency responsible for the dissemination of the official trade statistics. While implementing those recommendations and encouragements, it is good practice to make clear the dates on which the provisional estimates and the final data (no longer subject to regular revision) will become available. Also, it is good practice to inform users about availability of such calendars using all appropriate means of communication.

26.9. *Dealing with the trade-off between timeliness and reliability and accuracy.* In producing data, there is usually a trade-off between the timeliness, on the one hand, and the reliability, accuracy and level of detail of the published data, on the other hand. Recognizing this trade-off, IMTS 2010 (paras. 10.5-10.6) encourages countries, while making relevant decisions, to take into consideration a number of factors such as user requirements, timing of the collection of initial data by the customs administrations and other source agencies, extent and timing of data revisions of the major data sources, and modes of data dissemination. It is good practice to discuss this trade-off explicitly with major user groups, in order that an understanding may be reached on the best solution, and to make this understanding publicly available.

26.10. *Early dissemination of provisional estimates.* To improve timeliness in the dissemination of international merchandise trade statistics, it good practice to publish, on a regular basis, the provisional estimates of total exports and imports, as well as of trade by major commodities and partners, soon after the end of the reference period (see above). Such estimates, by their very nature, would be based on relatively limited data content and replaced at a later date by more accurate, but less timely figures. However, compilers and users must be aware of the trade-off between quality (size of revisions) and timeliness (e.g., it is generally not a good practice to frequently publish large revisions (IMTS 2010, paras. 10.10-10.12). Quality aspects need to be taken into account when deciding on the frequency of publication.

3. Coherence between disseminated data sets

26.11. *Coherence of monthly, quarterly and annual data.* Many countries use additional information for the compilation of annual trade statistics. In this connection, IMTS 2010 (para. 10.9) stresses that the data for the fourth quarter (or for the twelfth month) need to be compiled and disseminated in their own right and should not be derived as the difference between the annual totals and the sum for the first three quarters (or 11 months) in order to provide undistorted data for all months and quarters. It is good practice to provide in the reference metadata an appropriate explanation in this respect, so as to assist users in the correct interpretation and use of the data. It is also good practice to make users aware of particularly significant cases of non-additivity over time, and to provide the reasons for their existence.

4. Statistical confidentiality

26.12. *Statistical confidentiality versus user needs.* Statistical confidentiality refers to the protection of information of individual statistical units and should be distinguished from other forms of confidentiality under which information is not disseminated based on considerations such as national security concerns. It is good practice for compilers of international merchandise trade statistics to always strive for a full coverage of all trade transactions that are within the scope of IMTS while applying appropriate methods

to keep certain information confidential. IMTS 2010 (para. 10.2) recognizes the need both for statistical confidentiality and for balancing it against the demand for public information in cases where the application of statistical confidentiality would limit or make it impossible to provide sufficient or meaningful information. It is also good practice to disseminate, along with the data, a quantitative indicator of the quantity of goods subject to confidentiality.

26.13.   *Development and implementation of confidentiality rules.* IMTS 2010 (para. 10.3) recommends that passive confidentiality be applied as much as possible, i.e., that data be treated as confidential only at the trader's request and when the statistical authority finds the request justified based on the confidentiality rules, unless the use of active confidentiality is already the established, desired and accepted practice. It is further recommended that in suppressing data due to confidentiality, any information deemed confidential (suppressed) be reported in full detail at the next higher level of commodity and/ or partner aggregation that adequately protects confidentiality. However, the implementation of these recommendations on statistical confidentiality also depends to a large extent on each country's legislation and the general confidentiality policy adopted by its statistical system. An important challenge in the implementation of confidentiality rules is to ensure that confidentiality is applied across all the different classifications in which data are disseminated while preserving the goal of maximizing information. An example of good practices in the development and implementation of confidentiality rules is provided in box XXVI.1 and box XXVI.2.

Box XXVI.1

Treatment of confidentiality in Germany

Passive confidentiality in foreign trade statistics is regulated by European law.[a] Importers and exporters submitting Intrastat/customs declarations in Germany can submit a request for confidentiality, at which point the Federal Statistical Office examines whether the application of confidentiality is justified or not. Two criteria are relevant for establishing confidentiality: the maximum number of parties responsible for providing the information (traders, importers or exporters) and the so-called "p% rule". The first criterion is applicable if there are three or more providers of statistical information (PSI) involved. The p% rule involves calculating the difference between total value and the second largest value: if the difference exceeds the largest value by less than p%, then one PSI is dominating; the value of p% is determined by the Federal Statistical Office.

The request for confidentiality is granted if the above criteria are met in a majority of the 12 preceding reporting months. In cases of doubt, the decision is always made in favour of confidentiality.

"Primary confidentiality" is implemented both by partner countries (with the result that specific or all countries are suppressed, flagged as confidential and summed up under the position "confidential countries") and by commodity codes (with the result that specific codes are suppressed, flagged as confidential and summed up under a specific code number within chapter 99).

Each confidential commodity code (or partner country) needs a counterpart ("secondary confidentiality"). Otherwise, confidential values could be recalculated through the results in higher commodity levels or the results in other classifications (e.g., SITC). The aim is in finding a suitable counterpart is to protect data with a minimum loss of information. It is desirable to find a nearby counterpart to a confidential commodity code. The next step is to determine whether the counterpart commodity code also ensures that confidentiality is maintained throughout all other classifications used in foreign trade statistics (e.g., SITC, CPA).

Confidentiality of data is always granted for the current and the following years. After expiration of this term, companies have to submit a new application. Otherwise, the data are published again. Data once marked as confidential are kept confidential forever.

Data on exports and imports of military arms are generally kept confidential.

a.   See Regulation (EC) No. 471/2009 of the European Parliament and of the Council of 6 May 2009, article 10, and Regulation (EC) No. 638/2004 of the European Parliament and of the Council of 31 March 2004, article 11.

Box XVI.2

Disclosure control in Canada

Statistics Canada is prohibited by law from releasing any data that would divulge information obtained under the Statistics Act that relates to any identifiable person, business or organization without the prior knowledge or the consent in writing of that person, business or organization. Various confidentiality rules are applied to all data that are released or published so as to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure of identifiable information.

26.14.   *Informing about confidentiality rules.* It is good practice for all countries to develop and publish an overview of their confidentiality rules with respect to international merchandise trade data in order that data reporters may be assured that their right to confidentiality is guaranteed, while data users may be informed about certain data limitations, thereby enabling them to use the data more appropriately. It is also good practice to provide users with details on what part of the data are affected most by the application of confidentiality rules and on the magnitude of this effect.

5.   Revision policy

26.15.   *Features of a good revision policy.* Recognizing that data revisions are an essential part of country practices, IMTS 2010 (paras. 10.10–10.11) encourages countries to develop a revision policy that is well designed, carefully managed, transparent and well coordinated with other areas of statistics and hence allows users to cope with revisions in a systematic manner. The following are some good practices in relation to the revision policy (see IMTS 2010 (paras. 10.10–10.12):

(a). Availability of a detailed description of the revision policy on the responsible agency's website;

(b). Reasonable stability of timing of the revisions from year to year;

(c). Predetermined timing of revisions (*clearly reflected in the data release calendar*);

(d). Prior notification to users whenever a revision requires changes in the time series going as far back as the beginning of the series to retain methodological consistency, explanation for the reasons for the revision and provision of information on its possible impact on the data;

(e). Easy access to sufficiently long time-series of revised data;

(f). Dissemination of all revised monthly, quarterly and annual data so as to ensure consistency of all data available to users, including seasonally adjusted data and indices;

(g). Adequate documentation of revisions in the statistical publications and databases;

(h). Coordination of the revision policy with non-customs data providers, which might be the origin of large revisions;

(i). Establishment of a vintage database to measure the size of revisions and generate quality indicators.

26.16.   Country experiences in setting up and implementing a good revision policy are described in box XXVI.3 and in box XXVI.4.

Box XXVI.3

Revision policy of the Philippines

The figures for the previous month are revised to include documents that were submitted late and were not included before the cut-off date, i.e., for exports 10 days after the reference month and for imports 25 days after the reference month. The revised monthly figures are reflected in the next month's press release.

Processing, cleaning, and updating of data files to produce final tabulations are carried out for exports 5 to 7 days after the press release date, and for imports 5 to 10 days after the press release date.

Revisions are also due to:

(a.)   Consistency between FOB values and volume, both in gross weight in kilos and quantity.

(b.)   Validation of values to ensure credibility and accuracy of the final figures.

(c.)   Adjustments due to scope and coverage.

Box XXVI.4

Revision policy of Canada

In general, merchandise trade data are revised on an ongoing basis for each month of the current year. Current-year revisions are reflected in both the customs- and BOP-based data. The previous year's customs data are revised with the release of the data for the January and February reference months as well as on a quarterly basis. The previous two years of customs-based data are revised annually and released in February with the data for the December reference month. The previous year's BOP-based data are revised with the release of the January, February and March reference months. Revisions to BOP-based data for the previous three years are released annually in June with the data for the April reference month. Factors influencing revisions include late receipt of import and export documentation, incorrect information on customs forms, replacement of estimates produced for the energy sector with actual figures, changes in classification of merchandise based on more current information, and changes to seasonal adjustment factors.

6.   Users

26.17.   *Diversity of user groups and needs.* A key to the usefulness of trade statistics is its broad dissemination. Trade statistics are compiled to serve the needs of many users, including Governments, the business community, the mass media, non-governmental organizations (NGOs), compilers of other economic statistics such as balance of payments and national accounts, various regional, supranational and international organizations, researchers and the public at large. The uses of trade data are numerous and range from the development of national, regional and international trade and general economic policies to market analysis, determination of the economic characteristics of traders, infrastructure planning and provision of input into the system of national accounts and balance-of-payments statistics.

26.18.   *Equal treatment of users.* IMTS 2010 (para. 10.13) recommends that all users be treated equally and that data be disseminated without preference to any national or international user group. To ensure that such treatment is upheld, it is good practice to make all kinds of trade data available to all users at the same predetermined time.

26.19.   *Monitoring of data needs of users.* It is good practice to systematically monitor changing user needs in order to ensure the relevance of the compiled data and their adequate dissemination. Such monitoring, as well as subsequent actions taken,

should be part of inter-agency cooperation efforts within the established institutional arrangements. It is good practice to establish close and long-term relationships with representatives of major user groups in order to identify user needs and the most effective means of disseminating data and metadata. This might be achieved through standing advisory committees as well as ad hoc promotional events. National and world statistics days can be celebrated in this connection.

26.20.   *Surveys of user satisfaction regarding data dissemination.* In order to ensure the most effective dissemination, it is good practice to conduct user satisfaction surveys. Such surveys might identify user groups that might need to be given more attention, owing to a lack of certain technical means of accessing data, or more detailed explanations with respect to using the data properly. A user satisfaction survey focus on the following aspects of data dissemination:

(a).   User-friendliness of the trade statistics database interface;

(b).   Clarity and completeness of available metadata;

(c).   Desirability of continued issuance of traditional paper publications;

(d).   Means of improving data and metadata presentation.

26.21.   *Outreach activities.* It is good practice to conduct regular outreach activities aimed at helping users to better understand data and put them to the most effective use, including efforts to improve the statistical literacy of users and to prevent misinterpretation, for example, within the context of a broad public relations strategy designed to deepen the general public's understanding of the importance of statistics. The following outreach activities can be encouraged: conduct of seminars focused on specific user groups; provision of tutorials and user guides explaining how to find data on the dissemination website; organization of press conferences and including contact information in press releases to assist users in the correct interpretation of the statistics; enabling user groups to participate in annual conferences, book fairs and other suitable events; and launching of awareness campaigns, e.g., a "national statistics day/week/ month".

