

Statistical Commission
Forty-third session
28 February – 2 March 2012
Item 4(c) of the provisional agenda
Items for information: international merchandise trade statistics

Background document
Available in English only

International Merchandise Trade Statistics: Compilers Manual, Revision 1 (IMTS 2010-CM)

Draft version

(prepared by the United Nations Statistics Division)

United Nations
New York, 2012

Department of Economic and Social Affairs

The Department of Economic and Social Affairs of the United Nations Secretariat is a vital interface between global policies in the economic, social and environmental spheres and national action. The Department works in three main interlinked areas: (i) it compiles, generates and analyses a wide range of economic, social and environmental data and information on which States Members of the United Nations draw to review common problems and to take stock of policy options; (ii) it facilitates the negotiations of Member States in many intergovernmental bodies on joint courses of action to address ongoing or emerging global challenges; and (iii) it advises interested Governments on the ways and means of translating policy frameworks developed in United Nations conferences and summits into programmes at the country level and, through technical assistance, helps build national capacities.

Note

The designations employed and the presentation of material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

The term “country” as used in the text of this publication also refers, as appropriate, to territories or areas.

The designation “developed” and “developing” countries or areas and “more developed”, less developed and “least developed” regions are intended for statistical convenience and does not necessarily express a judgement about the stage reached by a particular country or area in the development process.

Symbols of United Nations documents are composed of capital letters combined with figures.

ST/ESA/STAT/SER.F/87/Rev. 1

UNITED NATIONS PUBLICATION

Sales No. XXXXXXXX

ISBN XXX-XX-X-XXXXXX-X

Copyright © United Nations, 2012

All rights reserved

Preface

The present provisional draft of the *International Merchandise Trade Statistics: Compilers Manual, Revision 1* (IMTS 2010-CM) has been prepared in accordance with a decision of the Statistical Commission at its forty-first session, held in New York from 23 to 26 February 2010.^a In that decision, the Commission adopted “International merchandise trade statistics: concepts and definitions 2010” (IMTS 2010)^b and endorsed the proposed implementation programme, including the preparation of the revised IMTS Compilers Manual.

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. Finally, 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.

At its forty-third session, to be held in New York from 28 February to 2 March 2012, the Statistical Commission will have before it the report of the Secretary General on international merchandise trade statistics.^c This report introduces the IMTS 2010-CM, which is provided as background document for information.

The preparation of IMTS 2010-CM is the cornerstone of the United Nations Statistics Division’s 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 of 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 recommendations or encouragements in addition to those contained in IMTS 2010.

The structure of the IMTS 2010-CM is largely similar to the structure of the original Compilers Manual of 2004,^d and the updates reflect the need to (i) incorporate guidance on the implementation of new recommendations and encouragements contained in IMTS 2010, and (ii) reflect new or updated country practices. The structure of the IMTS 2010-CM follows the logic of the data compilation process.

Notes

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

^b United Nations publication, Sales No. E.10.XVII.13.

^c See Report of the Secretary-General on international merchandise trade statistics (E/CN.3/2012/22).

^d United Nations publication, Sales No. E.02.XVII.17.

Acknowledgements

International Merchandise Trade Statistics: Compilers Manual, Revision 1 (IMTS 2010-CM) has been prepared by the United Nations Statistics Division in collaboration with the members of the Expert Group on International Merchandise Trade Statistics (EG-IMTS) as follows (in alphabetical order of countries and organizations): Brazil (P. Pavao, F. Martins Pimentel), Canada (A. Torrance), China (H. Jin), Colombia (J. F. Martínez), Costa Rica (A. M. Umana), Czech Republic (V. Petraskova), Germany (K. Geyer-Schaefer, A. Krockow, S. Gehle-Dechant), Italy (S. Menghinello, P. Anitori), Jamaica (L. Reid), Mexico (G. A. Durand Alcántara, P. Álvarez Icaza Longoria), Morocco (H. Ouljour), Norway (L. Korbol), Philippines (E. de Guzman), Uganda (J. Mayende), Ukraine (V. Pischeiko, L. Matronich), United Kingdom (M. Kingston, S. Tudor), United States of America (D. Dickerson, D. Oberg), Viet Nam (T. M. T. Le), Common Market for Eastern and Southern Africa (COMESA) (A. J. Walakira), Customs Union Commission (Belarus, Kazakhstan, Russia) (E. Borushko), Statistical Office of the European Communities (EUROSTAT) (K. Nuortila, A. Ridzonova), Food and Agriculture Organization of the United Nations (FAO) (M. Campeanu), Organization for Economic Co-operation and Development (OECD) (A. Lindner), United Nations Conference on Trade and Development (UNCTAD) (M. Muryawan), World Customs Organization (WCO) (E. De Jong), World Trade Organization (WTO) (A. Maurer, Y. Markus), Statistics Division, Department of Economic and Social Affairs of the United Nations Secretariat (R. Jansen, M. Reister, L. González Morales, C.S. Lovell and V. Markhonko as consultant).

The United Nations Statistics Division is grateful to the members of EG-IMTS for their fruitful collaboration. Their valuable contributions throughout the drafting of the recommendations and during four virtual meetings of the EG-IMTS and the meeting on compilation issues of IMTS 2010 are highly appreciated. The Division is also grateful to the Task Force on International Merchandise Trade Statistics (TF-IMTS),^a which supported the revision process at its various stages.

The United Nations Statistics Division also wishes to express its appreciation to national statistical offices, customs administrations and other governmental agencies for their numerous and often very detailed comments provided during the worldwide consultations on the contents of IMTS 2010-CM, which provided important input and guidance for the successful completion of the drafting process.

The preparation of IMTS 2010-CM was started under V. Markhonko and continued under the guidance and supervision of R. Jansen. M. Reister, V. Markhonko (as consultant), R. Jansen, L. González Morales, and C.S. Lovell were involved in the drafting of the text at various stages of the revision process. M. Reister was directly responsible for the organization of the virtual meetings of the EG-IMTS, the worldwide consultation, the meeting on compilation issues of IMTS 2010 and, with the assistance of L. González Morales, the preparation of the final text. Throughout the revision process, the staff of the International Merchandise Trade Statistics Section, United Nations Statistics Division, provided valuable support.

Note

^a TF-IMTS is an inter-agency body and consists of representatives of: United Nations Statistics Division, Economic Commission for Latin America and the Caribbean, Economic and Social Commission for Western Asia, United Nations Conference on Trade and Development, United Nations Industrial Development Organization, FAO, IMF, WTO, International Trade Center, OECD, EUROSTAT and WCO.

Contents

PART I: LEGAL FRAMEWORK AND DATA SOURCES	1
CHAPTER 1 LEGAL FRAMEWORK FOR IMTS.....	3
A. <i>The importance of the legal framework for trade statistics.....</i>	3
B. <i>Legal acts governing customs records.....</i>	4
C. <i>Legal acts regulating non-customs data sources.....</i>	6
D. <i>Legal acts regulating institutional arrangements.....</i>	6
E. <i>Legal acts protecting confidentiality of traders and trade information</i>	7
F. <i>Country Experiences.....</i>	7
CHAPTER 2 CUSTOMS DECLARATIONS AND RELATED CUSTOMS RECORDS.....	9
A. <i>Customs declarations as the most prevalent source of trade data</i>	9
B. <i>Structure and content of the revised Kyoto Convention</i>	10
C. <i>Customs Procedures and IMTS</i>	13
D. <i>Verification of the declared information.....</i>	17
E. <i>Lodgement of the customs declarations and related data-collection issues.....</i>	18
F. <i>Information required to complete a goods declaration</i>	20
Annex 2.A. <i>The single administrative document (SAD).....</i>	22
CHAPTER 3 NON-CUSTOMS DATA SOURCES	23
A. <i>An overview.....</i>	23
B. <i>Main types of non-customs data sources and their uses.....</i>	24
C. <i>Country experiences.....</i>	28
Annex 3.A. <i>Country practices in the use of different data sources</i>	30
CHAPTER 4 ENTERPRISE AND OTHER SURVEYS.....	31
A. <i>General description of enterprise and other surveys.....</i>	31
B. <i>Organization of the surveys</i>	32
C. <i>Advantages and disadvantages of surveys.....</i>	34
D. <i>Examples of enterprise surveys to collect missing trade data.....</i>	34
E. <i>Examples of enterprise surveys to obtain additional information.....</i>	36

PART II: DATA COMPILATION.....	39
CHAPTER 5 INSTITUTIONAL ARRANGEMENTS	41
A. <i>Purposes of institutional arrangements</i>	<i>41</i>
B. <i>Characteristics of effective institutional arrangements.....</i>	<i>42</i>
C. <i>Main types of institutional arrangements</i>	<i>43</i>
D. <i>Towards improved institutional arrangements.....</i>	<i>46</i>
E. <i>Institutional arrangements and data quality.....</i>	<i>49</i>
Annex 5.A. <i>Institutional arrangements – experience of the United States.....</i>	<i>51</i>
Annex 5.B. <i>Institutional arrangements – experience of Mexico</i>	<i>51</i>
Annex 5.C. <i>Institutional arrangements – experience of Brazil.....</i>	<i>53</i>
Annex 5.D. <i>Institutional arrangements – experience of the Philippines</i>	<i>54</i>
Annex 5.E. <i>Institutional arrangements – experience of China</i>	<i>54</i>
CHAPTER 6 STATISTICAL TERRITORY AND ORGANIZATION OF DATA COLLECTION.....	57
A. <i>Statistical territory.....</i>	<i>57</i>
B. <i>Detailed description of the elements of the statistical territory.....</i>	<i>58</i>
C. <i>Organization of the data collection in respect to different territorial elements</i>	<i>63</i>
CHAPTER 7 INTEGRATION OF DATA FROM DIFFERENT SOURCES.....	65
A. <i>Advantages and limitations of customs and non-customs data sources</i>	<i>65</i>
B. <i>Issues encountered when merging data from different sources.....</i>	<i>67</i>
C. <i>Possible approaches and solution when merging data from different sources</i>	<i>68</i>
D. <i>Examples of merging data from other administrative sources with customs data</i>	<i>69</i>
E. <i>Examples of merging data from enterprise surveys with customs data.....</i>	<i>70</i>
F. <i>Integrated approach to economic statistics</i>	<i>70</i>
CHAPTER 8 DATA PROCESSING AND DATABASE MANAGEMENT	73
A. <i>Basic concepts.....</i>	<i>73</i>
B. <i>Data processing and database management at Customs</i>	<i>74</i>
C. <i>Data processing and database management at the responsible agency.....</i>	<i>79</i>
D. <i>Data fields required for statistical purposes</i>	<i>81</i>
CHAPTER 9 DATA QUALITY: ASSURANCE, MEASUREMENT AND REPORTING	85
A. <i>Quality assurance</i>	<i>85</i>
B. <i>Quality measurement and reporting</i>	<i>91</i>

C.	<i>Reconciliation studies, cross-country comparability and bilateral data exchanges ..</i>	95
D.	<i>Inter-agency collaboration on data quality</i>	99
	<i>Annex 9.A. Brazilian statistical data validation system (exports example).....</i>	101
	<i>Annex 9.B. ASYCUDA Data quality assurance, measurement and reporting – Controls and reports.....</i>	103
	<i>Annex 9.C. Detailed discussion of data items that affect statistical discrepancies between countries and further guidance.....</i>	105
	<i>Annex 9.D. Conduct of reconciliation studies – the experience of Brazil</i>	109
CHAPTER 10	DATA COMPILATION IN THE CASE OF CUSTOMS UNION	113
A.	<i>Main types of customs unions and their implications for trade data compilers.....</i>	113
B.	<i>Current challenges and good practices in the organization of data compilation</i>	119
C.	<i>Longer term strategies</i>	120
D.	<i>Further possibilities in multi-country data exchanges</i>	121
CHAPTER 11	INTEGRATING TRADE AND BUSINESS STATISTICS	123
A.	<i>Integrated approach to economic statistics</i>	123
B.	<i>The benefits of integrating trade and business statistics;.....</i>	125
C.	<i>Integrating trade and business statistics in data compilation – possibilities and examples.....</i>	126
D.	<i>Ensuring quality of the linked data sources and the quality of the linked/integrated data</i>	127
E.	<i>Generation and dissemination of additional information – possibilities and examples.....</i>	130
F.	<i>Required institutional and working arrangements</i>	131
PART III:	COMPILATION OF PARTICULAR DATA ITEMS.....	133
CHAPTER 12	TIME OF RECORDING	135
A.	<i>Basic concepts and data sources: an overview.....</i>	135
B.	<i>Determination of the time of recording and customs territory.....</i>	137
C.	<i>Use of the lodgement of the customs declarations for determining the time of recording.....</i>	137
D.	<i>Use of non-customs data sources.....</i>	139
CHAPTER 13	HARMONIZED COMMODITY DESCRIPTION AND CODING SYSTEM.....	141
A.	<i>Recommendation to use the HS.....</i>	141
B.	<i>HS overview</i>	142