26.22.   *User support to ensure correct interpretation of data.* While statistics can be used acceptably and interpreted in many different ways, it is important to maintain trust in, and the credibility of, official trade statistics. Hence, it is good practice for the responsible statistical agency to prevent obviously erroneous interpretation of the data, and to undertake the necessary corrective actions if such faulty interpretations are detected (for instance, by conducting press conferences, providing press releases and writing letters to the editors of publications where misinterpretations have been detected). One good practice for preventing misinterpretation of data is to give special attention to establishing direct contacts with other government agencies, international organizations and universities, as these are users of foreign trade statistics whose analyses have a major impact on public policy and public opinion.

7.   Formats and means of dissemination

26.23.   *Use of different means of dissemination.* Both data and metadata can be disseminated in various formats and by various means. IMTS 2010 (para. 10.13) recommends that countries choose the dissemination format and means of dissemination that best suits their users' needs. In view of the diversity of user groups it is good practice to adopt several formats and means of dissemination to ensure that data and metadata are effectively delivered. For example, press releases of international merchandise trade statistics aimed at the general public have to be disseminated in ways that facilitate re-dissemination by mass media, while more comprehensive or

detailed statistics intended for researchers need to be disseminated through online databases, with hard-copy publications used as reference material.

26.24.   *Redesigning paper publications.* It is good practice to periodically redesign paper publications in order to make use of innovative means of data and metadata presentation and better reflect user demands. In this connection, countries are advised that it is no longer necessary to issue paper publications in an old fashioned way containing a set of tables or providing very detailed data on trade in respect of particular commodity groups and partners. A better practice is to focus such publications on the main features of a country's external trade, and present data in a more user-friendly way by resorting to enhanced visual elements, such as color charts and by adding more analytical information.

26.25.   *Central role of electronic databases.* IMTS 2010 (para. 10.13) recommends that the official country trade statistics be made available to users through the electronic databases maintained by the responsible agency (see box XXVI.5 for the experience of Brazil). It is good practice to ensure that such databases:

(a). Allow free and equal access to all users to any data record considered part of official trade statistics;

(b). Contain an extensive metadata and knowledge base;

(c). Allow users to query the entire database through a user-friendly interface, and to download query results in the commonly used electronic data formats (*such as comma-delimited text files*), thereby reducing the need for personalized handling of most data requests and greatly enhancing the efficiency of data dissemination;

Box XXVI.5

The central role of electronic databases for data dissemination: the case of Brazil

The System of Analysis of Foreign Trade Information, AliceWeb2,[a] is the most important means of disseminating Brazil's foreign trade statistics. It was released in 2001 with the aim of modernizing the means of access to and the systematic dissemination of statistical data on Brazil's exports and imports. In August 2011, the Secretariat of Foreign Trade in the Ministry of Development, Industry and Foreign Trade (MDIC/SECEX) updated the system, incorporating advances in information technology and the experience gained in the 10 years following its launch, and also adding additional variables and periods. Access is free after registration. There are currently over 200,000 registered users from 144 countries. The system is available in English, Portuguese and Spanish.

a. See http://aliceweb2.mdic.gov.br

AliceWeb2 disseminates detailed information on Brazil's international merchandise trade up to the eight-digit level of the Mercosur Common Nomenclature (NCM) by partner country and economic bloc, by State and municipality, port of loading and unloading, and mode of transport. It provides the trade balance by any of the variables on a monthly basis, and according to the desired periods. The system also enables the generation of files for download in Excel and ASCII format (txt structured) and allows automatic transmission to an email account. The data, which are updated monthly, are obtained from the Integrated Foreign Trade System (SISCOMEX), which manages Brazil's foreign trade. Data are available as of January 1989 (there are about three terabytes of data), either by month or accumulated.

Trade information is expressed in United States dollars in terms of FOB (free on board) and net kilogram. When the search includes a commodity, quantity and average prices are also provided. The following information is available, both for exports and for imports:
*   Goods at all levels of the Harmonized System (two-, four-, six- or eight-digit level of the NCM)
*   Countries of destination or origin
*   Economic blocks of destination or origin
*   Producing and exporting state (for exports) and importing state (for imports)

- Municipalities exporters and importers
- Ports of loading and unloading
- Mode of transport

Others system features are:

- Auto-fill function in the search for commodity codes
- Up to six concurrent periods of monthly and/or accumulated data
- Basket products: selection of several NCM, simultaneously
- General total: monthly series of one or more variables combined
- Trade Balance: monthly export and import trade by variable
- Auxiliary tables: all codes/names of the variables used in the system

Further information is available by contacting aliceweb@mdic.gov.br.

26.26.   *Use of social media.* It is also good practice to use social media as an additional tool with which to reach trade statistics users, in particular journalists.

26.27.   *Special data requests.* Regular data dissemination should satisfy most, if not all, user needs. However, some users might have special needs which would require highly complex data extraction, which they themselves might not be able to perform. It is a good practice to offer such users premium data extraction services on a fee basis. Countries should ensure that users are made fully aware of all available options for obtaining the required data.

8.   Dissemination of metadata and information on data quality

26.28.   *Metadata requirements.* The provision of adequate metadata and quality reports on international merchandise trade statistics are as important as the provision of the statistical data itself. IMTS 2010 (para. 9.22-9.25) takes into account a broad spectrum of metadata requirements and recognizes that different levels of detail of metadata can be considered by countries for dissemination. In this context, IMTS 2010 (para. 9.22) recommends as a minimum the segmentation of metadata into two levels (reference and structural metadata) and developing appropriate means of their dissemination. It should be recalled that reference metadata are intended for the detailed description of the scope, coverage and quality of data and can be presented separately from data, while structural metadata items are an integral part of the statistics database and should be extractable together with any given data item (see chap. XXV).

26.29.   *Providing reference and structural metadata.* It is good practice to make reference metadata available to users in a separate document posted on the website of the responsible agency and linked to the data query window, so that users can be immediately informed about the existence and importance of such metadata. Reference metadata can be made available in a separate paper publication as well and used in various outreach activities. It is important that reference metadata be compiled following the recommendations contained in IMTS 2010 (para. 9.23). With respect to structural metadata, it is good practice for data query options to include all relevant metadata variables and for those variables to be extracted by default unless explicitly "unclicked" by the user (e.g., quantity data should be extracted together with the respective quantity unit).

26.30.   *Raising awareness.* Users often do not notice or use the available metadata and additional efforts are required to raise their awareness. It is good practice to include explanations of the importance of metadata for the correct interpretation of data and

of the effective use of the data in all relevant outreach activities. Even if metadata goes unused, the very fact that they are compiled and made available is reassuring to those who wish to see high standards of credibility upheld.

26.31.   *Dissemination of trade data to international, supranational and regional organizations.* IMTS 2010 (para. 10.15) encourages countries to cooperate with the international, supranational and regional organizations in identifying and applying the most efficient means of dissemination of their trade statistics and related metadata. It is good practice in this regard to review the Statistical Data and Metadata Exchange (SDMX)[258] format for possible use in the exchange and sharing of their data.[259]

C.   Combined presentation of statistics on external trade in goods and services

26.32.   *Need for appropriate metadata and guidance for interpreting combined trade data.* Users expect that trade statistics will cover trade in both goods and services and be presented to them as a coherent data set. To meet this user expectation, it is good practice for IMTS compilers, in addition to making the IMTS data available in their own right, to closely cooperate with compilers of international trade in services in order to develop a policy of presenting (some) data on merchandise trade and trade in services alongside each other. This combined presentation should be accompanied with appropriate explanations regarding the scope and conceptual overlaps of the data and include a numerical assessments of such overlaps. It is good practice to provide guidance, including examples, on how data can (and cannot) be used.

26.33.   *Trade data and BOP data.* Trade data on a BOP basis is important for the presentation of an overall picture of trade flows, as it shows data on the trade in goods and data on the trade in services on the same conceptual basis. However, such data do not provide the level of detail needed for an in-depth analysis of international trade, as it is lacking, for example, partner and product breakdown.

258. The SDMX technical standards and content-oriented guidelines can provide common formats and nomenclatures for exchange and sharing of statistical data and metadata using modern technology. The dissemination of national data and metadata using web technology and SDMX standards is encouraged as a means to reduce the international reporting burden and to increase the efficiency of the international data exchange. For additional information on SDMX, see http://www.sdmx.org/.

259. See the recommendations contained in decision 39/112, adopted by the United Nations Statistical Commission at its thirty-ninth session (Official Records of the Economic and Social Council, 2008, Supplement No. 4 (E/2008/34),chap. I.B.

Chapter XXVII

Other international classifications relevant to trade statistics

27.1.   *Introduction.* The present chapter describes the Standard International Trade Classification (SITC),[260] the Central Product Classification (CPC)[261], the Classification by Broad Economic Categories (BEC)[262] and the International Standard Industrial Classification of All Economic Activities (ISIC).[263] It is based on IMTS 2010, chapter III, on classifications. In contrast with the Harmonized System (see chap. XIII), SITC, CPC and BEC provide alternative groupings of goods which are important for various analytical purposes and are used in trade data dissemination (see chap. XXVI). ISIC classifies the productive economic activities and is increasingly used in trade data compilation (see chap. IV) and dissemination (see chap. XI).

A.   Standard International Trade Classification, Revision 4

27.2.   *Use of SITC for dissemination and analysis.* The history of SITC is described in IMTS 2010 and is not reproduced here. It should be recalled, however, that in 1999, the Statistical Commission, at its thirtieth session, recognized that there would be a continuing need by users for international trade statistics analysed according to SITC,[264] and IMTS 2010 (para. 3.19) recommended that, in addition to HS, countries use SITC for the dissemination and the analysis of trade statistics according to user requirements. The majority of countries and international organizations continue to use SITC for various purposes, such as market research and study of long-term trends in international merchandise trade.

27.3.   *Classification criteria underlying the structure of SITC.* While the fourth revision of SITC (SITC, Rev.4) is based on the HS07 classification, it retains the classification scheme of SITC, Rev.3, and classifies goods based on the following considerations:

(a).   Nature of the merchandise and the materials used in its production;

(b).   Processing stage;

(c).   Market practices and the uses of the product;

(d).   Importance of the commodity in terms of world trade;

(e).   Technological changes.

27.4.   *Development of SITC, Rev.4. SITC, Rev.4, which was prepared by the United Nations Statistics Division in cooperation with a number of interested international organizations, was issued in 2006.* The scope of SITC, Rev.4, remains the same as that of SITC, Rev.3, that is, SITC, Rev.4, covers all goods classifiable by HS except for monetary gold, gold coin and current coin. All SITC, Rev.4 basic headings (except for 911.0 and 931.0) are defined in terms of HS07 subheadings. Since SITC is now recommended only for analytical purposes, there was no need, except in several special cases, to create new basic headings in SITC, Rev.4, that would be in one-to-one correspondence with the new HS07 subheadings.

27.5.   *SITC, Rev.4, retains the overall structure of SITC, Rev.3, and consists of the same number of one-digit sections, two-digit divisions and three-digit groups.* The changes made

260. The fourth revision of SITC was issued in 2006 and contains a description of its origin and development. See Standard International Trade Classification, Revision 4, Statistical Papers, Series M, No. 34/Rev.4 (United Nations publication, Sales No. E.06. XVII.10).

261. The latest version of CPC is available from http://unstats. un.org/unsd/cr/registry/cpc-2. asp.

262. The fourth revision of BEC was issued in 2003. See Classification by Broad Economic Categories, Statistical Papers, Series M, No. 53, Rev.4 (United Nations publication, Sales No. E.03. XVII.8).

263. The fourth revision of ISIC was issued in 2008. See International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4, Statistical Papers, Series M, No. 4, Rev. 4 (United Nations publication, Sales No. E.08. XVII.25).

264. See Official Records of the Economic and Social Council, 1999, Supplement No. 4 (E/1999/24), Chapter II, para. 24 (c).

were at the level of basic headings and some subgroups. The classification contains 3,993 basic headings and subheadings, which are assembled in 262 groups, 67 divisions and 10 sections. The SITC sections are as follows:

0	Food and live animals
1	Beverages and tobacco
2	Crude materials, inedible, except fuels
3	Mineral fuels, lubricants and related materials
4	Animal and vegetable oils, fats and waxes
5	Chemicals and related products, not elsewhere specified
6	Manufactured goods classified chiefly by material
7	Machinery and transport equipment
8	Miscellaneous manufactured articles
9	Commodities and transactions not classified elsewhere in SITC

27.6.   The coverage of the individual sections in all revisions of SITC is very similar, so that historical series of data are largely comparable at this level of aggregation. The historical comparability is also preserved for numerous series at the more detailed levels of the classification.

27.7.   *National practices in use of SITC.* According to a survey conducted by UNSD in 2006, SITC remains an important analytical and dissemination tool for most countries, especially developed ones (82 per cent of developed countries and 56 per cent of developing countries use it). Many developing countries prefer to use the HS for dissemination, as this reduces their data-processing and data dissemination burden. However, the dissemination of trade data in terms of SITC by all countries is seen as a good practice, which provides both national and international users with data of high analytical value. The conversion of the data compiled in terms of HS into SITC commodity groupings requires minimal resources if it is conducted electronically using appropriate conversion tables. Currently, UNSD converts all HS data into SITC data and may assist interested developing countries in setting up the conversion procedures.

27.8.   *International practices in use of SITC.* SITC is widely used in international databases, and trade data expressed in terms of SITC are in great demand by research institutions, as the SITC commodity aggregates are more suitable for analytical purposes and their time series are available starting from the 1950s. The UN Comtrade database stores SITC time series starting from 1962, and major international organizations like the World Trade Organization (WTO), the United Nations Conference on Trade and Development (UNCTAD) and the World Bank publish SITC trade data and use them for analytical purposes. For example, UNCTAD has defined product groups based on SITC, Rev.3, for research and analysis purposes (see box. XXVII.1).

a.   See http://unctadstat. unctad.org/ UnctadStatMetadata/ Classifications/ Methodology& Classifications.html

Box XXVII.1

UNCTAD product groups based on SITC, Rev.3[a]

In macroeconomic research and analysis, SITC is further aggregated into two broad commodity groups: primary commodities, precious stones and non-monetary gold; and manufactured goods. This is done to monitor the economic development of a country which normally starts by exporting mainly primary commodities, then moves up into commodities with higher value added (manufactured goods). However, for some countries with a high proportion of fuels exports in their total trade, it is necessary to exclude fuels in the analysis, in order to better monitor real economic development. In addition to those two broad groups, more detailed groups are created owing to special analytical interests, such as iron and steel (as an indication of construction activities), agricultural raw materials (normally used as intermediate inputs in various industries) and textile fibres, yarn, fabrics and clothing (important

manufactured goods exported by developing economies). Other groups that do not fit within the main structure are attached as memorandum items.

– Total all products
– – All allocated products (SITC 0 to 8 + 961 + 971)
– – – Primary commodities, precious stones and non-monetary gold (SITC 0 + 1 + 2 + 3 + 4 + 68 + 667+ 971)
– – – – Primary commodities (SITC 0 + 1 + 2 + 3 + 4 + 68)
– – – – – Primary commodities, excluding fuels (SITC 0 + 1 + 2 + 4 + 68)
– – – – – – All food items (SITC 0 + 1 + 22 + 4)
– – – – – – – Food, basic (SITC 0 + 22 + 4)
– – – – – – – – Food, basic excluding tea, coffee, cocoa and spices (SITC 0 + 22 + 4 less 07)
– – – – – – – Beverages and tobacco (SITC 1)
– – – – – – Agricultural raw materials (SITC 2 less 22, 27 and 28)
– – – – – – Ores and metals (SITC 27 + 28 + 68)
– – – – – – – Non–ferrous metals (SITC 68)
– – – – – – – Other ores and metals (SITC 27 + 28)
– – – – – Fuels (SITC 3)
– – – – Pearls, precious stones and non-monetary gold (SITC 667 + 971)
– – – Manufactured goods (SITC 5 to 8 less 667 and 68)
– – – – Chemical products (SITC 5)
– – – – Machinery and transport equipment (SITC 7)
– – – – Other manufactured goods (SITC 6 + 8 less 667 and 68)
– – – – – Iron and steel (SITC 67)
– – – – – Textile fibres, yarn, fabrics and clothing (SITC 26 + 65 + 84)
– – Unallocated (SITC 911 + 931)
– Memo: Primary commodities, precious stones and non-monetary gold, excluding fuels (SITC 0 + 1 + 2 + 4 + 68 + 667+ 971)
– Memo: Ores, metals, precious stones and non-monetary gold (SITC 27 + 28 + 68 + 667 + 971)

B.   Central Product Classification

27.9.   *History of the Central Product Classification.* The Central Product Classification (CPC) originated from initiatives in the early 1970s to harmonize international classifications. The new classification was intended to cover both goods and services (products) and would use the subheadings of the Harmonized System as building blocks for the part dealing with transportable goods.

27.10.   The final draft of CPC, called the provisional Central Product Classification, was approved by the Statistical Commission and recommended for use by member States at its twenty-fifth session in February 1989.[265] The Provisional Central Product Classification[266] was published in 1991. Since then, there have been several revisions of CPC and in 2008 CPC, Version 2.0, was completed. The Statistical Commission had adopted its structure at its thirty-seventh session in March 2006.[267] This version of CPC is divided into 10 sections, 71 divisions, 324 groups, 1,267 classes and 2,738 subclasses. Sections 0 to 4 are based on HS07,[268] and aggregate the HS codes into product categories suitable for various types of economic analysis within the national accounts framework. Sections 0-4 of the Classification, like SITC, provides for the rearrangement of HS-based international merchandise trade statistics for analytical purposes. Sections 5 to 9 of CPC, Version 2.0, go beyond the HS categories to provide a classification of service products.

27.11.   National practices in use of CPC. Only a minority of countries currently publish trade data in terms of CPC (11 per cent of developed and 8 per cent of developing countries). However, more countries are able to make such data available electronically. As in the case of SITC, the expression of trade data in terms of CPC does

265. See Official Records of the Economic and Social Council, 1989, Supplement No. 3 (E/1989/21), chap. V, para. 95 (b) and (f).

266. Provisional Central Product Classification, Statistical Papers Series M, No. 77 (United Nations publication, Sales No. E.91.XVII.7).

267. Official Records of the Economic and Social Council. Supplement No. 4 (E/2006/24), chap. I, sect. C, decision 37/105.

268. The correspondences between HS07 and CPC, Version 2.0 can be accessed at the United Nations Statistics Division website at http://unstats.un.org/unsd/class.

not require significant resources and can be effected using appropriate conversion tables. It is advised that the country's agency responsible for the dissemination of trade statistics make efforts to provide users with the data expressed in terms of CPC. Such data will significantly facilitate the use of trade statistics in economic analysis, including in the assessment of the impact of external trade on the consumption and production patterns in a country and in the compilation of a country's national accounts.

27.12.   *International practices in the use of CPC*. The analytical value of CPC is being recognized more and more by international organizations. For example, the statistical Classification of Products by Activity (CPA) was created at the level of the European Union (EU) by assigning CPC products to one single activity category. CPA is a product classification whose elements are related to activities as defined by NACE, Rev. 2. Each product - be it a transportable or non-transportable good or a service - is assigned to one single NACE, Rev. 2, activity. The linkage to activities as defined by NACE, Rev. 2, gives the CPA a structure parallel to that of NACE Rev. 2 at all levels distinguished by NACE Rev. 2. However, the detailed linkage between products and activities could be established only to a certain degree. There are nevertheless cases where products can be assigned to activities only at a higher level than the class level or even where a class in CPA 2008 has no activity counterpart in NACE Rev. 2,[269]

C.   Classification by Broad Economic Categories

27.13.   *History of the Classification by Broad Economic Categories*. The original version of the Classification by Broad Economic Categories (BEC)[270] was devised mainly to summarize data on international trade by large economic classes of commodities and as a means for converting trade data compiled in terms of SITC into meaningful end-use categories within the framework of the System of National Accounts (SNA)[273], namely, capital goods, intermediate goods and consumption goods.[272] The BEC classification has 19 basic categories that can be aggregated to approximate these three basic classes of goods, thus permitting trade statistics to be considered jointly with other sets of general economic statistics, - such as national accounts and industrial statistics, - for national, regional or global economic analyses.

27.14.   BEC contains 7 sections, which are broken down, as applicable, by other criteria, such as primary and processed goods, durable, semi-durable, and non-durable goods, etc., namely:

1.   Food and beverages
2.   Industrial supplies not elsewhere specified
3.   Fuels and lubricants
4.   Capital goods (except transport equipment), and parts and accessories thereof
5.   Transport equipment, and parts and accessories thereof
6.   Consumer goods not elsewhere specified
7.   Goods not elsewhere specified

27.15.   The Statistical Commission expected BEC to serve as a guideline for the development of national classifications of imports according to broad economic categories.[273] However, at its sixteenth session (5-15 October 1970), the Statistical Commission recognized that countries might wish to adapt the Classification for national purposes in different ways so as to meet national requirements, and concluded that, consequently, the classification was not to be regarded as a "standard" classification in the same sense as, for example, SITC.[274]

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269. A detailed description of CPA is available from http://epp.eurostat.ec.europa.eu/portal/page/portal/cpa_2008/documentsCPA2008introductoryguidelinesEN.pdf.

270. United Nations publication, Sales No. E.71.XVII.12.

271. See Official Records of the Economic and Social Council, Forty-fourth Session, Supplement No. 10 (E/4471), paras. 116 and 118.

272. See United Nations, A System of National Accounts, Studies in Methods, Series F, No.2, Rev.3 (United Nations publication, Sales No. E.69. XVII.3 and corrigendum), para. 1.50.

273. See Official Records of the Economic and Social Council, Forty-fourth Session, Supplement No. 10 (E/4471), para. 123.

274. Ibid, Fiftieth Session, Supplement No. 2 (E/4938), para. 95.

27.16.   *Revisions of BEC*. The original BEC was defined in terms of the divisions, groups, subgroups and basic headings of the Standard International Trade Classification, Revised.[275] Over the years several correlation tables between BEC and various revised versions of SITC and the HS were prepared by the United Nations Statistics Division and made available publicly.[276] However, the original structure of BEC has remained unchanged.

27.17.   *National practices in use of BEC*. The United Nations survey of country practices confirmed that BEC is recognized as an important analytical tool and many countries (41 per cent of developed countries and 46 per cent of developing countries) publish trade data in terms of BEC. Many more can make such data available electronically upon request. This is a good practice and should be encouraged. A number of countries use BEC in their compilation of national accounts and for other purposes. There is a significant interest in trade data expressed in terms of BEC among research institutions. In this connection, it should be noted that it is good practice for each country to prepare its own customized conversion table between HS and BEC, as the main use of certain products may differ from country to country.

27.18.   *International practices in use of BEC*. The usefulness of BEC is recognized by UNSD, which converts trade data reported by countries in terms of HS to BEC categories and makes such data available through UN Comtrade. Eurostat also disseminates data according to BEC, and other international organizations make use as well of BEC in their analytical publications.

D.   International Standard Industrial Classification of All Economic Activities (ISIC)

27.19.   *Purposes of ISIC*. Unlike HS, SITC, BEC and CPC, which are product classifications, ISIC is the international reference classification of productive activities. Its main purpose is to provide a set of activity categories that can be utilized for the collection and reporting of statistics according to such activities.