C.	<i>2012 edition of HS (HS12)</i>	143
D.	<i>Application of the HS for coding traded goods</i>	145
E.	<i>Measures to ensure proper classification</i>	149
F.	<i>Country experiences in the use of the HS</i>	151
CHAPTER 14	VALUATION	155
A.	<i>Statistical value and its components: an overview</i>	155
B.	<i>Compilation of the statistical value of imported goods</i>	158
C.	<i>Emerging good practices in the compilation of FOB type value of imported goods</i>	161
D.	<i>Compilation of statistical values of exported goods</i>	163
E.	<i>Valuation of selected categories of imported and exported goods</i>	165
F.	<i>Issues of currency recording and conversion</i>	168
CHAPTER 15	QUANTITY MEASUREMENT	171
A.	<i>An overview of the WCO standard units of quantity</i>	171
B.	<i>Compilation of quantity data from customs sources and non-customs sources</i>	175
C.	<i>Conversion factors from non-standard to standard units of quantity</i>	176
D.	<i>Quality issues</i>	177
E.	<i>Estimation and imputation of quantity data</i>	178
	<i>Annex 15.A. Conversion factors for mathematical conversion</i>	180
	<i>Annex 15.B. Quantity conversion factors used by the United Nations Statistics Division</i>	181
CHAPTER 16	PARTNER COUNTRY	183
A.	<i>Recommendations of IMTS 2010</i>	183
B.	<i>Country of origin and its use in import statistics</i>	183
C.	<i>Use of country of last known destination in export statistics</i>	189
D.	<i>Use of country of consignment in import and export statistics</i>	190
E.	<i>Definitions of partner country in trade between members of a customs union</i>	191
F.	<i>Partner country coding for statistical purposes</i>	192
CHAPTER 17	MODE OF TRANSPORT	195
A.	<i>Basic concepts</i>	195
B.	<i>Implementation and data sources</i>	196
C.	<i>Country practices in the compilation of trade statistics by MoT</i>	198

D.	<i>Experiences in the dissemination of international merchandise trade statistics by MoT</i>	200
	<i>Annex 17.A. Description of modes of transport for IMTS purposes</i>	202
CHAPTER 18	CUSTOMS PROCEDURE CODES	203
A.	<i>Customs procedure code as a new data field</i>	203
B.	<i>IMTS 2010 recommendation</i>	203
C.	<i>Importance of compilation and international reporting</i>	204
D.	<i>Customs procedures applied by countries</i>	205
	<i>Annex 18.A. Harmonization of customs procedure and codes in COMESA</i>	208
	<i>Annex 18.B. List of nature of transaction codes for Extrastat</i>	211
PART IV: COMPILATION OF DATA ON TRADE IN SELECTED CATEGORIES OF GOODS		213
CHAPTER 19	SCOPE OF IMTS	215
A.	<i>The general guideline</i>	215
B.	<i>Comparison of specific categories of goods</i>	215
C.	<i>Economic territory and categories of goods</i>	218
D.	<i>Cross-border trade and smuggling</i>	219
E.	<i>Customs and statistical threshold, treatment of non-response</i>	219
F.	<i>Confidential data and incomplete coverage due to data omission</i>	221
CHAPTER 20	GOODS FOR PROCESSING	223
A.	<i>Definition and examples of goods for processing</i>	223
B.	<i>Transactions and activities that are not goods for processing</i>	225
C.	<i>Treatment of goods for processing in the 2008 SNA/ BPM6</i>	226
D.	<i>Identifying trade in goods for processing – with or without change of ownership – and implications for the balance of payments compilation</i>	227
E.	<i>Country experiences</i>	228
F.	<i>Additional issues</i>	230
CHAPTER 21	GOODS WHICH CROSS BORDERS AS A RESULT OF TRANSACTIONS BETWEEN RELATED PARTIES	231
A.	<i>Definition of related parties and examples of trade between related parties</i>	231
B.	<i>Purposes of identifying trade between related parties (including valuation)</i>	232
C.	<i>Ways to obtain information on trade between related parties</i>	233
D.	<i>Good practices</i>	234

CHAPTER 22	PIPELINE TRADE AND TRADE VIA FIXED POWER LINES	237
A.	<i>Characteristics of trade in electricity, gas, oil and water</i>	237
B.	<i>Data sources and compilation issues.....</i>	238
C.	<i>Country experiences.....</i>	239
	<i>Annex 22.A. Italian experience in the production of external trade statistics on natural gas and electricity.....</i>	241
CHAPTER 23	SHIPS AND AIRCRAFT	243
A.	<i>Difficulties encountered in the measurement of trade in ships and aircraft.....</i>	243
B.	<i>Existing practices for recording and measuring trade in ships and aircraft</i>	245
C.	<i>Possibilities for improving the international measurement of trade in ships and aircraft</i>	247
D.	<i>Leasing of ships and aircraft</i>	248
E.	<i>Country experiences in the compilation of the trade in ships and aircraft</i>	249
	<i>Annex 23.A. Experience of Italy in the compilation of external trade in ships and aircraft</i>	250
	<i>Annex 23.B. Experience of Norway in the compilation of external trade in ships and aircraft</i>	251
CHAPTER 24	OTHER SPECIAL CATEGORIES OF GOODS AND COMPILATION FOR NATIONAL ACCOUNTS AND BALANCE OF PAYMENT PURPOSES	253
A.	<i>Goods to be recorded similarly in IMTS and BPM6/NA</i>	253
B.	<i>Goods to be recorded differently in IMTS and BPM6/NA.....</i>	256
C.	<i>Common metadata to be provided by IMTS and BOP compilers.....</i>	257
PART V: METADATA AND DISSEMINATION		259
CHAPTER 25	METADATA.....	261
A.	<i>Basic concepts.....</i>	261
B.	<i>Presentation and dissemination of metadata.....</i>	262
C.	<i>Metadata items relevant for international merchandise trade statistics</i>	263
D.	<i>Country practices.....</i>	265
CHAPTER 26	DISSEMINATION	269
A.	<i>Role of data and metadata dissemination.....</i>	269
B.	<i>Factors to consider in data and metadata dissemination.....</i>	269
C.	<i>Combined presentation of statistics on external trade in goods and services.....</i>	279

CHAPTER 27	OTHER INTERNATIONAL CLASSIFICATIONS RELEVANT TO TRADE STATISTICS	281
A.	<i>Standard International Trade Classification, Revision 4</i>	281
B.	<i>The Central Product Classification</i>	283
C.	<i>Classification by Broad Economic Categories</i>	284
D.	<i>International Standard Industrial Classification of all Economic Activities.....</i>	286
E.	<i>Correspondence and conversion tables and their use</i>	288
PART VI: EXTERNAL TRADE INDICES AND SEASONALLY ADJUSTED DATA.....		291
CHAPTER 28	EXTERNAL TRADE INDICES	293
A.	<i>General overview</i>	293
B.	<i>Data sources and measurement approaches</i>	294
C.	<i>Challenges in the application of various approaches.....</i>	295
D.	<i>Methodological issues.....</i>	296
E.	<i>Other issues.....</i>	299
F.	<i>Country experiences.....</i>	300
	<i>Annex 28.A. The Norwegian experience</i>	303
	<i>Annex 28.B. The Canadian experience</i>	306
CHAPTER 29	SEASONAL ADJUSTMENT.....	309
A.	<i>Basic concepts and uses of seasonally adjusted trade data.....</i>	309
B.	<i>Preliminary treatment of data prior to seasonal adjustment.....</i>	310
C.	<i>Seasonal adjustment.....</i>	311
D.	<i>Revision policies</i>	311
E.	<i>Quality of seasonal adjustment.....</i>	312
F.	<i>Specific issues</i>	312
G.	<i>Data presentation.....</i>	313
H.	<i>Country examples.....</i>	313

Abbreviations and Acronyms

2008 SNA	System of National Accounts 2008
BEC	Classification by Broad Economic Categories
BMP5	Balance of Payments Manual, 5th edition
BMP6	Balance of Payments and International Investment Position Manual, 6th edition
CIF	Cost, insurance and freight
COMESA	Common Market for Eastern and Southern Africa
DQAF	Data Quality Assessment Framework
EG-IMTS	Expert Group on International Merchandise Trade Statistics
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, Rev.1	International Merchandise Trade Statistics: Concepts and Definitions, Revision 1
IMTS, Rev.2	International Merchandise Trade Statistics: Concepts and Definitions, Revision 2
IMTS 2010	International Merchandise Trade Statistics: Concepts and Definitions, 2010
IMTS 2010-CM	International Merchandise Trade Statistics: Compilers Manual
INCOTERMS	Terms of delivery standardized by the ICC
ISIC	International Standard Industrial Classification of All Economic Activities
MSITS 2010	Manual on Statistics of International Trade in Services 2010
OECD	Organization for Economic Cooperation and Development
RKC	Revised Kyoto Convention
SAD	Single Administrative Document
SDMX	Statistical Data and Metadata Exchange
SITC	Standard International Trade Classification
TF-IMTS	Inter-Agency Task Force on International Merchandise Trade Statistics
VAT	value added tax
WCO	World Customs Organization
WTO	World Trade Organization

Part I: Legal framework and data sources

Chapter 1 Legal framework for IMTS

1.1. *Introduction.* This chapter stresses the importance of the legal framework for international merchandise trade statistics (IMTS), including for ensuring the availability of, and access to, the necessary data sources such as customs records (see chapter 2) and non-customs sources (see chapters 3 and 4), and for establishing effective institutional arrangements (see chapter 5) and protection of confidentiality (see also chapter 26). Country practices are described in several case studies.

A. The 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, due to a number of factors, such as reporting burden on companies and traders, confidentiality concerns, and the lack of proper cooperation between various agencies, basic data may not be provided or be accessible in a timely and comprehensive way, thus making it difficult for the compilers to produce complete and high-quality trade statistics. Basic trade data include data provided by traders through customs declarations, data provided by the customs administration, the central bank, ministries or other national agencies (in case they are not the agency responsible for compiling official trade statistics in the country), as well as 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 its legal framework for IMTS. It is, therefore, of the utmost importance that 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.

1.3. *Types of legal acts.* Legal acts relevant for trade statistics exist at least at three different levels, namely: (a) legal acts governing the declaration of customs documentation; (b) legal acts regulating the collection, processing and dissemination of trade statistics and the working relations of the concerned agencies; and (c) legal acts protecting the confidentiality of information. The latter kinds of acts are usually incorporated in the acts 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 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 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 or 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 the 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), which sets out the commodity classification. For trade statistics, the most important international agreement adopted by the WTO is the *WTO Agreement on Customs Valuation*. All 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 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 various agencies with respect to the statistical process (see chapter 5 for details).

1.6. *National laws and regulations – experience of the United States.* As an example, the customs procedures in the legal acts of the United States are part of a broader package of homeland security measures. Customs procedures are directly linked to border protection and national security. The United States Code contains the general and permanent laws of the United States by subject matter. It is divided by broad subjects into 50 titles and published by the Office of the Law Revision Counsel of the U.S. 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 (“The Census Act”) contains a whole chapter on “Collection and Publication of Foreign Commerce and Trade Statistics”. Box 1.1 below shows an excerpt of section 301 of this chapter. Another example of law is Title 19 on “Customs Duties”, which contains most references to customs procedures.

Box 1.1

United States Code - Title 13 (Census)

This box gives an excerpt of Chapter 9 “Collection and Publication of Foreign Commerce and Trade Statistics”, section 301 “collection and publication”, parts (a) and (b).

(a) The [US 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 [US Secretary of Commerce] 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 1.2 below gives an example of such 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 1.2

Excerpt of 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 therefore, 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 purposes 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 2, and their advantages and limitations are discussed in chapter 7 while chapter 9 elaborates a number of related quality assurance issues.

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 41st session in 2010, the Commission adopted the revised recommendations for international merchandise trade statistics (IMTS 2010). The reflection of these recommendations in the 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 trade statistics.

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 2 and further parts of this Manual, international merchandise trade statistics are based largely on information from customs documents, but are not limited to them. Certain kinds of transactions do not pass through customs and therefore need 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 Chapter 3 for more details on the 2006 survey results). All those additional data sources can be necessary or useful to complete or verify a country's international merchandise trade statistics.

1.11. The legal acts regulating the content of such data sources, the ways they are maintained and the access to them are of great importance for the trade compiler. 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 between governmental agencies relevant to 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 mechanism of their cooperation. If such provisions and mechanism of cooperation are lacking or are not sufficiently detailed, then the establishment of effective institutional arrangements might be more difficult and time consuming.

1.13. In this context it is a good practice that compilers 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. It is a good practice that the national laws and regulations designate only one governmental agency as responsible for the dissemination of official trade statistics and define the rights and responsibilities of all agencies involved in the collection, exchange, processing and compilation 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 could 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, pipeline shipments of natural gas and crude oil, maintained by specialized governmental agencies etc.). See chapter 5 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 instruments. 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. Once transmitted to the agency responsible for the compilation of international trade statistics, in many cases, that agency treats the information as confidential. However, in most cases the compiling agency does not subject all data to rigorous disclosure reviews, instead applying 'passive disclosure' methods where importers/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 concerns 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 business 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 not be excluded from the trade statistics and should be reported in aggregate form so that the confidential aspects of these operations are not identified (see Chapter 27 for details). It is further desirable that national legislation defines right and responsibilities regarding access to the micro-data, highlighting the appropriate principles and procedures. The responsible agency should cooperate with the national legislature to establish 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 the statistical reporting for the compilation of statistics of foreign trade. This law contains provisions that permit:

- (a) to establish the requirement for residents to report to the Office of Exchange transactions with non-residents;
- (b) to specify the reportable transactions: commercial and financial transactions with non-residents;
- (c) to define violations of the law on statistical reporting: non-declaration; misrepresentation and non-compliance with statistical declaration requirements;
- (d) empower 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 the 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 either as evidence for or against the individual, corporation, association, partnership, institution or business enterprise from whom such data emanates; 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 of Commonwealth Act 591 Sec 4 is being implemented for Philippine IMTS. 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 identity of the exporter or the importer is indicated in the statistical tables.

Chapter 2 Customs declarations and related customs records

2.1. *Introduction.* This chapter elaborates the recommendations on the use of customs declarations and related customs records contained in IMTS 2010, chapter 8, on data compilation strategies. The chapter provides details on the revised Kyoto Convention (RKC) and identifies customs procedures indicating inclusion or exclusion of movements of goods from IMTS. 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, trade statistics compilers should be fully aware of the relevant laws and administrative regulations which are in effect in their countries and which define customs procedures and the scope and level of detail of the declarations. This chapter builds on chapter 1, which discusses the overall legal framework for IMTS. The use of non-customs sources is covered in chapter 3. This chapter is closely related and provides the background for chapters 12 to 18, which elaborate on the compilation of particular data items from the point of view of customs declarations as the main data source for IMTS.

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

2.2. *Customs declarations as source of information.* At most points of entry, goods are brought into (withdrawn from) the customs territory of a country under various customs procedures with associated declarations that contain many statistically important particulars of such movements. So far only within a few customs unions (for instance, European Union, the Southern African Customs Union, or the Customs Union of Belarus, Kazakhstan and Russia), customs procedures have been lifted in favor 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 better 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 laid out by WCO.¹ 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”.² A declarant is “any natural or legal person who makes a customs declaration or in whose name such a declaration is made”.³ The RKC notes that a

1 Most of those procedures are formulated in *International Convention on the simplification and harmonization of Customs procedures*, which was signed at Kyoto on 18 May 1973 and revised in June 1999; the WCO has also the *Glossary of International Customs Terms* to facilitate uniformity in use of customs terminology (see http://www.wcoomd.org/files/1.%20Public%20files/PDFandDocuments/Procedures%20and%20Facilitation_2/glossary/Glossary_E2011.pdf).

2 WCO *Glossary* (see “goods declaration”); see also the RKC, General Annex, Chapter 2, E19/F8, goods declaration.

3 WCO *Glossary* (see “declarant”); see also the RKC, General Annex, Chapter 2, E14/F7.

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).⁴ The term “customs 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.* Related customs records are understood to refer to customs documents to be filled in addition to the goods declaration, such as for example a declaration of customs value or special forms when goods enter/leave customs free or industrial free zones. The requirements of countries might be very different. Related customs records differ from documents accompanying customs declarations such as invoice, shipping manifest, bill of lading or certificate of origin which are not completed or issued at customs.⁵ 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 follow 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 due 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 true 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 trans-border movements of good are no longer widely used or used differently. For instance, in certain cases the goods which are being simply transported through a given country, and which in the past would be normally 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 a good practice for customs officers and statisticians to cooperate closely to arrive to a common understanding of the distinctions between certain customs and statistical definitions and the fact that a transaction falling under the same customs procedure may be later classified differently for statistical purposes.

B. Structure and content of the revised Kyoto Convention

2.6. The 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.⁶

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

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

6 The RKC is available at <http://www.wcoomd.org>.

2.7. *The Body of the revised Kyoto Convention.* The main body of the RKC contains the scope, structure and management of the convention, and defines its ratification process by the contracting parties. For instance, Article 9 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.” It continues with “any Contracting Party which accepts a Specific Annex or Chapter therein shall be bound by any amendments to the Standard contained in that Specific Annex or Chapter which have entered into force at the date of 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, Austria, Azerbaijan and Belgium are all contracting parties to the RKC, but they did not sign off on any of the chapters of its Specific Annexes. As at 1 December 2011, 78 countries had become Contracting Party to the RKC (see Annex 1 of this Chapter). 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 by Specific Annexes. The General Annex and each Specific Annex to the RKC consist, in principle, of Chapters which subdivide an Annex and 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 have to be included in the Customs Law of the country. “Transitional Standard” means a Standard in the General Annex for which a longer period for implementation is permitted. Recommended Practices are also mandatory unless countries enter reservations against them. Each Annex is accompanied by Guidelines, the texts of which are not binding upon Contracting Parties. As examples of standards in the General Annex, the “Goods declaration format and contents” is given in the Box 2.1.

Box 2.1

General Annex of the revised Kyoto Convention – Example of Standards

Goods declaration format and contents

Standard 3.1.1. 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 3.1.2. 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 3.1.3. 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 3.1.4. 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 which are applicable to a variety of specific customs procedures that are defined in the Specific Annexes. Chapter 2 of the General Annex gives useful definitions, such as for “clearance”, “Customs law” or “Customs territory”. Chapter 3 defines in detail “Clearance and other Customs formalities” which includes descriptions of the “Goods declaration” and of “Examination of the goods”. The General Annex furthermore has – among others – chapters on “Duties and Taxes”, “Security”, “Customs control”, “Application of information technology”, “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 contain all details on customs procedures. Such information is very relevant for the compilation of IMTS. The table of contents of the Specific Annexes and accompanying guidelines is given in Table 2.1.

Table 2.1
List of specific annexes of the revised Kyoto Convention and their chapters

Specific Annexes	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 Control of Documentary evidence of origin

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 prevailing and important source of data for trade statistics⁷. Further, the customs procedures are used to determine what movements of goods are to be included or excluded from IMTS. However, countries may not always strictly follow the standards and recommended practices of the RKC and/or have other procedures in addition to those identified in it. Therefore, compilers should carefully review the details of the customs procedures and decide on the inclusion and exclusion of any given procedures, following the IMTS 2010 recommendations on the scope of recording (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 trade statistics. Goods movements under the procedures “Transit”, “Trans-shipments” and “Temporary admissions” are in general to be excluded. Boxes 2.2 and 2.3 below provide the list of customs procedures identified in the RKC under which, as a general guideline, goods are to be included or excluded from trade statistics, assuming the country follows the RKC in the definition and application of these customs procedures (see IMTS 2010, para. 8.5). Box 2.4 provides examples of cross border movements of goods which might not be covered by separate customs procedures but which should be included in IMTS.

2.14. *List of customs procedures under which goods are to be included in IMTS.* Box 2.2 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 2.2

Customs procedures covering goods to be included in IMTS

1. Imports

Clearance for home use

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 that “goods in free circulation” means goods which may be disposed of without Customs restriction.

⁷ See chapter 3 for description of trade flows which might not be covered by customs and where the use of non-customs sources of data might be needed.

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 repair 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 B, 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.

Customs formalities in respect of 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”.⁸ It states also that the customs declaration should not be required unless goods are dutiable, taxable or subject to special customs control.

Admission of urgent consignments (Specific Annex J, Chapter 5)

The RKC stipulates that the declarant should be authorized to lodge the goods declaration before the arrival of urgent consignments, and provisions should exist for a simplified goods declaration procedure, including an oral declaration.⁹ However, customs may request the subsequent furnishing of more detailed information.

2.15. *List of customs procedures under which goods are to be excluded from IMTS.* Box 2.3 provides the list of customs procedures whose application should result in exclusion of the goods from IMTS, 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 2.3

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.

Transshipments (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.

⁸ See the RKC, Specific Annex J, Chapter 2, Standard 3 and Standard 6.2 to the General Annex, Chapter 6.

⁹ See the RKC, General Annex, Chapter 3, Standard 25 and Specific Annex J, Chapter 5 on relief consignments.

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; such goods must be imported for a specific purpose and must be intended for re-exportation within a specified period¹⁰ 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 it is terminated. The Customs shall fix the time limit for temporary admission in each case.

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 1990¹¹:

- (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”

2.16. *Cross border movements of goods which might not be covered by specific customs procedures but which should be included in IMTS.* There is a number of cross border movements of goods which might not be covered by specific customs procedures but which represent a significant trade and should be included in IMTS. Examples of such movements of goods are provided in Box 2.4.¹²

Box 2.4

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

- *Goods on consignment;*
- *Border trade* (trade between residents of adjacent areas of bordering countries as stipulated by national legislation);
- *Barter trade;*
- *International aid* (aid or donations given gratis between Governments or by international organizations);
- *Gifts and donations* (to be included if to significant scale as defined by national law);
- *Contracting projects* (exports of equipment or materials to be used for construction projects carried out by country residents);
- *Goods on lease* (imports or exports under a financial lease arrangement) (see IMTS 2010, para.1.28);
- *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);
- *Duty-free shop* (the duty-free import of commodities for sale in specific shops to specific individuals according to specific customs regulations);
- *Seizure and subsequent resale by the State.*

¹⁰ See also IMTS 2010, para. 1.43

¹¹ See http://www.wcoomd.org/files/1.%20Public%20files/PDFandDocuments/Procedures%20and%20Facilitation/Istanbul_legal_text_Eng.pdf

¹² The RKC lists, inter alia, the most widely used regimes, such as clearance for home use and outright exportation (in some countries up to 90 percent of all declarations).

2.17. *National application of the drawback procedure.* As indicated at the beginning of this section there might be differences in the application of specific customs procedures between countries and trade statisticians need to be aware how certain procedures are defined and applied in detail in their country. Box 2.5 provides two country examples of the application of the drawback procedure

Box 2.5

Use of the drawback procedure – experience of Brazil and Canada

Definition and application of the drawback procedure in Brazil

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

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

1. This program 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.* Although the detailed examination of goods is considered a prerogative of any country, the Convention recommends that “the customs authorities should in as many cases as possible be content with a summary examination of goods declared for home use.”¹³ In summary examinations, the customs “may carry out some, though not necessarily all, of the following checks - counting the packages, noting their marks and numbers, and ascertaining the description of goods. Detailed examination may be done and involves thorough inspection of the goods to determine as accurately as possible their composition, quantity, tariff heading, value and, where necessary, origin.”¹⁴ It should be noted that in modern customs operations all shipments and declarations are subject to a risk assessment which allows to significantly limit physical inspections; in some countries information about inspections is

¹³ The compiler should be aware that “summary examination may be considered sufficient, for example, where goods of the same description are imported frequently by a person known by the Customs to be reliable, where the accuracy of the particulars given in the declaration can be checked against other evidence, or where the import duties and taxes involved are low”. See the RKC, General Annex, Chapter 6, Standard 6.4. See also Guidelines to the General Annex, Chapter 3, Standard 3.33, and Chapter 6.

¹⁴ See RKC, General Annex, Chapter 3, Standard 3.33.

flagged in the data while in other countries no such information is available. It is a good practice for trade statistics compilers to cooperate with customs in reviewing the scope and organization of physical inspection procedures to ensure that statistical concerns relating to data quality, verification and validation are fully taken into account. For further information on quality assurance please refer to chapter 9.

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. The most typical examples of such documents are import licenses, documentary evidence of origin, health or phytopathological certificates, commercial invoices, and transport documents.¹⁵ It is advised that compilers make standing arrangements with the customs authorities to have access, as permitted by law, to whichever of those documents are collected, and use them as additional sources of information. It is recognized, however, that the use of such documents might be limited to only 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 percentage of imports. Many developing countries use the Automated System for Customs Data and Management (ASYCUDA), a computerized system developed by UNCTAD.¹⁶ 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 or 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 additional administrative or financial burden to customs and traders, contain all statistically significant data fields (see chapter 8 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 addressed in the joint work programme between customs and the agency responsible for compiling international trade statistics (see Chapter 5). In this connection, the statistical agencies could seek also greater access to information such 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 define the time limit for lodgement which will enable the declarant to assemble the particulars needed for making the declaration and to obtain the required supporting documents. Governments are free to select the beginning of the time limit; the RKC names, as the examples, the time when

¹⁵ See RKC, General Annex, Chapter 3, Standard 3.16.

¹⁶ ASYCUDA can be configured to suit the national characteristics of individual customs regimes, for further detail see Chapter 8 of this Manual or the ASYCUDA web site at <http://www.asycuda.org>.

goods are unloaded, presented at the customs office or released.¹⁷ It follows that 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 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 chapter 12)

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.¹⁸ The lodgement of the additional declaration and the time when goods cross the border of the customs territory may be far apart from each other. However, both declarations refer to the same transaction and must be linked during the data processing. Compilers are advised, (a) to use the provisional or incomplete declaration to identify the time of lodgement and collect provisional data, and (b) to use the additional declaration to revise/complete trade data while time of recording should not change.

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/exported goods without waiting for collection of the documents needed for completion of the declaration.¹⁹ 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 (exported) frequently by the same company/person, the RKC recommends that customs allow a single goods declaration to cover all importations (exportations) by that person for a particular reference period.²⁰ That facility may be granted if the company/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 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 (amount) 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

17 See revised RKC, General Annex, Chapter 3, Standard 3.23.

18 See RKC, General Annex, Chapter 3, Standard 3.13 and its guidelines.

19 See RKC, General Annex, Chapter 3, Standard 3.25 and its guidelines.

20 See RKC, General Annex, Chapter 3, Transitional Standard 3.32, and its guidelines.

from the customs any information which may help to identify shipments of undeclared goods, and to use non-customs data sources including estimation to ensure proper coverage of the 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 be made exempt from reporting requirements; this can also apply when the value (or quantity) is below a certain customs-defined or statistical threshold.²¹ Compilers should be aware of those transactions and decide whether and how to include them in the trade statistics to avoid 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 trade statistics, or may be included in the trade statistics as an estimate based on a sampling approach or as an aggregate. That approach is useful where resources may not be sufficient to process all the transactions on a timely basis. In those cases, clear explanatory notes should be included in the metadata. For further information see chapter 19, which discusses simplified declarations and reporting thresholds.

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.²² It is a good practice if compilers work together with customs to develop 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. The list of names include such designations as import/export declaration form, cargo customs declaration, electronic export information, Single Administrative Document, entry/exit summary form, warehouse or free zone entry/dispatch form. Annex 2.1 provides some examples of goods declaration forms.

2.31. *Information required to complete a goods declaration.* The information items normally required in the custom declaration forms and relevant for compilation of trade statistics (either for inclusion into the statistics or for verification purposes) are listed in table 8.2.²³ The data

21 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. 18.17 for the explanation of customs and statistical threshold.

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

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

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 which can be used to analyze 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., identification of goods 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 in 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, detailed instructions regarding completion of the declarations are normally prepared by customs. Customs usually conducts training for its own staff as well as for the business community. It is a good practice that compilers participate in those training efforts to understand the data entry process and to sensitize customs officers, traders, brokers and traffic managers on the need to properly accomplish customs declaration forms and to stress the importance and uses of information derived therein. Such training can be seen as part of a broader range of trade statistics advocacy and quality assurance activities (see chapter 5 and 9 for details).

Box 2.6

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, mandatory filling up of the box on value of imported raw materials, insurance and freight value as well as the importance and uses of IMTS were emphasized during the fora.