27.20.   *Uses of ISIC*. Since the adoption of the original version of ISIC in 1948,[277] ISIC has provided guidance to countries in developing national activity classifications and has become an important tool for comparing statistical data on economic activities at the international level. Wide use has been made of ISIC, both nationally and internationally, in classifying data according to kind of economic activity in the fields of economic and social statistics, including, inter alia, statistics on national accounts, demography of enterprises and employment.

27.21.   *Revision of ISIC*. The original ISIC was revised four times. The third[278] and fourth revisions of ISIC put increased emphasis on harmonization with other activity classifications and product classifications, adding considerable complexity and constraints that had not applied in earlier revisions of ISIC. As ISIC occupies a central position in the international comparison and analysis of a wide range of statistics, a great deal of attention was devoted to ensuring that ISIC would be compatible with the economic structure, the statistical practice and the needs of the different countries (or areas) of the world.

27.22.   *Use of ISIC in economic statistics.* This classification is applied to classify statistical units, such as establishments or enterprises, according to the principle economic activity in which they engage. At each level of ISIC, each statistical unit is assigned to one and only one ISIC code. The set of statistical units that are classified into the same ISIC category is then often referred to as an industry, such as the "furniture

275. Statistical Papers, Series M, No. 34, 1961 (United Nations publication, Sales No. 61.XVII.6).

276. See http://unstats.un.org/unsd/cr/registry/regot.asp.

277. Statistical Papers, No. 4, Lake Success, New York, 31 October 1949.

278. Inaternational Standard Industrial Classification of All Economic Activities, Statistical Papers, Series M, No.4, Rev.3 (United Nations Publication, Sales No. E.90.XVII.1).

industry", which would refer to all units classified in ISIC division 31 (Manufacture of furniture) and the "construction industry", which would refer to all units classified in ISIC section F (Construction). This standardized categorization makes ISIC an important tool for socioeconomic statistics which need to be arranged in accordance with the productive system of the economy.

27.23.   The principal activity of an economic entity is the activity that contributes most to the value added of the entity, as determined by the so-called top-down method. According to the top-down method, it is not necessary that the principal activity account for 50 per cent or more of the total value added of an entity or even that its generated value added exceed that of all other activities carried out by the unit, although in practice it will do so in the majority of cases[279].

27.24.   Wide use has been made of ISIC both nationally and internationally in classifying data according to kind of economic activity. An increasing number of countries have adapted their national activity classifications to the ISIC structure or can provide their data according to ISIC.

27.25.   *The fourth revision of ISIC*. The Statistical Commission, at its thirty-seventh session, in March 2006, adopted the structure of the current fourth revision of ISIC and recommended that it be recognized as the international standard for economic activity.[280] It contains 21 sections, 88 divisions, 238 groups and 419 classes. The ISIC sections are listed below:

A.   Agriculture, forestry and fishing
B.   Mining and quarrying
C.   Manufacturing
D.   Electricity, gas, steam and air conditioning supply
E.   Water supply; sewerage, waste management and remediation activities
F.   Construction
G.   Wholesale and retail trade; repair of motor vehicles and motorcycles
H.   Transportation and storage
I.   Accommodation and food service activities
J.   Information and communication
K.   Financial and insurance activities
L.   Real estate activities
M.   Professional, scientific and technical activities
N.   Administrative and support service activities
O.   Public administration and defence; compulsory social security
P.   Education
Q.   Human health and social work activities
R.   Arts, entertainment and recreation
S.   Other service activities
T.   Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use
U.   Activities of extraterritorial organizations and bodies

27.26.   It should be noted that ISIC, Rev.4, is the outcome of a review process that spanned several years and involved contributions from many classifications experts and users around the world. This process resulted in an ISIC structure that is more detailed than that of the previous version, in response to the need to identify many new industries separately. This is especially applicable in the case of services. Comparability has also been enhanced with a number of other regional activity classifications, making this version of ISIC a much-improved tool for international data comparison. A number of alternate aggregations have been included in ISIC, Rev.4. They provide analytical tools

279. The top-down method follows a hierarchical principle: the classification of a unit at the lowest level of the classification must be consistent with the classification of the unit at the higher levels. To satisfy this condition the process starts with the identification of the relevant category at the highest level and progresses down through the levels of the classification. For details, see International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 4, Statistical Papers, Series M, No. 4, Rev. 4 (United Nations publication, Sales No. E.08. XVII.25).

280. See Official Records of the Economic and Social Council, 2006, Supplement No.4 (E/2006/24), chap. I, sect. C; decision 37/105, para. (a).

for use in areas that, for conceptual reasons, do not lend themselves to aggregation within the existing ISIC structure.

27.27.   *Uses of ISIC in trade statistics.* Since ISIC has been used for the collection and presentation of statistics in many areas, there has been a strong need for correspondence tables between ISIC and other classifications. When drafting ISIC, Rev.4, and simultaneously CPC, Ver.2, a strong link was established between the two classifications. By rearranging the CPC categories according to their industrial origin and using the link between CPC, SITC and HS, a detailed correspondence table between the HS, SITC, CPC and ISIC was established.[281] Countries may find this correspondence useful when rearranging the trade data compiled in terms of HS by activity categories.

27.28.   The results of the United Nations survey of country practices show that a significant proportion of countries publish trade data in terms of ISIC (15 per cent of developed countries and 24 per cent of developing countries). Usually, such data are obtained by the expression of HS data in terms of ISIC using a conversion table. While such a practice may yield an acceptable approximation of commodity exports generated by different economic activities (industries), the assignment of commodity imports to specific economic activities (industries) is in general more difficult. In general, the results of allocation of trade flows that were originally compiled by the HS classification to ISIC categories of economic activity using conversion tables may be misleading, as there is no one-to-one correspondence between products and activities. In this context, IMTS 2010 (para 3.29) gives preference to the approach in which countries obtain the additional information needed to identify the main economic activity of traders—for instance, by linking customs records with information in the business registers (see chap. XI)—and perform the appropriate aggregations on the original data at the microlevel. For details on the use of ISIC in trade data collection through enterprise surveys, see chapter IV.

E.   Correspondence and conversion tables and their use

27.29.   *Correspondence tables.* The correspondence tables (also known as correlation tables) define the scope of headings of one classification in terms of the scope of headings of another classification. There can be a strict one-to-one correspondence between headings, when the scope of a heading of one classification is equal to the scope of a heading of another classification, or various kinds of split correspondence. A split correspondence exists when the scope of a heading of one classification partially overlaps with the scope of several headings of another classification. Whenever successive versions of the same classification are produced, a correspondence table between the headings of the revised and original versions is issued. A reverse table, showing the correspondence between headings of the original and revised versions, is also frequently produced.

27.30.   *Conversion tables.* The correspondence tables allow a continuous time series to be maintained when various versions of a given classification are used data are to be expressed in terms of another classification. However, if the scope of a heading of one classification partially overlaps with the scope of several headings of another, an exact correspondence becomes impossible and there is a discontinuity in some data series. For data-processing purposes it is frequently desirable to substitute an approximate, but one-to-one correspondence for a split correspondence. When this is done, the resulting table is called a conversion table. It should be noted that if there are no split correspondences, the data conversion can be carried out using the correspondence table. Examples of such a straightforward conversion are the conversion of HS88 data into SITC, Rev.3, data and the conversion of HS07 data into

281. These and other correspondence tables are available in electronic format only and can be accessed at the United Nations Statistics Division website (at http://unstats.un.org/unsd/class).

SITC, Rev.4, data, as those SITC versions used the respective HS version's subheadings as building blocks. In contrast, the conversion of HS88 and HS96 data into SITC, Rev.4, data would require approximations, as there exist a number of split correspondences between those versions of HS and SITC, Rev.4.

27.31.   The use of conversion tables containing such approximations is warranted if the scope of the headings involved is quite similar. However, differences in scope between certain basic headings may be so great, as to eliminate the possibility of a meaningful one-to-one correspondence at that level. In such a case, a correspondence can be established only between basic headings of one version and the higher-level headings of the other. The responsible agency should study which approach should be adopted in order to achieve a reasonable balance between the requirement of data series continuity and data comparability.

27.32.   *Uses of the correlations and conversions tables.* The main uses of correlation and conversion tables in trade statistics include:

(a). Maintenance of comparable data series when the classification used in compilation is revised;

(b). Reconciliation of data obtained from various sources (*and expressed in different classifications*);

(c). Recompilation of trade data for another purpose (*e.g., to analyse trade in terms of broad categories of goods or by various economic activities*).

27.33.   *Informing users.* To make users aware of the methodology adopted for data conversion, it is good practice to ensure that all correlation and conversion tables are documented and made publicly available as part of the metadata. It is advised that the agency responsible alerts users regarding the data conversions that might diminish data comparability, so they can make their own assessment of whether such data are suitable for their purposes.

27.34.   *Correlation tables provided by the World Customs Organization (WCO).* WCO produced the first version of the HS in 1988 (HS88). In 1986, it had issued a publication entitled "Correlation Tables between the Harmonized System and the 1978 version of the CCCN", to link HS with the Customs Cooperation Council Nomenclature (CCCN).[282] This was a two-way correlation, that is, from HS to CCCN, and from CCCN to HS. When HS is revised, the WCO issues correlation tables between the new and preceding versions of HS and makes them publicly available.[283]

27.35.   *Correlation and conversion tables available from UNSD.* UNSD has created correlation and conversion tables between various versions of the HS, SITC and BEC, so that it could maintain its time-series data on trade.[284] UNSD also maintains correlations and conversions between HS, CPC and ISIC.[285] If compilers need to convert their data from one classification to another, it is good practice for them to take into considerations correlation and conversion tables available from international and/or regional organizations.

27.36.   *Correspondence tables with non-HS national commodity classifications.* If a country compiles data in terms of a non-HS classification (provided that said classification is highly detailed, with criteria similar to the ones applied in HS), compilers are advised to develop a correspondence table between the non-HS classification and HS, and to make it available to interested users.

282. This text was initially known as the Brussels (Tariff) Nomenclature (BTN), but in 1976 it was renamed the Customs Co-operation Council Nomenclature (CCCN), to prevent any confusion regarding the international organization responsible.

283. See http://www.wcoomd.org/en/topics/nomenclature/instrument-and-tools.aspx.

284. UNSD converts data based on the most detailed level of the applicable classifications.

285. See http://unstats.un.org/unsd/cr/registry/regot.asp.

PART SIX.

External trade indices and seasonally adjusted data

Chapter XXVIII
External trade indices

28.1.   *Introduction.* The present chapter aims at providing guidance on the compilation of unit value and price indices of external trade, which are briefly discussed in IMTS 2010, chapter XI. It provides information on assessing the main advantages and disadvantages of the various approaches to their compilation, as well as their potential complementarities, both from the conceptual point of view and in terms of their practical implementation.

A.   General overview

28.2.   *Need for external trade indices.* Many users need more information than trade values by country or by commodity: they require information on prices and volumes as well. Information on the development of prices and volumes is generally presented in the form of indices. In IMTS 2010 (para. 11.1), it is recommended that all countries produce and publish, on a monthly, quarterly and annual basis, both volume (quantum) indices and either price or unit-value indices (UVIs) for their total imports and exports. Countries are also encouraged to calculate and publish such indices for commodity groups of particular importance to countries at least quarterly and annually.

28.3.   *Some important uses of external trade indices.* External trade indices are in general used to eliminate the effects of price changes and obtain trade volume estimates. National accounts require a decomposition of measures of value into price and quantity for the calculation of its real flows. Government departments and international agencies use price indices to define, evaluate and resolve trade policy issues. They constitute a key tool for tariff and quota negotiations, as they provide an indication of the inflation of imports and exports as well as the international competitiveness of various industries and sectors. Moreover, business analysts and economists use international trade indices for analysis and research in respect of such questions as the causes of the real-economy effects that price changes have on trade.