Annex 2.A. The single administrative document (SAD)

2.A.1. The single administrative document is the documentary basis for customs declarations in the EU and in Switzerland, Norway and Iceland. The single administrative document is composed of a set of eight copies. Below shows 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. For full information please go to the website of the European Commission at http://ec.europa.eu/taxation_customs/customs/procedural_aspects/general/sad/index_en.htm.

Figure 2.A.1
Single administrative document – copy for the country of dispatch/export

EUROPEAN COMMUNITY					A OFFICE OF DISPATCH/EXPORT						
Copy for the country of dispatch/export	1	2 Consignor/Exporter			No	1 DECLARATION					
		3 Forms			4 Loading lists						
		5 Items			6 Total packages		7 Reference number				
		8 Consignee			No	9 Person responsible for financial settlement					No
		10 Country first			11 Trading		13 C.A.P.				
		14 Declarant/Representative			No	15 Country of dispatch/export		15 C. disp./exp. Code		17 Country destin. Code	
		16 Country of origin			17 Country of destination						
		18 Identity and nationality of means of transport at departure			19 Ctr.	20 Delivery terms					
		21 Identity and nationality of active means of transport crossing the border			22 Currency and total amount invoiced		23 Exchange rate		24 Nature of transaction		
		25 Mode of transport at the border	26 Inland mode of transport	27 Place of loading		28 Financial and banking data					
1	29 Office of exit			30 Location of goods							
31 Packages and description of goods	Marks and numbers - Container No(s) - Number and kind				32 Item No	33 Commodity Code					
					34 Country origin Code	35 Gross mass (kg)					
					a	b	37 PROCEDURE			38 Net mass (kg)	39 Quota
					40 Summary declaration/Previous document						
44 Additional information/ Documents produced/ Certificates and authorizations					41 Supplementary units						
					A.I. Code						
47 Calculation of taxes	Type	Tax base	Rate	Amount	MP	48 Deferred payment		49 Identification of warehouse			
	Total:					B ACCOUNTING DETAILS					
51 Intended offices of transit (and country)	50 Principal				No	Signature:					
	represented by				C OFFICE OF DEPARTURE						
Place and date:											
52 Guarantee not valid for					Code		53 Office of destination (and country)				
	D CONTROL BY OFFICE OF DEPARTURE				Stamp:		54 Place and date:				
Result:				Signature and name of declarant/representative:							
Seals affixed: Number:											
identity:											
Time limit (date):											
Signature:											

Chapter 3 Non-customs data sources

3.1. *Introduction.* This chapter refers to the recommendation of IMTS 2010, chapter 8, on data compilation strategies, to use non-customs data sources to supplement customs-based data to ensure full coverage of IMTS. This chapter discusses such non-customs data sources as parcel and letter post records, aircraft and ship registers, enterprise surveys (more details on enterprise surveys are provided in a chapter 4), 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 is covered in chapter 2. Challenges and good practices in merging data obtained from customs and non-customs sources are covered in chapter 7, which contains additional examples of the use of non customs data sources.

A. An 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 3.A). However, there is a considerable difference between developed and developing and transitional countries.²⁴ According to a survey conducted by the United Nations Statistics Division in 2006, only 55 percent of developed countries that replied use customs declarations as their main data source, while almost all (98 percent) developing and transitional countries indicated that customs declarations are their main source. More developed countries use additional data sources, such as administrative records associated with taxation (58 percent) and enterprise surveys (59 percent), as compared with developing and transitional countries, where these figures are only 22 percent and 21 percent, 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. The table in annex 3.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 those additional data sources can be necessary and useful to complete the 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 generally may not appear in customs records:

- Goods delivered through postal or courier services
- Electricity
- Petroleum, gas and water through pipelines

24 There is no established convention for the designation of “developed” and “developing” countries or areas in the United Nations system. In common practice, Japan in Asia, Canada and the United States 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>).

- Border trade (i.e., informal sector trade between residents of adjacent areas of bordering countries)
- Sales and purchases made by aircraft and ships in foreign ports
- Sales and purchases of aircraft, ships and other mobile equipment
- Transactions on high sea

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 source may vary from country to country depending the national circumstances and needs.

1. Parcel post and letter post records

3.6. *United Postal Union.* The treatment of parcel post and letter post shipments by customs offices is governed by the acts of the Universal Postal Union, which is currently composed of 189 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 CN22 and C23.* Among other matters, the UPC deals with the issue of items (letter post, parcels) which are subject to customs control. It provides, for example, that items weighing less than two kg and with the value of their contents less than 300 special drawing rights, should bear a special form (CN22). All other items should be accompanied by form CN23. The CN22 form contains a description of content by separate articles, their net weight and value. The CN23 form, usually referred to as a customs declaration, requires additional information; the information should be provided by the sender and should 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 in those forms.

3.8. *Application of a threshold.* If the values declared on the CN22, CN23 or other postal forms exceed the threshold value adopted for trade statistics purposes, then compilers should include those goods in trade statistics in full detail (commodity classification, value, quantity and partner country, etc.). If the value of the individual transaction does not exceed the threshold, then the transaction should be treated 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 to that agency on a regular basis.

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 similar pattern, utilizing all information available. The agency responsible for compiling the statistics should make special arrangements either through customs or directly with the parcel carriers 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 by parcel delivery services (both government and privately operated) is becoming more and more important; the compiling agency should develop a strategy with the aim of developing a compilation procedure which ensures that those merchandise flows are adequately reflected in trade statistics.

2. Aircraft and ship 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 23 discusses the compilation of data on the trade in ships and aircrafts in detail.

3. Enterprise surveys

3.12. *Use of enterprise surveys.* Obtaining information on international transactions of electricity, petroleum, gas and water through pipelines or on sales and purchases made by aircraft and ships in foreign ports or on high sea, can be done 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 quarterly) of all involved enterprises to complete the IMTS. If for certain kinds of transactions, the number of involved enterprises is too large to hold a regular census, then the compiling agency could conduct regular enterprise surveys of the specific sectors (airlines and/or shipping companies).

3.13. *Surveys to capture border trade.* Border trade, including shuttle trade, is trade between residents of adjacent areas of bordering countries. Such trade is typical of low quantities and value but at high frequencies. Given the relatively low value of the individual transactions, such 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 a good practice that trade statisticians capture the value, quantity and commodity detail of these transactions on a quarterly or annual basis. Chapter 4 provides more detailed information about enterprise surveys and contains an example of Uganda on its Informal Cross Border Survey.

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 11.

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 that found on customs declarations; they may be of use as a source in cross-checking and/or supplementing information gathered from customs declarations. Quantities in weight and number are usually available, as are information on freight costs, general description of the commodities (but 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 cartage to dock, 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, be entered in the currency of the exporting country and 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 compilation of trade-related statistics.

5. Currency exchange records and records of monetary authorities

3.17. *Use of information from International Transactions Reporting Systems (ITRS).* 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 which 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 to cross-check the customs-based trade statistics as applicable.

3.18. *Limitations in the use of data from ITRS.* Compilers should keep in mind that ITRS is set up to reflect financial flows which do not necessarily correspond to the physical movements of goods relevant to IMTS. Therefore, due care should be exercised to separate merchandise flows from service, income, transfers, and financial flows. Also, the partner country attribution in ITRS would be based on the residence of transactors rather than on country of goods origin and

country of their last known destination of consignment. 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. That may result in a recorded time different from when the goods changed ownership (as required for balance of payments and national accounts statistics) or when the goods were exported or imported (as used in customs-based 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 source of information.

3.20. *Advantages in the use of data from ITRS.* The advantage of ITRS is that sometimes it can provide more timely total trade data than a survey or customs system. For example, 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 that 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 quantity information. In such a case compilers are advised to analyze data from these reports and to use them as appropriate. For an example on the use of information from commodity boards see chapter 7.

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. The European Union is an example of a group of countries where such a system is in place.

8. Data exchanges between countries

3.23. *Use of data exchanges between countries.*²⁵ In some circumstances, particularly where non-reporting or errors in collected data are prevalent, a data exchange²⁶ 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. Exchange may be a permanent arrangement or be limited to a specific time frame to deal with a temporary situation. Given the confidentiality aspect of the data exchange it may be necessary to have a signed agreement between the partners. An example of country data exchange is provided in chapter 9, Section C and chapter 10 discusses further cases of country data exchanges. Chapter 26 covers the issue of confidentiality in detail.

3.24. *Reconciliation studies.* Before undertaking a data exchange, it is important to do detailed trade data reconciliation studies (see chapter 9) to fully understand the differences between the two partners' statistics and the adjustments which will be needed to derive each partner's export data from counterpart import statistics (see chapter 16 on the issues related to partner country attribution). Because of the greater customs scrutiny paid in most countries to imports, 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 exports of a partner have a significant portion which may not have been reported. It can also foster greater communication and cooperation between the customs and statistical agencies in the two countries. The exchange may increase the burden on importers if they have to report additional data elements to meet the exporting partner's needs, and may reduce each partner's flexibility to modify 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 the time of recording may have large differences may be lengthy. More details on Data Exchange are given in Chapter 9.

C. Country experiences

3.26. *United States example - obtaining information on goods transactions through Postal and Courier Services.* In the United States 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. As complete information is not available for goods valued below these thresholds, import and export low-value estimates are calculated each month. Goods shipped via small package courier companies were identified as a major component of under coverage, especially for exports. Therefore the U.S Census Bureau developed a methodology to use a sum of courier and non-courier estimates.

²⁵ 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.

²⁶ One form of data exchange is the use of one country's imports data as a substitute or input into another country's exports data.

Data on low value shipments provided by major courier companies upon request served as a basis for the methodology. A 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. These factors can be updated as needed by requesting more recent low-valued data from the courier companies.

3.27. *Mexico example - administrative records as non-customs sources.* There are administrative records that provide data for validating or replacing information from Customs declarations, or can supplement to the information provided by Customs. In the case of Mexico, non-customs records are used for two specific cases: as a supplement in the collection of data by mode of transport, in which the Ministry of Communications and Transportation makes available the volume of goods transported by air, sea, road and rail provided by national and international airlines as well as public bodies such the maritime ports. Likewise in the case of oil, the Mexican 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. *Norway example - 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 Norwegian shipping registers (NIS and NOR) about new registrations, cancelations and other changes in the registers. Based on this information a letter and a form are sent to whom the registered owner, asking for additional information. The full detail of this example is provided in chapter 23.

Annex 3.A. Country practices in the use of different data sources

Table 3.A.1
Results of a survey on national practices conducted in 2006

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

Source: *International Merchandise Trade Statistics: Supplement to the Compilers Manual* (United Nations Publications, 2008, Sales No. E.08.XVII.9), Table 1.2.

* There is no established convention for the designation of “developed” and “developing” countries or areas in the United Nations system. In common practice, Japan in Asia, Canada and the United States 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>).

Chapter 4 Enterprise and other surveys

4.1. *Introduction.* This chapter provides details on enterprise surveys and other surveys identified in chapter 3 as one of the main non-customs data sources for international merchandise trade statistics. The chapter focuses in particular on purposes and good practices in the organization of such surveys as well as on their advantages and disadvantages as trade data source. The need to adopt an integrated approach is highlighted. The chapter provides also 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 10.

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. Therefore, in most countries enterprise surveys are not extensively applied for the compilation of merchandise trade statistics. Member states of customs unions are an exception (see Annex 3.A) in which customs records might not exist for trade among the members of the union. Instead enterprise surveys can be a main source of information for trade statistics such as in the case of Member States of the European Union. Data compilation in the case of a customs union is discussed separately in Chapter 10. This chapter focuses on surveys for the compilation of trade transactions not covered by customs records or additional information. It should be pointed out that IMTS 2010, para. 8.9, recommended to use non-customs sources such as surveys as substitutes for available customs records only if they provide a cost-effective way to improve the quality of trade statistics.

4.3. *Surveys to collect missing data.* Enterprise or other surveys, like border surveys or household surveys, can be useful to obtain information on transactions which are not processed through customs. Specifically, the following items recommended in IMTS 2010 to be included as part of merchandise trade may require surveys as the principal data source: (a) “goods acquired by all categories of travellers, including non-resident workers, to a significant degree as defined by national law”, more generally referred to as “shuttle trade”; (b) trade in electricity, gas, oil and water; (c) goods dispatched or received through postal or courier services; (d) fish catch, minerals from the seabed and salvage; and (e) bunkers, stores, ballast and dunnage, acquired or landed by national aircraft and vessels outside the economic territory of the compiling economy.

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 it would take 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 be 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 11.

4.5. *Merging of data from enterprise and other surveys with data from other sources.* One major issues for data compilers is how to incorporate data from enterprise surveys with data obtained from other sources (predominantly from customs records) as the level of detail, timing etc. might differ significantly. Chapter 7 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 a good practice to ensure that the enterprise and other surveys conducted for the IMTS purposes possess the following characteristics: (a) survey design (survey frame, target variables etc.) is in compliance with the IMTS 2010 recommendations, (b) surveys are organized and conducted as an integral part of the national survey programme to reduce the resource requirements by avoiding duplication of work and by using applicable common concepts, classifications, questionnaire design and sampling techniques, and to achieve maximum possible consistency with other areas of economic statistics (c) the reporting burden of the respondents is minimized in view of an increasing reluctance of respondents to complete the many separate questionnaires sent to them. 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 chapter 5).

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 co-ordination of source data that relate to the same business units. Countries with a high proportion of small and micro enterprises might complement the business register with listings of the 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. Ideally, the identifier could be selected taking into consideration the business number used by the administrative authorities to ensure that administrative data are correctly applied to the various entities on the register.

4.8. *Consultation with the respondents and selection of data collection methods.* Consultation with potential respondents is an essential requirement before the finalization of the questionnaire design and before making decisions on the data collection method. Frequently, the statistical questionnaires are filled by accountants and this may require the participation of other person(s) of the enterprise with a good knowledge of the survey questions. The choice of the survey data collection method (mail, telephone, electronic, 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 a 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 necessary amendments to increase the survey efficiency and to ensure better harmonization with other economic surveys.

4.9. *Standardisation of surveys.* Standardisation of surveys and questions across the questionnaires of different industries contributes to consistency and facilitates the integrated statistical production process. Integration 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 of business statistics programmes to complete the many separate survey requests sent to them each year through traditional survey questionnaires. A coordinated modular approach through annual continuous data collection instruments with intra-annual collection rounds instead of separate specific purpose surveys provides the possibility to reduce response burden and cost while providing flexibility, i.e. in case of changing information needs.

4.10. *Survey forms.* Special data-collection forms or an electronic data request should be designed and sent to the selected enterprises on a regular basis at preannounced dates. Such surveys could request similar information 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 forms.* It is advised that a simplified 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 to determine 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 case 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 in the case of national aircraft operators acquiring and landing goods abroad. Other economic sectors have many enterprises participating in international trade. This could hold for the shipping sector, which generally consists of a few large, but many medium-sized and small companies in the population of enterprises and adequate sampling should then be applied. Ideally, the information on the shipping companies is available from the business register and sampling could be done in a stratified way based (for instance) on enterprise size and location. It is generally advised to sample all large companies and an adequate proportion of the medium- and small-size companies.

4.13. In case of fishery, for example, exports and imports in many countries are dominated by big companies; however, this might not be the case in others. If in a country there is a wide spectrum of small- and medium-sized enterprises as well as significant activity in the informal sector (e.g., family owned) which together contribute noticeably to such trade, surveying them

might be necessary. Such surveys would require obtaining a sample frame using the information provided by economic and population censuses. This may imply also 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, satisfy the needs of various fields of statistics and can be revised as frequently as necessary.²⁷ 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 problems encountered in running a survey include: (a) frequent correction by enterprises of data previously submitted, leading to substantial revision in the preliminary data; (b) the high cost of implementation; (c) the additional reporting burden caused by the survey for the enterprises; (d) the difficulty in ensuring proper completion and submission of survey questionnaires; (e) obtaining a detail and reliable information (e.g., at the level of 6-digit HS codes) on value and quantity of trade is a serious challenge due to the limited sample sizes of such surveys; also not all information may be available to filers of 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 through bilateral contacts.

D. Examples of enterprise surveys to collect missing trade data

4.16. *Survey of airline operators and 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 is 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 need to be requested to provide the required information. Such operators and enterprise could either complete a monthly questionnaire of transactions involving bunkers, stores, ballast and dunnage, or send a pre-determined set of data records every month. In either case submission could be done electronically. The required elements of the transaction are preferably 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. *The 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. Two boxes below provide experience of Uganda and Turkey in such surveys.

²⁷ Compilers may find it practical to use the same survey form to collect data on a physical movement basis for consistency with IMTS, Rev.2 recommendations and on a change of ownership basis to obtain information needed for SNA/Balance of Payments statistics.

Box 4.1

Informal Cross Border Surveys – Uganda’s experience

Background. Uganda conducts monthly Informal Cross Border Trade (ICBT) Surveys to collect information on unrecorded trade transactions in goods with her 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-COMESA/EAC trade and the overall international merchandise trade statistics in the Balance of Payments goods account.

Scope of survey. Currently, twenty customs stations and four bus terminals where informal trade flows were found to be significant are being monitored on 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 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 whether in small or large quantities carried on vehicle, bicycle, head, and wheel chairs; (b) Goods partially declared to customs authorities and could be identified and quantified by traders and data collectors. The goods excluded in ICBT recording are those in transit and goods properly declared to customs authorities.


Data compilation. Direct Observation technique is used in collecting data, where enumerators are positioned strategically 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 crossing the customs stations in the counter books. Prices of these commodities are collected at the border on daily basis to provide estimates for FOB and CIF value for exports and imports respectively. The data collection instruments used includes the following: the Field Instruction Manual, Counter Books, Summary Form “A”, Calculators, List 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 is processed and transformed into international commodity codes and nomenclature before merging with Customs Data. Since data collection activities covers a period of two weeks in a month, estimates for the entire months are derived using an up-rating model.

Box 4.2


Example Turkey – survey for shuttle trade

Turkey’s shuttle trade estimations are based on a ‘Survey for Shuttle Trade’ (see box below) conducted quarterly by the Turkish Statistics Institute 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 shuttle trade, which is estimated by using the ratio of foreign visitors who in the ‘Departing Visitors Survey’ report having purchased products in bulk to be sold abroad, to the total number of foreign visitors who responded to this survey. ‘the Turkish Survey for Shuttle Trade’ has been conducted since 2003.

Figure 4.1
Example Turkey – Survey form for shuttle trade



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 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 free on board (FOB) basis to facilitate analysis on merchandise trade balance and comparison of trade statistics with 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 by desired precision and resources availability is around 3000 trade items per quarter. Data are collected by contacting the trader or company on the import declaration using the Computer-Assisted Telephone Interviewing (CATI) approach. Various measures, such as implementation of validation checks in the CATI system, on-line 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.* Hong Kong's outward processing (OP) in the mainland of China (the Mainland) 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 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 Hong Kong's trade with the Mainland and re-exports of the Mainland origin to other places are employed as the sample frame for the survey. Under the current sample design, the declarations are first categorised by trade flow and commodity groups. For re-exports of the Mainland origin, the declarations are further categorised by three markets, namely the USA, the EU and other places. Stratified sampling method is adopted for 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 II: Data compilation

Chapter 5 Institutional arrangements

5.1. *Introduction.* This chapter describes the purposes and characteristics of effective institutional arrangements, 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. Challenges and good practices are described taking into account countries experiences in establishing a legal framework for trade statistics (see chapter 1) and recommendations contained in IMTS 2010, chapter 8, on data compilation strategies. The Annexes to the chapter provide examples of institutional arrangements under various country circumstances.²⁸

A. Purposes of institutional arrangements

5.2. *Institutional arrangements.* Usually several governmental bodies participate in activities resulting in official country trade statistics. The most important 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 a set of laws and 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 mandate and the main areas of activity of those agencies are usually defined by national law which provides the foundation on which detailed institutional arrangements are to be worked out.

5.3. *Purpose of institutional arrangements and international recommendation.* The purpose of institutional arrangements is to ensure that national and international users have at their disposal high quality national trade statistics in a timely and convenient manner, and that the statistical process is carried out with the maximum possible efficiency. In order to achieve this goal, details of the responsibilities of the involved agencies should be elaborated, agreed upon and documented. For this reason, 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.²⁹

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 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

28 The scope of this chapter does not include institutional arrangements between international organizations active in compilation, dissemination and analysis of trade statistics. The information on this matter is available at the UNSD website [...] and the website of Inter-agency Task Force on International Merchandise Trade Statistics [...]

29 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; 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), Chapter I, Section B, Decision 41/103.

assurance procedures covering various aspects of the data production and dissemination are developed and executed in a transparent manner, and (e) the public confidence in the disseminated data is assured, so that the statistics are used to the maximum extent possible.

B. Characteristics of effective institutional arrangements

5.5. *Key characteristics of the 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 can be equally effective. In this connection, IMTS 2010, para. 8.16, identifies several key characteristics of the effective institutional arrangements, namely:

- (a) Designation of only one agency responsible for the dissemination of official trade statistics;
- (b) Clear definition of the roles and responsibilities of all agencies involved; and
- (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 micro-data that those agencies collect.

5.6. *The responsible agency.* It is a good practice that the agency designated to be responsible for the compilation and dissemination of official trade statistics is given the necessary authority and responsibility to monitor and coordinate various aspects of the whole statistical process. The existence of such an agency is also essential from the user perspective as it provides a clear designation of a single source of official data and contact point for any inquires. This raises the confidence of users in the quality of the statistics and promotes its wide and effective use. In particular, it is a good practise that the agency should 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, and
- (d) being focal point for the consultation with trading partners on the data reconciliation and data exchange and the representation of the country at various regional/international forums dealing with foreign trade statistics.

5.7. *Rights and responsibilities of the involved agencies.* It is a 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. The definition of the rights and responsibilities of all involved agencies should be unambiguous in order to minimize misunderstandings which might lead to a duplication of work or lack of attention to certain tasks.

5.8. *Formalized arrangements between the agencies (Memorandum of Understanding)*. It is a good practice that the establishment of formalized arrangements between the agencies is documented through appropriate means such as the Memorandum of Understanding (MoU), which would, inter alia, include provisions for holding inter-agency working meetings and for the access to micro data that those agencies collect. In this connection it is recognized that any MoU will have certain limitations as its content is constrained by the applicable national legislation (e.g., the rules of interagency cooperation should be written in such a way as not to risk the disclosure of the confidential information). It is a good practice that the MoU worked out (under appropriate delegated authority) and signed by the appropriate units of the larger governmental agencies to facilitate their effective cooperation.³⁰ The formal arrangements should be complemented by the informal working agreements between the relevant units of the involved agencies to ensure the speedy implementation of the agreements.

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

- (a) Preamble describing reasons for its establishing
- (b) Mission statement defining the MoU scope and its overall purpose;
- (c) An outline of a long-term work programme, a commitment to develop and implement mid-term (e.g., biannual or annual) action plans designed to achieve the work programme objectives (see section E for details) and a cost-sharing agreement;
- (d) List of participating agencies together with a clear description of their rights and responsibilities in the context of the agreed work programme and covering data collection, data transmission, data compilation and treatment of confidentiality, data quality, metadata and dissemination as well as methodological improvements (e.g., development of national commodity classification, elaboration of methods of statistical valuation etc.);
- (e) Terms of reference and rules of procedure of the interagency body responsible for monitoring the MoU implementation (e.g., a permanent committee);
- (f) Terms of MoU including its effective date.

C. Main types of institutional arrangements

5.10. *Different institutional arrangements*. The kinds of institutional arrangements in countries, 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 coordinates data collection and processing is the most common practice in countries. Responding to the UNSD questionnaire 78 percent of countries confirmed that the compilation and dissemination of IMTS are normally the responsibility of national statistical offices.³¹ However,

30 For example, national statistical office might sign MoU not with the national customs authority as a whole, but with its statistical unit; this can result in establishment of a 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.

31 *International Merchandise Trade Statistics: Supplement to the Compilers Manual*, 2008, Para 1.3

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 units in a ministry.

1. Statistical office as the responsible agency

5.11. *Typical arrangements.* The statistical office holds overall responsibility for trade statistics including issuance of methodological guidelines, raw data editing and processing, database maintenance and dissemination of official statistics. Customs administration holds the responsibility for 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 dataset.

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 a Memorandum 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 a good practice to periodically review the MoU and update it as needed.

Box 5.1

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 data on external trade. It is not a legal act in a narrow sense but 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. With this, change of these details is facilitated without changing the main agreement. The main topics of the administrative agreement include:

1. Transmission of the statistical data

a. *Scope:* The legal basis for the transmission and scope is mentioned here. The FFA commits to transmit the relevant statistical data to the FSO after technical and methodical examination. The data is checked for formal validity (code checks) and if a mistake is detected, the responsible customs unit or the participant respectively, is obliged to correct the data. Only correct (plausible) data is 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, 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. ID-number, name, address of the company, contact persons) is mentioned here. Master data is updated on a monthly basis. Details are specified in the annex.

4. Statistical confidentiality and tax secrecy

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

5. Contact persons

Both FSO and FFA commit to name contact persons for clarification of methodical and technical issues. They are specified in the annex.

6. Application and amendment

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

Box 5.2**Statistics Canada/ Canada Border Services Agency (CBSA) MOU Table of Contents**

The MoU contains seven sections as follows:

Section I – General Roles and Responsibilities

- 1) CBSA's Roles and Responsibilities
- 2) Statistics Canada's Roles and Responsibilities
- 3) Joint CBSA/Statistics Canada Roles and Responsibilities

Section II – Data Collection

- 1) CBSA's Roles and Responsibilities
- 2) Statistics Canada's Roles and Responsibilities
- 3) Joint CBSA/Statistics Canada Roles and Responsibilities

Section III – Data Transmission

- 1) CBSA's Roles and Responsibilities
- 2) Statistics Canada's Roles and Responsibilities
- 3) Joint CBSA/Statistics Canada Roles and Responsibilities

Section IV – Data Disclosure and Dissemination

- 1) CBSA's Roles and Responsibilities
- 2) Statistics Canada's Roles and Responsibilities
- 3) Joint CBSA/Statistics Canada Roles and Responsibilities

Section V – Data Quality

- 1) CBSA's Roles and Responsibilities
- 2) Statistics Canada's Roles and Responsibilities
- 3) Joint CBSA/Statistics Canada Roles and Responsibilities

Section VI – Harmonized System

- 1) CBSA's Roles and Responsibilities
- 2) Statistics Canada's Roles and Responsibilities
- 3) Joint CBSA/Statistics Canada Roles and Responsibilities

Section VII – Costs

- 1) CBSA's Roles and Responsibilities
- 2) Statistics Canada's Roles and Responsibilities
- 3) Joint CBSA/Statistics Canada Roles and Responsibilities

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. Customs administration as the responsible agency

5.13. *Typical arrangements.* In this case customs is responsible for all activities from the collection of basic records to dissemination of the official 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 a good practice that customs uses additional data sources as required and implements an appropriate quality assurance programme in order to ensure that the detailed trade statistics disseminated by customs is of 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 on traders; and (b) increased user need (both government agencies and the business community) in availability of trade data of increased 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 with the statistical office.

3. Central bank as the responsible agency

5.15. In a small number of countries the central bank is responsible for compilation and dissemination of trade statistics. Under this arrangement the bank receives the customs records on a regular basis, and compiles and disseminates the trade statistics in a manner similar to that of 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 a good practise that recompilation and dissemination of trade statistics on the BOP basis is undertaken as separate activity to allow proper focus on the respective purposes and characteristics of IMTS and BOP statistics.