28.4.   *Levels of aggregation.* The level of detail required in the index numbers of imports and exports is not necessarily the same for all the purposes for which they are used, and national statistical offices need to strike a balance among the various demands of different types of users. For some purposes, no detailed information on the price changes of individual commodities is required; for others, the usefulness of the price statistics depends entirely on the commodity breakdown that can be made available. For instance, while tariff-policy decision-making and the analysis of the effects of trade on employment and productivity by industry often require highly disaggregated prices, macroeconomic studies focused on a country's terms of trade and its balance of payments require aggregate measures of price and volume trends of exports and imports.

28.5.   *Macroeconomic uses.* From the perspective of national accounts, price and volume indices of external trade in goods play an essential role in the estimation of macroeconomic aggregates in constant prices. Exports and imports in supply and use tables (SUTs) at current prices are deflated by foreign trade price and/or unit value indices at the product level in the process of obtaining supply and use tables in

constant prices. Also, exports and imports in constant prices are a necessary input into general macroeconomic forecasting and model-building, as well as analyses of balance of payments.

28.6.   *Microeconomic uses.* Disaggregated measures of price change are especially relevant for uses that entail the transmission of inflation across national boundaries and within those boundaries, from one sector to another. Studies that serve tariff-policy discussions also require the availability of highly disaggregated prices to an extent that could go well beyond the most detailed level of a purely statistical commodity classification. Also, there is increasing interest in understanding the relative importance of price-based versus quality-based competition. The need for detailed answers to questions like these cannot be satisfied through utilization of traditional price and value indices at the macroeconomic level.

28.7.   *Divergent objectives of users of external trade indices.* Statistical agencies often face divergent demands for measures of price and volume changes in external trade, and it is not always clear how the different objectives of users should be ranked. In this complex situation, a statistical agency must choose among the various strategies open to it—strategies that have to do with both sources of data and methods of calculation. The choice of approach must also be pragmatic, taking into consideration resource constraints, data availability and the practical feasibility of the selected methodology. The objective is to produce, subject to the usual budgetary constraints, the "best" measures possible for changes in the prices and volume levels of both imports and exports, detailed, to the extent possible, by major commodity groups and partner countries.

B.   Data sources and measurement approaches

28.8.   *Price and unit-value indices.* There are three kinds of indices that can be produced to reflect prices for imports and exports: unit-value indices that are based primarily on customs documents, price indices that are based on survey data and "hybrid" indices that combine both customs records and survey data.[286] Although price indices are generally preferred on methodological ground, in practice, countries may not have the resources available to compile that information. Many countries compile only unit-value indices or survey-based price indices, while others use both approaches in a complementary manner.

28.9.   *Alternative data sources.* The main options available in terms of data sources are the use of customs records, the implementation of specific surveys of exporters and importers, and the taking advantage of other established domestic-price surveys. Additional alternatives include relying on other data providers such as commodity boards and associations of exporters and importers, and utilization of price indices of partner countries as proxy or supplementary indicators.

28.10.   *Advantages of data from customs records.* An important advantage of average unit values is that they effectively increase the number of price observations used to calculate the index, thereby reducing sample variance. Although the customs source often excludes transactions of very low value and/or volume, as well as special transactions (e.g., those that are kept confidential on the grounds of national security, etc.), they often provide an almost full coverage of the transactions on which the target population of a foreign trade index should be based on and are more frequently updated than most other data sources. Also, when the statistical agency has access to individual customs records, working with detailed data can support the compilation

286. For detailed information on external trade price indices and unit values, see Export and Import Price Index Manual: Theory and Practice (Washington, D.C., International Monetary Fund, 2009). Available from http://www.imf.org/external/np/sta/xipim/pdf/xipim.pdf.

of trade indicators at the microeconomic level for various analytic purposes, especially when linked to other statistical sources through business registers.

28.11. *Advantages of data from direct price surveys of imports and exports.* There are various advantages often associated with the use of survey data for the estimation of foreign trade indices. One such advantage is the improved possibility of controlling ex ante for potential biases and variability due to non-price factors, including changes both in the mix of products in the market basket and in the quality of the items being priced. Also, through direct surveying of exporting and importing firms, the risk of using erroneous data (e.g., due to misclassification) can be mitigated, granted that there are appropriate communication channels for providing guidelines and feedback to respondents. Moreover, depending on the details collected from survey respondents in terms of product specifications and attributes, survey data open the possibility of carrying out quality adjustments using, for instance, hedonic methods. Further potential advantages of price surveys include improved timeliness, as in some countries price data from surveys are available earlier than unit values from customs records, and improved coherence with other price indices (such as producer, construction, wholesale/retail and consumer price indices).

C.   Challenges in the application of various approaches

28.12. *Heterogeneous product categories in detailed customs records data.* The main drawback in the use of custom records is that product codes, even at the most disaggregated level for which "unit values" can be calculated, often refer to heterogeneous sets of goods, while extensive direct enquiries of firms aimed at controlling for important price determining characteristics in each individual transaction (e.g., terms of sale, timing of contract, and specific model attributes) are normally not feasible. This implies that an increase or decrease in unit values based on averaging values and quantities from customs records may be due to unidentifiable non-price effects which impair the measurement of pure price changes. This is especially the case for complex products like electronic appliances (computers, cellphones, audio-visual equipment), large industrial machinery, etc., which may have heterogeneous units of quantity and price-determining characteristics even at the most detailed level of the commodity classification. Also, data from customs records are usually unsuitable for capturing average price changes of products that experience substantial technological change.

28.13. *Errors in filling customs declarations.* International experience has shown that large differences between the highest and lowest prices (unit value range) for single commodity codes are often due to errors in filling out the customs declarations themselves. For instance, declarants may have difficulties in choosing the correct commodity code, filling in the correct partner country or reporting the correct unit of quantity. To some extent, this can explain the fact that the distributions of unit values are often skewed even at very fine levels of detail (say, the HS eight-digit level).[287]

28.14. *Simplification of customs declarations requirements.* The compilation of unit-value indices presupposes the existence of administrative and regulatory procedures whereby importers and exporters are required to provide enough details on their individual transactions through customs records or other specific surveys (e.g., the Intrastat system). However, as national authorities move towards simplification or even elimination of customs documents, the relevance of administrative records for statistical purposes may diminish in relative terms.

287. Note that large variance of unit values can imply erroneous declarations as well as heterogeneity in the commodity composition of individual HS codes.

28.15.   *Incomplete coverage and small sample sizes of price surveys.* Survey-based external trade indices require having an appropriate survey frame from which to select a sample of establishments for collection of information on a set of well-defined commodities whose overall price changes are representative of all transactions taking place. The survey frame should be representative of the target population, that is, of all entities engaged in imports and exports of goods. However, the fact that survey frames based on the statistical business registries normally identify only businesses that engage in regular export and import operations can be a source of concern in cases where a significant fraction of total trade is carried out by casual importers or exporters. Also, sample surveys are usually expensive, and consequently sample size is often limited by budget constraints and also the burden on respondents. Having a small sample size may in turn lead to biased estimates and imputations if not adequately controlled within a well-structured and coherent statistical design. Achieving such control is a difficult task in itself.

28.16.   *Trade-off between availability and comparability in specifications of price surveys.* Although, in principle, it is possible to produce a highly detailed definition of the characteristics of the products to be priced through surveys, in practice, there exists a trade-off between the level of detail in the specifications of items and the ability of survey respondents to consistently match these specifications over time. As in the case of elementary unit-value indices based on data from customs records, survey-based price indices may also suffer to some extent from not comparing like with like, especially if the specifications of the product varieties being priced are too loose, and shifts in the relative share of different price-determining characteristics remain unknown. These difficulties are compounded by the fact that the total number of transactions per respondent per period of time may be relatively small, making it necessary to collect average prices over longer periods of time instead of prices for individual transactions.

D.   Methodological issues

28.17.   *Elementary unit-value indices.* The compilation of price indices normally involves a first stage in which price indices for elementary commodity groups are calculated, which are subsequently combined to produces price indices at higher levels of aggregation. In the case of unit-value indices based on customs records, elementary price indices are simply ratios of unit values each of which is the result of dividing total value by total quantity at the most detailed level of aggregation available (which can be a specific stratum within a particular commodity code, deemed to include relatively homogeneous types of goods). Elementary unit-value indices are implicitly weighted by quantity information for each individual record.

28.18.   *Elementary price indices.* On the other hand, elementary price indices based on survey data involve the unweighted aggregation of price relatives (i.e., the ratios of directly reported prices over time), as data on the traded value shares, or quantities of the surveyed goods, are usually not readily available.[288] Based on the analysis of the properties of various alternatives, one of the preferred formulas for the calculation of elementary price indices is the Jevons index formula, which takes the geometric average of the price relatives (or, equivalently, the ratio of the geometric average of prices in each period). However, this formula is highly sensitive to extreme price decreases, and its practical use may require imposing upper and lower bounds to the individual price relatives used in the compilation. Also, the Jevons index makes the implicit assumption that revenue shares are constant, which is equivalent to assuming that quantities fall as relative prices increase.[289]

288. The design of a price survey may introduce an implicit weighting structure, e.g., through the probabilistic selection of establishments based on their shares in total exports, etc. However, at the elementary level, implementation of such probabilistic sample designs in the compilation of foreign trade price indices is infrequent. See Export and Import Price Index Manual: Theory and Practice for a more detailed discussion.

289. See Export and Import Price Index Manual for a discussion of the advantages and disadvantages of alternative formulas for the calculation of elementary price indices.

28.19.   *Index formulas at higher levels of aggregation.* Regardless of elementary price, indices are based on (quantity-weighted) unit values or (unweighted) price relatives. They need to be combined into aggregate indices for broader categories of goods with the help of a specific weighting structure. There are various alternative formulations for calculating these aggregate indices, and although their detailed discussion is not within the scope of this chapter, some of the most important classes of index formulas are as follows:

(a). Indices based on fixed baskets of goods and services, often referred to as *Lowe-type* indices. They measure the change in the value of a commodity group by holding the quantities of their individual commodities at a constant level. These indices are in general defined by the equation

$$P_{Lo} \equiv \sum_{i=1}^{n} (p_i^t/p_i^0)\, s_i^{0b},$$

where (p_i^t, q_i^t) represents a price-quantity pair for commodity $i = 1,..., n$ in period t,

and a $s_i^{0b} \equiv \dfrac{p_i^0 q_i^b}{\sum_{i=1}^{n} p_j^0 q_j^b}$ is the "hybrid" value share of commodity i obtained by valuing

the quantities of period $t = b$ at prices of period $t = 0$. The well-known Laspeyres and the Paasche indices are special cases of a Lowe index, as the former is obtained by setting b equal to 0, and the latter by setting b equal to t. These types of indices, which are easy to explain to users, are compiled by many statistical offices in practice;

(b). The class of *superlative* indices. These are indices that treat the prices and quantities of the periods being compared symmetrically, and in general they are preferable on theoretical grounds. Two specific superlative index formulas are:

(i).   The Fisher index, the geometric average of the Laspeyres and Paasche indices and defined by the equation:

$$P_F \equiv (P_L \times P_P)^{1/2};$$

(ii).   The Törnqvist index, the geometric weighted average of the price relatives, with weights given by the arithmetic average of value share of each commodity in the two periods being compared. The index is defined by the equation

$$P_T \equiv \prod_{i=1}^{n} (p_i^t/p_i^0)^{\bar{s}_i},$$

where $\bar{s}_i \equiv \dfrac{s_i^t + s_i^0}{2}$.

28.20.   *Chain indices.* If a fixed-base index is used, it is good practice to frequently update the base period (at least every five years), as the quantities used to determine the weight structure become less relevant in describing the actual mix of goods being traded. As an alternative, chain indices are constructed by linking a series of individual indices that bilaterally compare every two consecutive periods, so that in each comparison the weight and price reference periods are moved forward in time. However, chaining should not be carried out at the sub-annual level before seasonal adjustment of the time series, as the seasonal fluctuations in prices and quantities would cause serious distortions in the chained time series owing to the fact that chaining is "path-dependent", i.e., the change in the index between two given periods depends on the price changes that occur in each and all the intervening periods.