4. Other governmental bodies as the responsible agency

5.16. Other governmental bodies also can be designated as the agencies responsible for trade statistics. Examples include ministries of economy or trade. Such arrangements may result in high quality trade statistics if the designated body follows the IMTS 2010 recommendations and the good practices described in the present Compilers 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. Such review is in particular valuable for countries that face challenges in the provision of timely high quality 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 and to the extent that these institutional arrangements are established in national legislation or relevant administrative regulations can usually not be changed in the short term if at all. However, at the same time there exist a number of steps which interested countries can undertake in a short run and which can yield positive results in near 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.* The permanent coordination committee would 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 aiming to ensure high quality of official trade statistics. Such committee will promote a systematic cooperation between the involved agencies in the identification and enactment of the measures which are within their prerogatives. To make sure that the work of such a committee is effective it is a good practice that its members agree on and document the objectives and the rules of procedure of the committee.

5.19. *Meeting procedures.* It is a good practice that in order to facilitate the functioning of such a committee its work programme should be elaborated as soon as possible, further the agendas of the forthcoming meetings should be circulated well in advance and the meeting’s minutes be kept, so that the process is transparent and the implementation of the reached decisions can be evaluated. The logistics of the activities should be distributed among the representatives of each participating agency in order 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) reporting to the committee and dealing on the regular basis with the detailed technical issues such as compliance of data collection procedures with the adopted trade statistics methodology, organization of effective data processing and data exchange, including the use of compatible IT platforms, coordination of outreach activities etc. It is a good practice that the working group formulates its work programme and periodically reports on its implementation to the committee.

2. Activities the coordination committee and working groups

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

(a) *Formulation of a long term strategy and activities for improving trade statistics.* Such 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 or of 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 to trade statistics. Therefore, the agencies involved in the preparation of such regulations

and in the compilation of trade statistics should discuss these changes in a timely manner in order to take into account the requirements for compilation of trade statistics. In particular, the arrangements should allow for amending rules on customs recordings 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 are reached with other governmental or non-governmental bodies to allow the use of their administrative data or that additional data are collected via national survey programme;

(d) *Adoption of an integrated approach.* Compilation and dissemination of merchandise trade statistics should be seen as an integral part of national statistics programme (see chapter 11 for details) and trade statisticians should cooperate with customs and other data providers as well as compilers of business statistics and statistics on international trade in services to make best use of the available information and to realize efficiency gains in data compilation. Close cooperation with compilers of other statistics can both improve merchandise trade statistics as well as be beneficial to other statistical domains. For example, in view of the limited resources and to ensure that work is not duplicated it is a 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 to incorporate trade statistics requirements. On the other hand, compilers of merchandise trade statistics can assist colleagues who are responsible for statistics on international trade in services by passing to them any available information on cost of goods transportation and insurance. The necessary working arrangements have to be worked out 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 made during the statistical production process. It is a good practice that the responsible agency would, inter alia, (i) take into account the technical systems available at the source agencies, 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., use of virtual private networks (VPN) and / or ftp sites, as well as SDMX), and (iii) take care of the data security through appropriate control mechanisms (e.g., defined submitters, reception, 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 a good practice that the involved agencies 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, 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 which is defined in the context of institutional arrangements;

(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 a good practice to arrange for visits of the statisticians to the customs ports in order to better understand and investigate the procedures for different types of customs declarations and to understand 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 get user support it is a good practice to conduct periodic meetings with various user groups to make them aware of what data are available and how to use such data effectively, as well as to collect information on their needs for planning further improvements in data compilation and dissemination. It is a good practice also to invite to the meetings of the coordination committee, as necessary, other institutions and agencies (public, private and / or academics) with the aim to ensure their potential contribution to the statistical process. For example, there should be meetings with various business associations to explain to them the importance of 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 this 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 increased quality of the disseminated trade statistics. Properly functioning institutional arrangements can significantly contribute to the enhancement of data quality.

5.23. As described in IMTS 2010, chapter 9, 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. No single agency can develop and implement an effective data quality assurance programme alone. Therefore, appropriate institutional arrangements are important for the success of the quality assurance efforts and should clearly spell out the roles of each agency in such a programme.

Box 5.3

Brazil's experience 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 responsible agency for export data quality is the Foreign Trade Secretariat (SECEX) of the Ministry of Development, Industry and Foreign Trade (MDIC), while the responsible for import data quality is the Federal Revenue of Brazil (Customs) of the Ministry of Finance.

Export data quality is guaranteed by the deperation system of SECEX / MDIC described in Annex 9.1 of this manual, while the quality of import data is guaranteed by the application of the Customs Valuation Agreement of WTO and by application of the parameterized system customs on the physical and documents supervision.

Box 5.4

Responsibilities for quality assurance – example Canada

In the Canadian experience, 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 program 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 amendment program 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. As well, high value transactions are routinely manually reviewed and corrected where necessary;
- (c) Merchandise trade data are cross-checked against other data series for selected commodities 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 further comparison to other data series.

Box 5.5

Cooperation between Italian National Statistical Institute (ISTAT) and the National Customs Authority – in particular on data quality

Institutional arrangements – establishment of a committee. The Italian National Statistical Institute (ISTAT), as responsible agency, has set up and maintained a long lasting institutional cooperation with the National Customs Authority. From an operational point of view, a dedicated committee, composed by members from 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 all the problems related to changes in the national regulations, EU level regulations and customs procedures as far as they may affect the quality and timeliness in the production and dissemination of external trade figures. The Committee then informs the relevant superior bodies in case some actions are required in terms of changes in the national legislation or application procedures. In particular, ISTAT is constantly informed by the Customs Authorities about 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 the timeliness in data transmission performing only formal quality checks on customs and statistical variables. On the other hand, ISTAT has developed a sound methodology for outliers detection and is constantly 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 and under the institutional umbrella of the National Statistical System. This initiative, which implies a stronger cooperation on a technical and methodological ground under the full respect of national confidentiality rules, was very welcome by ISTAT from both a technical and cost-efficiency perspectives. Given the sharp decline in human resources devoted to the foreign trade statistics production process all over the world, this cooperation can be considered as an opportunity to devote the limited amount of available human resources to more value added quality checks by moving downward (at the data collection and preliminary validation process) more standardised inconsistency and data quality checks.

Annex 5.A. Institutional arrangements – experience of the United States

5.A.1. *The United States' Automated Export System.* 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 process of the AES is the result of input from various partnering government agencies' requirements to ensure complete, timely and accurate reporting of export information. As the AES evolves additional edits and validations are added to the system 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 between the U.S. Census Bureau's Foreign Trade Division, the U.S. 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 Nonproliferation, the U.S. 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 U.S. Census Bureau through an outside contractor. *AESDirect* is an internet based system, and became operational on September 23, 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 provides 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. These requirements are then forwarded by the Census Bureau to the CBP AES Developers and the *AESDirect* contractor for inclusion into the two systems.

5.A.4. The AES also serves as a conduit through which required export information reaches appropriate government agencies. The U.S. Census Bureau extracts AES data to compile and publish export trade statistics while AES validates dual-use shipments against licenses approved by the Bureau of Industry and 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 licenses and transmits the data to the agency. Partnering agencies will continue to work in cooperation as the AES goes through future phases.

Annex 5.B. Institutional arrangements – 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 Geographic 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 the SNIEG. All the government agencies involved in the collection, treatment, generation and dissemination of national statistical and geographic information take part in 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 Mexican Working Group on Foreign Trade Statistics, which is integrated by the General Customs Administration, the Central Bank, the Ministry of Economy and INEGI, has been responsible of defining criteria for the production and release of International Merchandise Trade Statistics of Mexico. Initially, these institutions worked mainly on the basis of official letters and meetings; however, changes in the Statistical Law now provide the legal framework supporting the work of a “Specialized Technical Committee on Foreign Trade Statistics”, which has assumed the activities of the initial Working Group.³² The roles of the various institutions that participate in the Committee are 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) Mexico’s Central Bank (Banco de México) is responsible for the statistical processing of custom records according to agreed criteria

(c) The General Customs Administration provides the administrative records and its 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 Program and meets approximately once every quarter. The Committee agrees on, and follows up, an agenda for the issues to be addressed by the Committee. The Program is focused to 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 via teleconference 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 Program are the periodic revision of customs records to make a proper interpretation of the declarations according to international recommendations, and the content of metadata in order to explain clearly the characteristics of the records and how they are processed to produce the statistics on

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

international merchandise trade. On the other hand the Committee agrees on the 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 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 the production of statistic results, taking into account the simplification of customs procedures.

Annex 5.C. Institutional arrangements – experience of Brazil

5.C.1. *Brazil's Integrated Foreign Trade system (SISCOMEX).* 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 Brazilian Customs (Ministry of Finance, Federal Revenue Secretary), responsible for the tributary and tax police; the Central Bank of Brazil, responsible for 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 Brazil's foreign trade statistics.* In 1991, an agreement by the Presidency of the Federative Republic of Brazil, determined a technical and political understanding among the agencies involved, approved by law in Congress. From 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 areas above), a Technical Committee (conformed by technicians with extensive knowledge of foreign trade activities), and a set of sub-committees (made up of experts of each area and each body responsible for standards rules), each one with clearly defined functions. This decision-making structure is also responsible for training users (both companies and individuals) and for the infrastructure.

5.C.5. *Working arrangements.* Decisions are taken from each subcommittee and when there is not understanding, the matter goes to the Technical Committee or, if necessary, up to 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 responsibility for the administration of tables of code/names and the implementation data checks in the data entry system (e.g., parameters for preventive validation), were also previously defined for each body. These arrangements have allowed having a single data source and a single flow of information, with prior validation of all the variables and interconnection with other existing databases (e.g., national register of companies with foreign trade data), as well as the implementation of the recommendations of IMTS (framing operation in the export and import tax regime).

Annex 5.D. Institutional arrangements – experience of the Philippines

5.D.1. *Philippines' Inter-Agency Committee (IAC) on Trade in Goods.* The Philippines has an Inter-Agency Committee (IAC) on Trade in Goods with members from the following key agencies of the government: the National Statistical Coordination Board (Board NSCB), the National Statistics Office (NSO), the National Economic and Development Authority (NEDA), the Central Bank (Bangko Sentral ng Pilipinas, BSP), the Department of Trade and Industry (DTI), and the Bureau of Customs (BOC) and Philippine Economic Zone Authority. There are two technical working groups (TWG) under the IAC on Trade in Goods, namely, the TWG on Trade in Goods and the TWG on Trade in Services. The IAC on Trade in Goods is tasked:

- (a) To serve as a forum for the discussion of the issues raised by the stakeholders regarding the official statistics on trade of 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 analyze 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 identify issues resulting there from:
- (g) To conduct an in-depth review of consigned imports; and
- (h) To present the results and recommendations to the NSCB Executive Board for appropriate action.

Annex 5.E. Institutional arrangements – experience of China

5.E.1. *The General Administration of Customs of China (GACC) as the responsible agency for IMTS.* In China, Customs is responsible for the collection, processing, compilation and dissemination of China's external merchandise trade statistics according to Customs Law, Statistics Law, and the Regulation on Customs Statistics of the People's Republic of China. The

Statistical Department in the General Administration of Customs of China (GACC) is responsible for the formulation of the methodological foundation in accordance with the adopted international standards, the organization of nation-wide trade statistical operations, the development and implementation of data compilation arrangements, and the dissemination and analysis of merchandise trade statistics. At each of the 41 customs districts throughout China, a statistical office is being established which is responsible for the collection, verification, processing and transmission of its regional trade data to the GACC.

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

5.E.3. *Cooperation between GACC and other agencies.* An institutional cooperation mechanism is set up between GACC and other agencies to listen to the requirement of users to improve the quality of statistics. Memoranda of Understanding or agreements for statistical information service are made between GACC and the National Bureau of Statistics (NBS), the Central Banks, the Ministry of Commerce (MOFCOM) , the State Administration of Foreign Exchange (SAFE), etc. for compilation of other economic statistics according to SNA/BOP requirements, or for the purpose of trade administration and analysis.

Chapter 6 Statistical territory and organization of data collection

6.1. *Introduction.* This chapter is based on IMTS 2010, chapter 2, on the trade system. It provides additional information on the definition of statistical territory and its territorial elements and 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 2 to 4, country practices in establishing the legal framework (chapter 1) and institutional arrangements (chapter 5).

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 a good practice to define the statistical territory by listing the various elements and territorial parts of its economic territory which 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).³³ It is also a 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.

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 additional territorial elements and recommends that countries make clear whether or not the following territorial elements 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, but can be defined on the enterprise level in terms of specific operations which may be carried out (e.g., inward processing, customs warehousing etc.).

³³ See chapter 2 for an introduction to the RKC.

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”, which 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”. Goods in free circulation may be disposed of without Customs restriction.³⁴

6.6. *Islands.* Islands are generally defined as any piece of sub-continental 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.³⁵ This term refers to the water area over which the sovereignty of a coastal state extends and is internationally recognized (see Box 6.1 for details). However, in statistical practice of some countries the term territorial waters may be used in a different or broader sense. It is advised that countries 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 the country’s trade statistics metadata. Further, it is a good practice that countries make clear if 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 6.1 for the definition of these terms). It is further advised that trade statistics compilers consult on this matter with appropriate legal authorities of their countries as well as with the SNA and BOP compilers for necessary details and clarifications.

Box 6.1

Excerpts from the United Nations Convention on the Law of the Sea³⁶

Territorial sea

“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

“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

34 See chapter 2 for information on the customs procedures defined in the RKC.

35 The convention is available at http://www.un.org/Depts/los/convention_agreements/texts/unclos/part2.htm.

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

territory or territorial sea. 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, 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 6.2

Eurostat practises concerning specific territorial elements

According to EU legislation **exclusive economic zones** are not part of statistical territory because they are not part of the customs territory of a Member State (MS). Customs provisions set that "the customs territory of the Community shall comprise the listed MSs territories, including their territorial waters, internal waters and airspace".