28.21.   *Focus on optimal use of trade data from administrative sources.* With the above in mind, the methodology used in compiling unit-value indices for imports and

exports should provide for the handling of seemingly erratic behaviour in customs data, so as to extract as much information as possible from the data available in custom records and other administrative sources. This may entail, inter alia, the use of appropriate stratification variables to disentangle the difference between genuine variations in price levels and shift effects in the quality or in the mix of goods reported under a given item specification.

28.22.   *Error detection and treatment of outliers.* The statistical properties of the data used in the compilation of foreign trade indices, either from administrative or survey sources, also need to be examined in detail to identify outliers and correct or eliminate outright erroneous observations.[290] In general, the treatment of outliers from direct surveys is less complicated than for UVI's, due to the relatively smaller amount of information collected by products and by traders. However, in both instances compilers should try using to the maximum extent possible all the information they have available to determine whether particular data points should be considered outliers or not.

28.23.   *Treatment of quality change.* Compilers of foreign trade indices based on price survey data can handle quality changes by asking survey respondents to provide an estimate of the value of the quality change whenever an item description has changed. An adjustment can be made to the price to separate out the value of the description change from any remaining price change. In some cases where the items being compared are too divergent, the original item needs to be replaced by the new one and the price series is starting over again from the current period.[291]The use of hedonic regression models to estimate the value of the quality change for technology products like computers and some computer peripherals is also a good practice, which is currently followed by some countries.

E.   Other issues

28.24.   *Integration of the statistical production process and index calculation.* As the compilation of foreign trade indices can reveal the presence of outliers by decomposing value trends into their price and quantity components, it is good practice to allow for the compilation process of trade indices to feed back into the compilation of raw data and vice versa.

28.25.   *Need for integrated economic statistics.* In most countries, there is less than complete compatibility between the coverage, methods, classifications and adjustments of price index numbers in external trade and domestic indexes, even if these indices must be related if the mechanism of transmission of inflation across national boundaries and the way in which domestic prices are set are to be properly understood. It is therefore important to develop integrated economic statistics based on common statistical business registers which allow the linkage of customs declarations data with information gathered from surveys, tax records and other direct and indirect sources of information.

28.26.   *International comparability of external price indices.* Governments as well as the business community show considerable interest in monitoring the performance of their countries vis-à-vis commercial competitors in international markets. While changes in a country's competitive position may be gauged from an analysis of its market shares, one of the key explanatory variables of the change in such shares is the measure of the evolution of relative prices across countries. This highlights the need for countries to compile and make available (in terms of a common currency) mutually consistent measures of price changes for the traded commodities at matching levels of detail.

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290. Statistical analyses may include estimation of univariate densities and cluster analysis to help assess whether a certain strata or commodity classifications may composed by various sub-categories of products with heterogeneous price trajectories.

291. This is, for instance, a practice currently followed by the United States Bureau of Labor Statistics.

28.27. *Role of international economic classifications.* While the commodity classifications for the compilation of export and import indices normally follow external trade classifications (HS or SITC), special emphasis should be directed to linking them to those of domestic-price indices, in particular CPC and related national classifications.

Use of foreign price indices. Foreign price indices could also be used as a "second best" measure in some special circumstances. For example, if a country's economy is highly interconnected with that of another country, there may be specific commodity groups for which they can be considered to constitute a single market, with purchasers in both countries facing approximately the same price movements. If this hypothesis is reasonable, the producer price index of a foreign, closely related economy can be used as a proxy for the price index of imports from that country. Nevertheless, it is important to emphasize that foreign price indices are only an "indirect" second-best way to measure variation of prices of internationally traded goods, and their linkage is generally imperfect and its accomplishment is difficult.

F.   Country experiences

1.   Practices of Norway

28.28. *Current practices.* The Department of Economic Statistics of Statistics Norway uses unit-value data from customs records and combines them with survey-based price data to compute price and volume indices of external trade in commodities. Survey price data are used for some commodity codes for which customs data are not considered acceptable as a source of price statistics. When this is the case, priority is given to Norway's data sources, and only if they, too, are not adequate, are data collected from international sources (such as the United States Bureau of Labor Statistics).

28.29. *Use of foreign trade indices in national accounts compilation.* Detailed data on exports and imports at the HS eight-digit level are aggregated to the national accounts product level (going from about 6,500 commodities to approximately 700 product categories). Values of exports and imports are used in balancing the national accounts at current prices. Price information is applied to national accounts at the detailed CPA level to derive exports and imports at constant prices, and to estimate price changes of components where no price observations exist (namely, for intermediate consumption, gross fixed capital formation, and final consumption).

28.30. *Future developments.* It is expected that, in the future, large importers and exporters will be allowed to lodge consolidated customs declarations on a monthly basis. Although this will have a positive effect in terms of trade facilitation, statisticians will need to rely on fewer data records (owing to the consolidation of single transactions into monthly totals) ; hence, error detection procedures may be further complicated. Also, the general trend towards removal of tariffs and duties, and the inherent interest of customs in simplifying and facilitating trade procedures, means that additional efforts will have to be made in order to preserve the quality and coverage of data from administrative customs records. Currently, the goal of Statistics Norway is to replace unit-value indices with survey-based price indices for both exports and imports. For more detailed information on the practices of Norway, see annex XXVIII.A.

2.   Practices of Canada

28.31. *Current practices.* Statistics Canada compiles an International Merchandise Trade Price Index (IMTPI), which is a composite price index designed to express, in a

single index, price changes that involve a range of commodities. In order that realities of price movement may be accurately reflected, a fixed basket of goods is chosen which are representative of, and correlated to, the rest of the commodities in the trade universe. The index is based on a non-random sample of import and domestic export commodity classes. Data are extracted from administrative files and derived from other Statistics Canada surveys and/or other sources. International trade price and volume indices are constructed on the basis of unit values derived from detailed customs-based data and survey price indices taken from Canadian and foreign sources. As a general rule, unit values are retained for relatively homogeneous commodities such as primary and semi-manufactured goods; and proxies are used for heterogeneous commodities, particularly manufactured goods ready for final use. Several organizations provide the International Trade Division with proxies that are used as price relatives in the calculation of the Laspeyres and Paasche price indices.[292] As Canada's economy is very much interconnected with that of the United States, the United States Bureau of Labour Statistics producer price index is used as a proxy for the prices of some Canadian imports from the United States. For more detailed information on Canada's practices, see annex XXVIII.B.

292. The Statistics Canada Industrial Product Price Index (IPPI) and Automotive Price Index by Model, as well as data on exports of crude petroleum and natural gas (by pipeline), are derived from its Manufacturing, Construction, and Energy Division. Price indicators derived from other organizations include the Bank of Japan Export Price Index, price data on electricity from Canada's National Energy Board, and the Computer Price Index by Component from the United States Bureau of Economic Analysis (BEA).

3.   Practices of the Czech Republic

28.32.   *Current practices.* The export and import price index has been calculated for the Czech Republic since 1998. Prices are measured through a national monthly statistical questionnaire, with price relatives collected from both production enterprises and enterprises engaged in foreign trade only, about 580 of them engaged in exports and about 590 in imports. At present, the weight pattern includes approximately 2,050 exported and 2,100 imported products, raw materials and supplies, which take up a significant share in the value of external trade (both exports and imports). Foreign trade indices are calculated on the basis of invoiced prices (without duties, VAT and consumer tax) which are converted into national currency using the average monthly exchange rates declared by the National Bank. The price indices thus reflect changes in foreign-exchange rates. The breakdown of the export and import price index adjusted by exchange-rate influences has been published monthly since January 2011. The index is compiled according to the Harmonized System and is transformed to conform to the SITC, Rev.4, breakdown into its main groups and the Czech Republic Classification of Product by Activities (CZ-CPA 2008) , so as to meet the needs of national accounts and Eurostat. The first estimates are definitive, which means that ordinary revisions (revisions for the purpose of obtaining more precise previous estimates without methodological changes or modification of computation concepts) are not carried out.

4.   Practices of Germany

28.33.   *Current practices: calculation of unit-value indices.* The external trade price indices constitute an important module within Germany's overall system of price statistics, which is intended to measure the development of prices across all of the main stages of the economy in a methodologically consistent way. In Germany, (Laspeyres) volume indices and (Paasche) unit-value indices (UVIs) are calculated and published on a monthly basis in a breakdown by detailed commodities and country groups. The compilation is based on the results of external trade statistics. Even though price indices based on survey data are generally preferred for methodological reasons, UVIs are calculated as well, since they can be derived easily from already existing foreign trade figures and allow a breakdown by detailed commodities in combination with partner

countries. In this way, a methodologically consistent set of nominal and real export/import figures is available which is based exclusively on foreign trade statistics. By means of volume indices and UVIs the nominal figures of foreign trade statistics can be split up into a quantity and a value component. Another advantage of UVIs is that they are calculated on the basis of up-to-date weighting factors (while calculation of price indices requires unchanging weighting factors of the relevant base year).

28.34.   *Compilation of price indices.* In respect to the analysis of price changes in foreign trade, besides UVIs, "real" price indices are also calculated monthly as Laspeyres indices for a large number of commodity groups and by groups of countries. To a large extent, the data are obtained through an enterprise survey. Only in exceptional cases are other sources (e.g., stock market valuation, market reports) appropriate as providers of actual trade prices. The generation of the survey sample follows a multi-stage procedure. First, a basket of representative commodities is defined, which can be derived from foreign trade statistics. Second, the reporting enterprises are selected with regard to their share in the total value of the relevant commodities.[293] Finally, the enterprises decide on specific "price representatives" (single cases of sale or purchase) for each of the selected commodities. As a result, the survey covers 6,000 enterprises reporting nearly 10,000 single prices per month. The advantages and disadvantages of a price survey have been described above. The main methodological issue is to keep the parameters underlying the calculation (goods and enterprises selected, sample of price representatives, weighting scheme) as constant as possible (according to the Laspeyres-concept).

5.   Practices of Italy

28.35.   *Current practices.* External trade UVIs in Italy are chained Fisher-type indices, with each monthly link calculated as the squared root of a Laspeyres- and Paasche-type index, both based on the previous year. Each Laspeyres and Paasche link is a weighted average of elementary unit value indices belonging to "product-country of origin/destination-flow" strata, the products being classified according to the Combined Nomenclature at the eight-digit level. The total number of elementary strata is about 220,000. Outlier detection procedures are applied to the log-distribution of the elementary unit values (levels) in each stratum, to control for the variability inside the strata, due mainly to errors on reported quantities. No imputation method is applied to replace the deleted observation so as not to introduce imputation bias in the resulting distributions. Deleted unit values are taken into account through maintaining their original weights in the calculation of the aggregated indices.

293. The survey is not based on a random sample: the choice of enterprises is "targeted". Hence, it is not possible to estimate sampling errors. Nevertheless, the reporting companies can be considered representative, since they are the leaders in the relevant market segment.

Annex XXVIII.A.

Experience of Norway

1.   Unit values from customs records

28.A.1.   *Frequency and volume of data from customs records processed.* Statistics Norway receives administrative data from the Norwegian customs administration authority (TAD), every day. The number of customs data records used by Statistics Norway in the creation of exports statistics has increased 23 per cent since 2000, and for imports this increase has been more than 80 per cent. In 2010, Statistics Norway used about 1.4 million data records of exports and almost 11 million records of imports (representing 44.3 per cent and 99 per cent of Norway's total value of exports and imports, respectively).

28.A.2.   *Two-step process for unit value calculation.* The main body of information on Norway's external trade statistics comprises administrative data from customs declarations (the single administrative document (SAD). As the single administrative document does not contain a price variable, unit values are derived from the variables value and quantity. This is carried out based on the total commodity value and quantity, after a two-step validation process which involves stratification to identify commodity codes whose the data may be utilized for price statistics.

28.A.3.   S*tratification below the commodity code level.* In the first step, data in each commodity code are stratified below the HS-code level. The aim of the stratification is partly to arrive at more homogeneous strains within the code and, simultaneously, to reduce the overall variation observed at the code level. There are three stratification variables: enterprise (VAT number), partner country (ISO code) and quantity group (based on weight or supplementary unit). The choice of the best stratification variable for a commodity code in the reference year is made by means of automated analyses run on the data of the previous (base) year.

28.A.4.   *Outlier detection and data editing.* Before the estimation, the data are run through an editing procedure controlling for extreme prices. The data are subjected to a Hidiroglu-Berthelot (HB)-based procedure for identifying extremes, both on the stratum level and within the strata. Extremes are excluded from further calculations. For each stratum within an eight-digit commodity, a set of control variables is calculated. The purpose of this step is to evaluate statistical properties of unit prices resulting from each method of stratification (enterprise, country and quantity group). The indicators are:

(a).   Regularity of transactions (*number of months in year T-1 with no transactions < six*)

(b).   Price variation (*coefficient of variation < 0.5*);

(c).   Value (> *1 per cent of the total value on commodity level*);

(d).   Quantity (> *1 per cent of the total quantity on commodity level*).

28.A.5.   *Selection of customs data for the computation of unit value indices.* The ratio of the arithmetic average to the quantity-weighted average of the monthly unit values, at the transaction level, is used as a background variable for evaluating the stratification of the data and choosing which method to use for each HS code. Taken together, these indicators give information on stability, and magnitude and concentration of the strata. A stratum is accepted if the values of all the indicators are within the required limits. If one or more of the limit values are exceeded for a stratum, the stratum is rejected and therefore does not become a part of the calculation of price indices.

2.   Producer price indices (PPIs) for external trade

28.A.6.   *Integration of survey data from producer price indices.* For some important commodities, data from customs records are deemed too heterogeneous to yield acceptable price information. To compensate for such shortcomings, survey-based price indices are used as indicators in external trade statistics. In Statistics Norway, the survey that yields producer price indices (PPIs) covers the domestic, export and import markets. An important characteristic of the Norway's system of price statistics is the fact that external trade considerations guide and influence the PPI production, particularly in respect of determining which commodity codes are included in the sample.

28.A.7.   *Survey implementation.* Data collection is mainly conducted through questionnaire, whereby respondents also receive guidance in the form of an information brochure as well as semi-annual messages from Statistics Norway. The statistics register employed by Statistics Norway includes all resident firms that produce or deal with the commodities in question and have 10 or more employees. The sample is based on a scheme of probability proportional to size. Prices are collected over time for selected well-defined products, all of which are classified according to the HS nomenclature. In practical terms, this means that a survey questionnaire makes reference to a specific HS commodity classification, and the respondent must provide price data for a product model that best suits this commodity description; the price of this product is reported monthly.

28.A.8.   *Index formulas.* Elementary indices are calculated at the HS level, using a geometric mean. Indices at the HS level are then aggregated, using a weighted average, to form a Classification of Products by Activity (CPA) index, and from the CPA level, indices are aggregated to CPA level of four-, three-digits, etc. This is carried out for each of the three markets (domestic, export and import). Indices above the elementary level are calculated using the Laspeyres formula.

28.A.9.   *Imputation.* During the process of compilation of PPIs, missing HS data are imputed using higher levels of aggregation. Sequences of 13 consecutive months are used to calculate a short-term index, where the base is always December of the previous year.

3.   Other data sources

28.A.10.   *Alternative sources of price data.* In addition to survey data and customs records, there are special data-collection mechanisms in place, including the use of price information from international commodity exchanges and foreign statistical agencies. For internationally traded commodities (refined oil products, nickel, etc.) price data are collected from the London Stock Exchange and London Metal Exchange.

28.A.11.   *Use of foreign indicators of price trends.* For other products (especially exports and imports of capital goods), international price indicators are in some cases considered to be representative of the price development of the same product group in Norway's trade. For instance, data from the United States Bureau of Labor Statistics are used for about 80 export products and 40 import products.

4.   Data validation and editing

28.A.12.   *Validation of customs data.* Data validation procedures are routinely put in place in order to detect errors in the statistical values reported in the customs declarations. In this regard:

(a). Tests were introduced in 2011 that are applied directly on data as they are entered by *declarants of exports or imports.* These tests aim at identifying obvious errors or data inconsistencies at the first step of data flow, and include: validity checks

for commodity and country codes, price verifications based on upper and lower thresholds, quantity checks, and checks for implausible data by commodity or partner. These and other controls are also applied within the customs service's own information systems;

(b). Prior to loading customs data into the Statistics Norway database, some data editing is conducted. Only the transactions involving commodities above 1,000 Norwegian kroner (*NOK*) and less than one year old are selected, and incomplete declarations are rejected. After loading, automatic corrections are carried out, and the validity of codes is checked again. Also, with the aid of statistical tools, probable errors are identified, which may involve unusual prices, partners or commodities, as well as code combinations that seem suspect. All large declarations are subject to data quality control, in which the experience of staff members specializing in the checking of data of specific groups of commodities plays a key role;

(c). In cases where Statistics Norway does not have sufficient information to correct obvious errors, a report is sent to customs specifying the nature of the problem with each suspect transaction. This report is reviewed by customs and sent back to Statistics Norway with a comment indicating whether any corrective action was taken.

28.A.13.   *Validation of price survey data.* Validation mechanisms are also applied to price survey data submitted to Statistics Norway. These mechanisms include detection of high and low outliers, control of CPA classification, and checks on aggregated data at different NACE levels. If errors are suspected and the data in the questionnaire are insufficient, Statistics Norway will establish direct contact with the respondent in order to obtain further clarification.

28.A.14.   *Most frequent kinds of errors.* Some of the most frequent kinds of errors detected are related to the wrong currency and/or exchange rates, as well as errors in the quantities reported. Two specific examples illustrate some of the kinds of errors that have been dealt with in the past. The first case involved salmon exports to the European Union that were subject to a punitive duty. As firms filling out the declarations were not able to report separately the duty, Statistics Norway had to expend significant efforts to correct the statistical value. Another situation was created by some companies using computer software to speed up the filling out of customs declarations, which automatically distributed total quantity (weight) of all declared goods according to their individual value shares. As a result, all commodities declared in a single document were implicitly given exactly the same unit value, rendering the information useless for unit-value calculations.

5.   Institutional framework

28.A.15.   *Cooperation between Statistics Norway and Norway's customs administration.* A good working relationship exists between Statistics Norway and the Norway's customs administration authority in terms of providing data for statistical purposes, as required by the Statistics Act of 1989. Cooperation between the customs administration authority and Statistics Norway is regulated by a formal agreement, which establishes responsibility for contacts between both parties. It stipulates that changes made to the existing administrative data systems should be communicated to Statistics Norway, regulates data transmission between the customs administration authority and Statistics Norway, confers on Statistics Norway the responsibility for compiling a list of all statistical surveys being conducted, and requires a yearly report on cooperation. As cooperation with customs personnel is essential during the data validation process, Statistics Norway provides regular training for Customs employees, allowing for improvements at the data source level.

Annex XXVIII.B.

Experience of Canada

28.B.1.   *Estimation formulas.* Fixed (Laspeyres) and current (Paasche) weighted price indices are calculated monthly, quarterly and annually on a customs and balance-of-payments bases for all countries and for the United States. The International Trade Division of Statistics Canada also calculates trade values at constant dollars on a balance-of-payments basis through use of the chain Fisher formula with a base reference year. They are available from 1981 to the present on a monthly and a quarterly basis.

28.B.2.   *Error detection and imputation.* Once the Laspeyres and Paasche indices have been calculated, a method described by Hidiroglou and Berthelot (1986) to identify outlying observations is used by a module. The Historical Trend Method is also adopted and used to identify transactions within an aggregation that are "abnormal" for a given period. The error detection process is carried out only at the first stage of aggregation in the construction of the International Merchandise Trade Price Index. If a unit value is identified as an outlier during the error detection process, and if the price analyst with the help of the subject-matter specialist also considers this unit value an outlier, then the unit value will be imputed manually.

28.B.3.   *Quality evaluation.* The quality of this index is maintained by the few trained analytical experts assigned to this area, who develop a thorough knowledge of the domain. Much time and effort are devoted to detecting and following up unusual fluctuations over time in the pricing patterns of goods. Prior to dissemination, the price indices are analysed and historic trends reviewed.

Chapter XXIX
Seasonal adjustment

29.1.   *Introduction.* The present chapter explains the concept of seasonal adjustment of data, its key features and main approaches, including revision policy and quality issues in general terms. It then provides some examples of country practices in the application of seasonal adjustments to international merchandise trade data. It is based on IMTS 2010 (para. 11.3), which encourages countries to compile and publish, where appropriate, seasonally adjusted monthly and quarterly international merchandise trade data on a regular basis. It is related to chapter XXVI on dissemination.

A.   Basic concepts and uses of seasonally adjusted trade data

29.2.   *Need for seasonally adjusted data.* Monthly and quarterly data on international merchandise trade statistics are an important tool for economic policymaking, business cycle analysis, modelling and forecasting. However, they are often characterized by seasonal fluctuations and other calendar or trading-day effects, which mask other characteristics of the data which are of interest to analysts. Seasonal adjustment is a process of estimating and removing seasonal or calendar influences from a time series in order to achieve a better knowledge of the underlying behaviour.

29.3.   *Seasonal adjustment method.* Because national circumstances vary from one country to another, no preferred seasonal adjustment method is recommended. If seasonally adjusted data are published, it is recommended that information on the adjustment methods be provided by countries in their metadata (IMTS 2010, para. 11.4).

29.4.   *Concept of seasonal adjustment.* Seasonal adjustment is the process of estimating and removing effects in a sub-annual time series that occur at about the same time and magnitude each year, as well as calendar-related systematic effects that are not stable in annual timing, which are often large enough to mask other data characteristics. Removing the seasonal component allows for an easier comparison of long- and short-term movements across sectors and countries and further contributes to an understanding of the non-seasonal behaviour which is often of interest for economic policymaking, business cycle analysis, modelling and forecasting.

29.5.   *Components of time series.* A time series is generally considered to consist of trend, cycle, seasonal and irregular components. The trend, cycle and irregular components together reflect long-term movements lasting many years, fluctuations relating to the business cycle, and unforeseeable movements of all kinds. The seasonal component of a time series represents the movement within the year, and includes the effect of climatic and institutional events that are repeated regularly throughout the year, as well as calendar-related systematic effects that are not stable in annual timing, such as trading-day and moving holiday effects. Seasonal adjustment is the process of completely eliminating the seasonal component from the original time series.

29.6.   *Tools used for seasonal adjustment.* Seasonal adjustment is typically accomplished with the assistance of free and publicly available software packages, the most widespread of which are TRAMO-SEATS (supported by the Bank of Spain) and X-12-ARIMA (supported by the United States Census Bureau).[294] As the seasonal component

294. X-12-ARIMA is based on moving averages and includes a time-series modelling component, the ability to produce multiplicative as well as additive seasonal adjustment, and systematic removal of calendar effects. In July 2012, the United States Census Bureau released X-13ARIMA-SEATS which it developed in collaboration with the Bank of Spain (see http://www.census.gov/srd/www/x13as/), which integrates an enhanced version of X-12-ARIMA with an enhanced version of SEATS.

is not precisely defined, seasonal adjustment often depends on the a priori hypotheses underlying the model chosen and upon the software and specifications chosen.

B. Preliminary treatment of data prior to seasonal adjustment

29.7.　Seasonal adjustment begins with a preliminary process of identifying and removing outliers, adjusting for those calendar effects that are not stable in annual timing, and identifying an appropriate decomposition type.