However the exclusive economic zones are treated for the purpose of specific movements, namely **offshore installation**, as they were part of statistical territory, since the MS has "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."

The EU legislation does not cover the cases when an offshore installation is installed out of exclusive economic zone, as 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" (according to the Convention on the Law of the Sea), it could be recommended to use the same approach for the continental shelf as for the exclusive economic zone.

If the installation is stationed beyond the continental shelf, there is no country which has the exclusive right, neither to exploit nor to authorize the drilling in this area. IMTS recommendations contained in IMTS 2010 follow the residency of the (economic) owner and country's jurisdiction to define statistical territory. (IMTS par. 1.7: "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."

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 2008 SNA, then that installation belongs to the economic and statistical (if that country applies general trade system) territory of that other country. However, if an installation periodically moves in and out of that economic territory it can be treated in the same way as ships (seen as a part of statistical territory of the country where the economic owner resides. In all such cases it is advised that countries concerned agree on a common treatment of such installations which is both operational and practical.³⁷

6.9. *Outer space installations and apparatus.* These are objects launched into outer space by countries and are subject to international law. The outer space is conventionally defined as space located at an altitude of 100 kilometers above sea level. The framework for international space law was established by the Outer Space Treaty, which was passed by the United Nations and entered in force in 1967.³⁸ 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”. 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 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.³⁹ Referring to two kinds of authorized operations specified in the RKC a distinction may be made between commercial and industrial free zones.⁴⁰ For the 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.”⁴¹

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 zone is referred to as industrial free zone.⁴²

37 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.

38 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, is a treaty that forms the basis of international space law. The treaty entered into force on October 10, 1967.

39 See the RKC, Annex D, Chapter 2, E1.

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

41 RKC, Annex D, Chapter 2, para. 11.

42 *Ibid*, para. 12.

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 or industrial free zones. In some cases, these zones are not delineated geographically but may involve only different tax, subsidy or customs treatment. A large and growing number of customs free zones are onshore manufacturing enclaves which have been created to attract foreign direct investment, stimulate local industry and provide employment to the local labor force. The legal status of these zones ranges from extra-territorial, whereby they are exempt from all customs laws, to varying degrees of customs control.

Box 6.3

Export processing zone – example Brazil

Brazil adopts the concept of export processing zone as defined by the World Bank. It states that “The concept of Export Processing Zones (EPZs) covers various types of zones e.g. free trade zones, duty free zones, free-investment zones, offshore zones representing various types of activities being performed over there. The activities include bonded warehousing, export processing, assembling, trade through borders or by sea and financial services. The EPZs are defined as “fenced-in industrial estates specializing in manufacturing for export and offering their resident firms free-trade conditions and a liberal regulatory environment. That is a territorial or economic enclave 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, in according to the Law 11.508/2007, article 1º, in less developed regions, EPZs aimed at reducing regional unbalances, as well as strengthening the balance of payments, fostering technological transfer and the improvement of 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, being considered primarily zones for purposes of customs control.

6.13. *Customs warehouses.* A customs warehouse is a designated place where goods can be stored under “customs warehousing procedure”.⁴³ Usually these are the 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 exports can be stored in such warehouses as well.⁴⁴ 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 duty, or they may be withdrawn for consumption upon payment of duty at the rate applicable to the goods in their manipulated condition at the time of withdrawal.

6.14. *Premises for inward processing.* Inward processing defined by 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

43 RKC, Annex D/ Chapter 2/ E1.

44 For example, according to China customs regulation, “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.

manufacturing, processing or repair and subsequent exportation.”⁴⁵ 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 is 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.⁴⁶

6.15. *Territorial enclaves and exclaves.* For IMTS 2010 purposes 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, 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 the goods movements between the host country and enclaves of other countries located on its territory might be significant. All such movements are out of scope of IMTS (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 as separate statistical territories or as part of the statistical territory of the mainland country.⁴⁷

6.17. *Special case: duty free shops.* In many countries travelers are allowed to buy certain goods such as cigarettes, alcohol, jewelry etc. at certain locations at airports, on ships and aircraft or at borders etc. without payment of duties and/or with 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 aircrafts 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. Statistical treatment of goods sold at such shops is more complicated as they may be sold to both residents and not 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 in order to adopt a consistent statistical treatment.

45 RKC, Annex D, Chapter 2, E2.

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

47 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 the UN publication *Statistical Territories of the World for use in International Merchandise Trade Statistics (2005)*, available at http://unstats.un.org/unsd/trade/stat_terr_e.pdf

C. Organization of the data collection in respect to different territorial elements

6.18. *Data sources.* The organization of data collection in respect to different territorial elements requires a careful selection of the most appropriate data sources and depends on the national circumstances and priorities. Table 6.1 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 recommends that countries apply 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.⁴⁸ However, many countries continue to apply the special system for both imports and exports (or even may 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 in the respective chapters of the Manual.

6.19. *Moving to the general trade system.* Due 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 the regular customs records are not available for certain territorial elements of the economic territory, additional data sources can be required (see table 6.1). Such sources could be surveys of free zone operators or enterprise surveys (see chapter 3 and chapter 4 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 that monitor the trade related to these specific zones for security and other reasons. However, this information might not be of sufficient quality or it might be difficult to merge or reconcile with the trade data which is obtained from customs declarations (see chapter 7 for further information on the compilation of IMTS from different sources). However, it is a good practice that countries that follow the special trade system explore the possibility to include in the statistical territory territorial elements that are currently not included, if the trade related to these territorial elements is significant.

Table 6.1
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
<i>Free circulation area</i>	Customs records and non-customs data sources, e.g., enterprise surveys, in cases when customs records are not sufficient or absent	General and special
<i>Islands</i>	When islands are part of free circulation area - customs records and non-customs data source, e.g., enterprise surveys in cases when customs records are not sufficient or absent; see also an entry for <i>overseas territories</i>	General and special

⁴⁸ See IMTS 2010, para. 2.20.

<i>Territorial waters</i>	Customs records and enterprise surveys in cases when customs records are not sufficient or absent; enterprise surveys might be especially relevant for the collection of data on trade in fish catch and products extracted from the sea bed (e.g., oil, gas and minerals)	General and special
<i>Exclusive economic zones and continental shelf</i>	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 sea bed (e.g., oil, gas and minerals); customs records whenever available.	General (and special depending on national definition)
<i>Offshore and outer space installations and apparatus</i>	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 sea bed (e.g., oil, gas and minerals); customs records whenever available.	General (and special depending on national definition)
<i>Commercial free zones</i>	Mainly non-customs data source, e.g., records of governmental bodies overseeing operations in such zones and enterprise surveys; customs records whenever available.	General
<i>Industrial free zones</i>	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
<i>Customs warehouses</i>	Customs records	General
<i>Premises for inward processing</i>	Customs records supplemented by enterprise surveys if customs records do not provide all statistically important information	General and special
<i>Territorial enclaves and exclaves</i>	Trade involving enclaves and exclaves and the host country are not in scope of IMTS,* but IMTS compilers should assist compilers of trade in services and BOP whenever possible.	
<i>Overseas territories</i>	Records of local customs authorities and non-customs data sources available to the bodies responsible for the administration of such territories.	General and special
<i>Duty free shops</i>	Customs records and non-customs data sources, e.g. records of the tax administration, survey of duty free shop operators	General and special

* See IMTS 2010, para. 1.49(c). However, trade between a country's enclaves and countries different than the host country are to be included under the general trade system and the 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 statistical authority.

Chapter 7 Integration of data from different sources

7.1. *Introduction.* This chapter builds on the discussion of different data sources contained in IMTS 2010, chapter 8, on data compilation strategies, and in chapters 2 to 4 of this Manual. It describes challenges and good practices in merging customs and non-customs data (e.g. in adding non-customs to the customs data and substituting non-customs for customs data), including merging of different information from the same source. It hereby links the discussion contained in parts I and II of this Manual on data sources (and the legal framework) and data compilation. The scope of this chapter is limited to the compilation of IMTS based on multiple sources. It is, therefore, related to but clearly different from the scope of chapter 11 dealing with integration of trade and business statistics which aims 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 also that full coverage cannot be achieved by the use of custom records only, either because the relevant transactions are not or 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 to use non-customs sources as substitutes for available customs records only if they provide a cost-effective way to improve 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 is a complex and time-consuming activity and includes merging and cross-checking large amounts of collected data. Compilers need to be aware of the conceptual and practical difficulties 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. Compilers should be aware of them when deciding what data sources are the most appropriate to use. Customs records reflect the physical movement of goods across borders that international merchandise trade statistics aims to record and are, in general, reliable, detailed and readily available in most countries. However they may not provide full coverage of all transactions, may not be subject to adequate statistical quality control at customs, or may not be 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 the possible under-valuation and misclassification of commodities for the purposes of tax evasion, which however might not apply to all countries or apply to a different degree. Also, customs records are not free from the reporting burden. In fact, the reporting burden is high only that it is imposed for the customs rather than for statistical purposes.

7.5. *Advantages and limitations of non-customs data sources.* As described in chapter 3, a variety of non-customs data sources can be used by compilers to obtain information that otherwise would not be available. Some of these additional data sources, such as surveys, can be used in a very flexible way, while others, such as parcel and letter post records, only provide a pre-defined set of information. 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, countries), under-coverage (e.g., due to the absence of the adequate survey frame and non-response) and may not follow standards recommended 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 trade statistics (IMTS 2010, paras. 8.12).

7.6. *Country practices in the use of additional data sources.* Results of a survey in 2006 show that besides customs declarations countries also use, to a varying degree, 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 those additional data sources can be necessary or useful to complete or verify the trade statistics.

7.7. *Data sources for special categories of goods.* Transactions of the categories of goods indicated below may not appear in customs records (see para. 3.2). For these categories of goods the compiling agency will 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 Chapter 3 and 4:

- Goods delivered through postal or courier services;
- Electricity transmitted via fixed power lines;
- Petroleum, gas and water through pipelines;
- Petroleum and gas produced outside the customs territory and shipped directly by vessel;
- Border trade (i.e. informal trade between residents of bordering countries);
- Sales and purchases made by aircraft and ships in foreign ports;
- Sales and purchases of aircraft, ships and other mobile equipment;
- Transactions on high sea;
- Military goods.

7.8. *Data sources for trade information regarding specific territorial elements.* IMTS 2010 recommends the implementation of the general trade systems under which the statistical territory covers all applicable territorial elements (see IMTS 2010, para. 2.13 and chapter VI). 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. Also, the compilation of trade data for other territorial elements such as islands, territorial waters etc. that are included in the statistical territory, require the use of non-customs data sources if customs records are insufficient or absent (see Chapter 6, table 6.1 for details).

B. Issues encountered when merging data from different sources

7.9. *Integration of different data sources.* To complete the coverage of IMTS, data compilers often have to merge and cross-check data collected from customs and non-customs sources, which is quite a complex and time-consuming activity. Merging customs and non-customs data includes adding non-customs to the customs data and substituting non-customs for the customs data. For the purpose of quality control and/ or for information of the users, compilers can consider it useful to differentiate data based on customs- and non-customs data sources.⁴⁹

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

(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, or cross border surveys might only provide data on the higher HS levels (e.g., on HS chapters);

(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 can be delays in data forwarding by some source agencies or these agencies can 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., 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 assess which sets are of greater reliability.

7.11. *Examples of specific issues encountered by countries.* The examples from countries show specific problems encountered in the merging of data from different sources, namely:

(a) Reference period - survey results which apply to a period longer than the reference period used for the compilation of trade statistics cannot be easily added to the customs data;

(b) Commodity classification - as shown in the example of Uganda's informal cross border survey (ICBS) below, commodities which are difficult to classify are often allocated to a few broad categories which are difficult to merge with more detailed customs data;

⁴⁹ For example, in extra-EU trade statistics Member States are obliged to use statistical procedure "9" if the customs declaration was not the source of information on imports/exports.

(c) Partner country for goods on consignment – it is not always possible to identify partner countries in detail and some rest categories will need to be used at times;

(d) Mode of Transport – for the Intrastat estimation it will not be possible to determine the mode of transport, since the estimates necessarily merge the modes of transport at the level of HS chapter by partner. An overall estimate could be made, if such information was requested;

(e) Valuation – the statistical value is made up of several components, which may not be available in some cases;

(f) Quantity measurement – in enterprise surveys quantity information is frequently not collected, or cannot be provided at sufficient detail.

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

7.12. *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 contents and limitations/quality of the additional data sources and obtain the adequate access to these data sources. Appropriate institutional arrangements between the compiling agency and agency responsible for the additional data source need to be in place (see chapter 5 for details).

7.13. *Merging micro-level data from different sources.* The following steps might be applicable when merging micro-level data from different sources:

(a) Conversion and transformation of information from non-customs sources into the standard trade data format to the best possible extent;

(b) Assessment of the data from non-customs sources, e.g., by comparison with data from other sources and application of data editing operations such as scaling or estimation of particular data items.

(c) Addition of the new records to the existing dataset or combination of records from different sources, including the elimination or correction of existing records as needed to avoid any double counting;

(d) Validation of the combined data set, including, e.g., imputation/estimation of missing quantities.

7.14. *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 micro-level or might provide only macro-level information that can be used to establish certain totals (i.e., for commodities or partners). In this case so called dummy records which would only represent a certain value without full commodity or partner detail can be generated. However, countries might encounter many different situations and might adopt different practices.

7.15. *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 issue of missing data fields (e.g., estimates of quantity units 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 to the importance of trade statistics for government and economic policy to improve the data quality;

(d) Establishing a terminology-management strategy to ensure the use of a consistent terminology in questionnaires in the different areas in the organization. As much as possible the same classifications for commodities, partner countries, quantity units and modes of transport should be used as well.