29.8.　*Graphical analysis.* Preliminary treatment of the data should begin with a graphical analysis of the series in order to identify potential problems with the data, select appropriate parameters, and determine how to perform the seasonal adjustment. Relevant preliminary graphical analysis should examine the length of the series, the presence of strange values, the structure of the series, the presence of possible breaks in seasonality, and the decompositions scheme.

29.9.　*Outliers.* Since most seasonal adjustment methods use procedures and filters that are sensitive to outliers, these should be identified and removed before estimating the seasonal components. Outliers clearly due to errors in the data should be discarded. However, since outliers not due to error typically contain information about key events, these should be reintroduced into the data after seasonal adjustment.

29.10.　*Calendar effects.* Calendar effects are regular effects that do not necessarily occur in the same month or quarter each year but that can be identified and removed from the series. These effects include holidays whose exact timing shifts systematically each calendar year and the variation in the number of times each day of the week occurs in a given month or quarter. These effects must be corrected for using standard seasonal adjustment tools, so as to prefent mis-specification of the model or a compromising of the overall quality of seasonal adjustment. The decision to correct for other effects, such as temperature, school holidays or bridge holidays, should be made on a case-by-case basis.

29.11.　*Decomposition.* The decomposition scheme specifies how the trend-cycle, seasonal and irregular components combine to form the original series. Additive decomposition assumes that the components of the time series behave independently of each other. In particular, the size of the seasonal oscillations is independent of the level of the series. Multiplicative decomposition, often chosen by default in seasonal adjustment software packages, assumes that the components of the series are interdependent and thus that the size of the seasonal variation increases and decreases with the level of the series.

C. Seasonal adjustment

29.12.　*Choice of seasonal adjustment approach.* TRAMO-SEATS and X-12-ARIMA are currently the most commonly used seasonal adjustment approaches. TRAMO-SEATS is based on a parametric approach (where the model structure is specified a priori), while X-12-ARIMA is based on a non-parametric approach (where the model structure is determined from the data). A third possible approach is to use structural time-series models, provided that they allow for a complete calendar and outlier treatment and include an adequate set of diagnostics. The consistent use of a common set of seasonal adjustment packages will improve transparency and comparability of seasonally adjusted time-series across countries.

29.13.   *Seasonal adjustment and consistency with annual data.* Annual trade totals based on seasonal adjustment will not automatically (or conceptually) be equal to the corresponding annual trade totals based on unadjusted data. Specifically, the annual totals of the unadjusted series and the seasonally adjusted series will be equal only when the series are adjusted additively, the seasonal pattern is fixed from one year to the next, and there are no trading-day adjustments. The impact of working days, moving holidays and other calendar effects change from one year to the next. Moving seasonality also implies that the impact of the seasonal effect will vary across years. Nonetheless, the process of ensuring that seasonally adjusted values sum to their unadjusted annual values, known as benchmarking, can be conducted using seasonal adjustment software.

29.14.   *Direct versus indirect seasonal adjustment.* Direct seasonal adjustment is performed if all time series, including aggregates, are seasonally adjusted on an individual basis. Indirect seasonal adjustment is performed if the seasonally adjusted estimate for a time series is derived by combining the estimates for two or more directly adjusted series. Indirect seasonal adjustment should be preferred when the component series that makes up the aggregate series have both distinctively dissimilar seasonal patterns and adjustments of good quality. Direct seasonal adjustment should be the approach of choice when the corresponding series have similar seasonal patterns and summing the series may reduce the amount of unexplained variation.[295]

D.   Revision policies

29.15.   *Reasons for revisions to seasonally adjusted data.* Revisions of seasonally adjusted data occur for two main reasons. Seasonally adjusted data may be revised as the consequence of a revision of the unadjusted data, which may be the result of an improvement in the information set. Revisions of seasonally adjusted data can also occur because of a better estimate of the seasonal pattern due to new information provided by new unadjusted data and to the characteristics of the filters and procedures for removing seasonal and calendar components. The challenge is to strike a balance between the precision of seasonally adjusted data and their stability over time. Revisions of seasonally adjusted data should be carried out in accordance with a coherent, transparent and officially announced revision policy, and should not be more frequent than the revisions to the raw data. In this regard, it is good practice to keep the model specification for seasonal adjustment as stable as possible over time, and to coordinate the timing of revisions to the model specification with the timing of major revisions of the raw data.

29.16.   *Trade-off between frequency and accuracy.* How seasonal adjustment is carried out has implications for the revision policies. At one extreme, there is so-called current adjustment, which minimizes the frequency of revisions and concentrates the revisions mainly within a predefined review period. At the other extreme, there is so-called concurrent adjustment, which maximizes the accuracy of the adjusted data at any given point, but leads to more revisions, often from the beginning of a series, with many of them small and moving in opposite directions. In practice, other procedures are utilized, based on a combination of these two extreme approaches.

29.17.   The decision regarding whether a changed time series should be published in its entirety is influenced by several factors. On the one hand, there is an incentive from a methodological perspective to treat all values identically, so as to ensure that calculations are easy to understand and to replicate. However, it is nevertheless questionable whether a newly added figure actually contains information relevant for

295. Note that optimal direct seasonal adjustment does not preserve additivity; however, it is in general a good practice to give priority to obtaining the best seasonal adjustment of individual series, rather than maintaining additivity. See, e.g., Bank of England, "Prospective change in seasonal adjustment methodology: consultation with users-summary of responses", Bankstats (Monetary & Financial Statistics) Articles, February 2003. Also available from http://www.bankofengland. co.uk/statistics/ms/articles. htm.

significant revisions to the estimation of the usual seasonal fluctuations in previous decades. As a means of balancing the information gain and the revision horizon, the revision period for the seasonally adjusted data is often limited to being between three and four years longer than the revision period for the unadjusted data (see also para. 26.15).

E.   Quality of seasonal adjustment

29.18.   *Absence of residual seasonality.* The most fundamental requirement of seasonal adjustment is that there be no estimable seasonal effect, known as residual seasonality, still present in the seasonally adjusted series. To detect residual seasonality and residual trading-day effects, validation should be performed using spectral diagnostics as well as other tools included in the seasonal adjustment packages, perhaps complemented by graphical diagnostics and statistical tests from external statistical packages. Both TRAMO-SEATS and X-12-ARIMA provide a wide range of quality measures and diagnostics for this purpose.

29.19.   Stability and lack of bias. Other important requirements for good seasonal adjustment are a lack of bias in the level of the series and stability of the estimates. A lack of bias implies that the level of the seasonally adjusted series is similar to the level of the original series. Stability of the estimates implies that the inclusion of new data into the estimation procedures will not result in large changes in the estimates. Large revisions can indicate that the estimates are misleading or even meaningless.

F.   Specific issues

29.20.   *Length of series.* A series that is under three years in length cannot be seasonally adjusted accurately with either TRAMO-SEATS or X-12-ARIMA. It is possible, however, to adjust these series using alternative, less standard, procedures. For series that are long enough to run X-12-ARIMA or TRAMO-SEATS but remain quite short (three to seven years), some instability problems can araise. Several empirical comparisons have been carried out to assess the relative performance of X-12-ARIMA and of TRAMO-SEATS on short time-series.

29.21.   *Seasonal adjustment of shorter series.* It is good practice to evaluate the results of seasonally adjusting shorter series over an extended period before deciding whether to publish them or not. For instance, it is important to check for consistency and reliability for each period (monthly or quarterly). As a general rule, when the series are shorter than seven years, the specification of the parameters used for pretreatment and seasonal adjustment has to be checked more often (e.g., twice a year in order to deal with the higher degree of instability of such series).

29.22.   *Series requiring non-standard seasonal adjustment.* Some series can be characterized by highly specific features which preclude the application of standard seasonal adjustment methods. Such features include high non-linearity[296], absence of a clear signal due to a dominant irregular component, unstable seasonality, a high number of outliers, and heteroskedasticity.[297] In such cases, ad hoc treatment should be carried out.

296. Non-linearity refers to a model whose variables are not written as a linear difference equation.

297. Heteroskedasticity occurs in a linear model with error terms that do not have constant variance.

G. Data presentation

29.23. Data can typically be presented in raw, seasonally adjusted, calendar-adjusted only or trend-cycle form. The raw data contain all the characteristics of the time series. As the seasonally adjusted data contain the trend-cycle and the irregular components, they contain the "news" of the series. Much of the discussion on trend-cycle analysis focuses on the so-called end-point problem. Since the trend-cycle values at the end of the series are usually estimated by extrapolation, the estimated trend-cycle for the most recent data is very uncertain and can suffer from phase-shift[298] problems. Particular care is required at turning points, where it often takes months until the new correct direction of development appears. In addition, it is good practice to monitor discrepancies between the trend of raw data and the trend of seasonally adjusted data

29.24. In all cases, the information contained within the press release should reflect the principles of ensuring transparency and assisting users in making informed decisions.

H. Country examples

29.25. *Example of Germany.* In Germany, the seasonal adjustment of foreign trade data as well as of other important economic indicators entails close collaboration between the Central Bank and the Federal Statistical Office. The original data collected by the Federal Statistical Office are seasonally adjusted and calendar-adjusted by both institutions using the same X-12-ARIMA procedure (which represents the evolution of the well-known X-11 model developed by the United States Bureau of the Census). As a second step, both institutions examine the results and have to decide in common whether any of the processing parameters that are crucial for the quality of the results have to be adjusted or not. In the case where the parameters are changed, the calculation of seasonally adjusted figures is repeated by both institutions. In this way each institution verifies the calculation of the other. This shared approach results result in the publication of an agreed upon product, which eliminates the risk confusing the users of trade statistics.

29.26. *Example of Italy.* In Italy, monthly trade time series are seasonally adjusted by means of TRAMO-SEATS (Windows version). In particular, intra- and extra-European Union series (at import and at export) are adjusted directly and separately, while the series referring to total trade (intra- and extra-European Union) at import or at export are obtained indirectly as sums of the corresponding seasonally adjusted series, owing to the well-known aggregation problem. The models selected by TRAMO-SEATS are revised at the beginning of a new year, but the estimated SA coefficients are revised monthly as soon as a new observation is added to the series. While this approach obviously implies the need for some revisions for the nearest time lags, it gives more consistent overall-year information as compared with raw data. The selected models are available to researcher or users on request.

29.27. *Example of the United States of America.* Monthly merchandise trade series are seasonally adjusted using factors that are produced once a year during an annual revision cycle. Factors are produced for each month of the coming 12-month period, and are revised for the previous three years. The X-13ARIMA-SEATS program is used to analyse data series and generate the seasonal adjustment factors. Data are aggregated into 269 total import and export five-digit end-use commodity groupings which are examined for trading-day variation and seasonality. The end-use commodity classification system combines data into broad categories based on principal uses of

298. A phase shift is the amount of horizontal change of a wave pattern from its original state.

the commodities; utilization of the system ensures methodological consistency with quarterly adjusted balance-of-payments data. Seasonal factors are generated for those groups that show significant predictable seasonality. The factors are used to adjust the data in the most detailed end-use categories. These detailed adjusted data are then summed to the one-digit end-use level for release with the monthly merchandise trade totals.

29.28.   *Example of Norway.* In the case of monthly data, the main figures for import and export are adjusted seasonally using X-12-ARIMA, in addition to a number of selected series at the two-digit level of SITC. A few monthly data series at the three-digit level of SITC are also adjusted. In the case of quarterly data, seasonal adjustments are applied to volume indices on total imports and exports in addition to some selected series as described above in the case of monthly figures. Norway's External Trade Division is assisted by one or two experts, when needed, who support all fields dealing with seasonal adjustments in Statistics Norway. These experts also participate from time to time in the conduct of a more in-depth evaluation of the methods used.