(e) Running training programs 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 the staff skills to merge data from different sources;

(f) Conducting regular meetings between staff of compiling and source agencies (including staff of large importing and exporting enterprises) to establish more stable and efficient working arrangements; complementing such meetings by periodical follow-ups by phone and visits;

(g) To the extent possible, establishing a direct computer link with data suppliers to eliminate data-transmission problems and to allow for better and faster verification of incoming data; using standard classifications and appropriate correlation tables to identify and linking 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 merging data from other administrative sources with customs data

7.16. *Uganda – use of data of the Commodity Authority.* In Uganda, the commodity authorities submit monthly reports to the Uganda Bureau of Statistics (UBOS), these include; coffee, tea, tobacco, and cotton to complement customs data. The data provided contains 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 check on the accuracy and reliability of the data for each commodity. Normally, UBOS adopts the commodity authority's data which appears to be reliable and is 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. Once the structures of the two datasets are aligned, merging is then done.

7.17. *Norway – use of ship registers.* In Norway the external trade of ships, aircrafts and movable drilling rigs is not properly covered by data from the Customs. Statistics Norway regularly receives information from the Norwegian shipping registers (NIS and NOR) about new registrations, cancelations and other changes in the registers. Based on this information a letter and a form are sent to whom the registered owner, asking for additional information (see chapter 3 and Annex 23.B for details).

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

7.18. *Informal Cross Border Survey (ICBS).* The Uganda Bureau of Statistics conducts an informal cross border survey on a monthly basis (see Chapter 4, Box 4.1 for details). The data is collected by trained enumerators under the supervision ICBT 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 coded into international and national codes for commodity, country, mode of transport and border post among others. The ICBT data structure is aligned to the Customs structure before merging is done.

7.19. *Challenges in commodity classification.* In Uganda, a number of challenges are encountered when transforming the cross border data into standard harmonized commodity coding and description system (HS) for comparison. This is because most of the commodity names can't be 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.

7.20. *Survey for shuttle trade.* The Turkish Statistics Institute conducts quarterly a 'Survey for Shuttle Trade' at specific border crossings. As shown in Figure 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 Chapter 4, Box 4.2 for details)

7.21. *Further examples.* Chapters 3 and 4 contain additional examples on the use of non-customs data sources.

F. Integrated approach to economic statistics

7.22. *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 integrated approach in trade statistics are discussed in chapter 11 of the Manual. In the context of this chapter it should be stressed that in designing data collections (in particular surveys), it is an important objective to achieve consistency with statistics of the different industries and sectors in order to allow and facilitate the merging and sharing of information. For example, consistency between different surveys is achieved by the use of a common business

register, statistical units and variables. For further information on the organization and standardization of surveys see chapter 4.

Chapter 8 Data processing and database management

8.1. *Introduction.* This chapter describes data processing and data base management at customs and at the statistical agency responsible for the overall compilation of IMTS (the responsible agency). It describes the characteristics, functions and differences of these systems, giving ASYCUDA and 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 follows logically chapter 7 which discusses the integration of data from different sources and precedes chapter 9 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, analyzing and disseminating statistical data. In practice these processes are structured according to particular institutional arrangements 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 UNECE / Eurostat / OECD Work Sessions on Statistical Metadata (METIS).⁵⁰

8.3. *Database management systems.* The basic functions of a statistical database management system are to create, retrieve, update, and delete specified data (often referred to by the CRUD acronym) 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.⁵¹ The Structured Query Language (SQL) is a widely accepted interface between relational database management systems and database-related applications.

50 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/memis/METIS-wiki>. See also United Nations Statistical Commission and Economic commission for Europe (1999), "Information Systems Architecture for national and International Statistical Offices: Guidelines and Recommendations", available from http://www.unece.org/fileadmin/DAM/stats/documents/information_systems_architecture/1.e.pdf.

51 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 providing protection of society and fighting trans-national organized crime (enforcement), the facilitation of trade, the collection of revenue as well as providing trade statistics.⁵² To support national customs administrations in increase 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 to such instruments enter into an obligation 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 21st century. The General Annex to the RKC recommends the following principles that a modern Customs Administration should implement: Standard, simplified procedures, Continuous development and improvement of Customs control techniques, Maximum use of information technology and 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 February 3, 2006.⁵³ For further information on the RKC please see chapter 2, 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 only be submitted 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 (<http://www.wcoomd.org/sw.htm>).

8.7. *WCO Data Model.* There is a realization from Governments and Customs administrations that the increasing demand for free and secure trade in particular in an e-commerce environment

52 The WCO's main instrument to facilitate 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 the 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. The 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 the UNSD as the world's premier depository for global statistics (see WCO Recommendation concerning the reporting of trade data to the UNSD (available at: www.wcoomd.org/home_hsoverviewboxes_tools_and_instruments_hsrecommendation.htm)).

53 See KYOTO 2000, The International Convention on the Simplification and Harmonization of Customs procedures (Revised) - Pathway to Efficiency and Effectiveness in the Customs Environment.

require data standardization in order for governments to accomplish their missions. The WCO Customs 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 Customs Data Model has aligned export and import data requirements and created a single electronic structure. This enables a more effective exchange of information between export and import and allows export information to be reused at import. The WCO Customs 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. 54

8.8. *Seamless integrated data pipeline.* The above initiatives for the automation at customs are addressed to countries. However, the information sharing and the information requirements need to be viewed and analyzed not only from national but also from 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, the 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 and not only in terms of the last known destination that is frequently provided. 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 which is the goal of the European Community funded Cassandra pilot project.⁵⁵ Besides the technical solution also an adequate international legal framework has to be established to ensure the accuracy of the data. It is expected that statistics would gain in terms of quality, timeliness and availability of data. However, it is pointed out that, it would require trade statisticians to identify the real data requirements, get involved in customs developments and pursue a combined data legislative framework for customs and statistics.⁵⁶

2. Characteristics of data processing at customs

8.9. *Technical characteristics of data processing at customs.* The characteristics of data processing at customs are electronic submission of customs declarations (and/ or provision of paper declarations) plus the provision of additional documentation at geographically dispersed locations, 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

54 See http://www.wcoomd.org/files/1.%20Public%20files/english/procedures_facilitation/data_model/DM_technicalBrochure_EN.pdf

55 David Hesketh and Sandra Tudor, Trade Statistics Data Gathering – A Concept for the Future, paper provided to the Global Forum on Trade Statistics, 2-4 February 2011, Geneva, Switzerland.

56 *Ibid.*, pp. 9-10.

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 Single Window.*⁵⁷ There are three basic models for the Single Window:

(a) A Single Authority that receives information, either on paper or electronically, disseminates this information to all relevant governmental authorities, and co-ordinates controls to prevent undue hindrance in the logistical chain. For example, in the Swedish Single Window, Customs performs selected tasks on behalf of some authorities (primarily for the National Tax Administration (import VAT), Statistics Sweden (trade statistics), the Swedish 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) that integrates the electronic collection, use, and dissemination (and storage) of data related to trade that crosses the border. For example, the United States has established a program that allows traders to submit standard data only once and the system processes and distributes the data to the agencies that have an interest in the transaction. There are various possibilities:

- i. Integrated System: Data is processed through the system;
- ii. Interfaced System (decentralized): Data is 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. In 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 the Singaporean 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 dataset, which consists 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 requires the establishment of an adequate technical infrastructure for data transmission, data storage, data processing etc. Costs for hardware and software have declined significantly and also telecommunication technology has advanced in recent years. Nevertheless, the 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 likely 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 widow in Sweden.* The present Swedish Single Window system, known as "The Virtual Customs Office" (VCO), allows the submission, by electronic means, of customs

⁵⁷ 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, pp. 6-8.

declarations and of applications for import and export licenses, for licenses for strategic products and for both the import and export licences. It can further be 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 both via Internet and EDIFACT. The system currently involves the Swedish Customs (lead agency), the Swedish Board of Agriculture, the National Board of Trade, the National Inspectorate of Strategic Products, the Police, the National Tax Administration and Statistics Sweden.⁵⁸

8.13. *Customs modernization in the USA.* The International Trade Data System (ITDS) is a project 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 and the relevant data will be distributed to the appropriate agencies. Costs will be reduced for business and government. 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 U.S. Customs and Border Protection (CBP), as part of the ACE (Automated Commercial Environment) project.⁵⁹

8.14. *Philippines - electronic-to-mobile (e2m) Customs Project.* The e2m Customs Project is one of the mission-critical and high impact ICT projects of the national government. It seeks to streamline the Bureau of Customs (BOC)’s core processes (imports and exports) and improve trade facilitation between BOC and its stakeholders, including other government agencies through the development and integration of various systems allowing internet-enabled and later SMS-enabled, thus less face-to-face transactions, towards the realization of the National and ASEAN Single Window. Launched in January 2005, this project was financed through a multi-million grant from President Gloria Macapagal Arroyo’s e – government fund, 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 via 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 fight against corruption. The e2m system for the imports formal entry was fully implemented in the major ports of the Philippines in August 2010. E2m - Customs offers the following enhancements to the current system:

- Online submission of declarations;
- Automatic advice on declaration status;
- Engagement of Value Added Service Providers (VASPs);
- Online submission of manifests by airlines and shipping lines, including de/consolidators;

58 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, p. 19. Additional examples are provided on Mauritius, Netherlands and the USA.

59 Report to Congress on the International Trade Data System (ITDS), December 2010 (available at <http://www.itds.gov>).

- Automated process for other types of import transactions such as informal (including passenger baggage system), warehousing and transshipment entries;
- Automated process of liquidation of raw materials;
- Centralized management of bonds transactions;
- Links with relevant government agencies;
- Online resource access through BOC website on issuances, processes, policies, guidelines and other related information.

8.15. *Experience of Brazil - SISCOMEX*. Brazil process its foreign trade data through a computerized system (SISCOMEX) that collects and records in a single flow, information and procedures concerning foreign trade operations in Brazil. The collected data is 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:

- Harmonization of concepts, standardization of codes and nomenclatures;
- Elimination of controls and parallel systems of data collection;
- Simplification (and avoiding bureaucracy) of foreign trade operations;
- Generation of a single document at the end of the process;
- Preservation of the basic functions of managers and consenting;
- Reduced administrative costs for all involved in the system;
- Critical parameter data;
- Preparation of timely trade statistics.

(b) The advantages of SISCOMEX are:

- On-line system;
- Simplification and acceleration of the process;
- Information provided only once;
- Automatic granting of permits;
- Ease of access / free from use of intermediaries;
- Cost reduction with dispatch and storage of documents;
- Available 24 hours a day, 7 days a week;
- Transparency of administrative controls;
- News SISCOMEX - timely information about changes in the administrative processing of Brazilian foreign trade;
- Enabling legal representatives made by the company itself, directly into the system;
- 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. The system handles manifests and customs declarations, accounting procedures, and transit and suspense procedures. It generates trade data that can be used for statistical economic analysis. The ASYCUDA software is developed by UNCTAD in Geneva and operates on microcomputers in a client server environment. ASYCUDA is fully compliant with international codes and standards developed by ISO (International Organization for Standardization), 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 EDIFACT (Electronic Data Interchange for Administration, Commerce and Transport) rules. The most recent Web-based version of ASYCUDA will allow Customs administrators and traders to handle most of their transactions via the Internet.⁶⁰

8.17. *Interface to statistical data – example 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.^{61,62} Work is currently (as of July 2011) underway to add in ASYCUDA a statistics data extraction module that complies, to the extent possible, with the requirements of IMTS 2010 (see table 8.1), specifically for international reporting in detailed trade statistics. A pre-defined 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:* The statistical processing of merchandise trade data involves, compared with other statistical areas, dealing with large amounts of datasets with relatively simple structure. These datasets 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 to perform customised data queries and timely provision to users of large datasets in various formats. All these activities imply the intensive use of information technology which frequently requires significant IT resources to be specifically dedicated to trade statistics. Particular challenges for the 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 confidentiality or quality), correction of existing data and supplementation of existing data via estimation or other

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, pp. 31-32.

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

62 For user and technical details please refer to the documents - ASYCUDA++ Eurotrace data extraction interface, User manual v1.0, and ASYCUDA++ Eurotrace data extraction interface, Technical manual v1.0. The Central Statistical Office of Trinidad and Tobago provides an example of data extraction from ASYCUDA to Eurotrace (see <http://www.cso.gov.tt/news/Pages/EurotraceTradeStatistics.aspx>, and para. 8.22 of this Manual).

means (i.e., if certain characteristics are not provided).

Box 8.1

The statistical production process - Example of Italy

The production process carried out by ISTAT encompasses a number of tasks/production stages which span 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 custom data
- (b) Exclusion of trade flows not relevant for the compilation of external trade statistics
- (c) Standardisation of customs data according to statistical standards, including both classification and analytical variables
- (d) Fast 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 misclassification problems at the product, country or other statistical variables level.
- (f) Estimation of possible random item or unit not response problems
- (g) Estimation procedures related to “structural biases” in customs data, such as systematic delays in data transmission, undercoverage 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 both in terms of “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, but it is rather mostly embodied in the human capital devoted to the production of trade statistics. As an example, it concerns knowledge on the best way to check, revise and classify specific trade flows, based on an extensive knowledge of product characteristics and feedbacks from trade operators or external experts.

As a result, the successful management of trade statistics by NSI requires the set up of a 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 to:

- (a) design an efficient IT framework for the upload and management of customs data, with a dedicated pool of IT technicians
- (b) design and implement a sound methodological approach to outliers detection
- (c) set up and maintain a limited pool of specialised clerks which an extensive knowledge of product characteristics to manage data quality problems. In particular, the criteria adopted to assign a given group products to each expert should be consistent with human resources constraints and in line with national trade characteristics.
- (d) adopt a risk management approach 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.

8.20. *The role of customs.* Custom declarations are the main and usually preferred data source for merchandise trade statistics. Customs authorities are not only providing this information to the responsible agency but have a very strong influence on the quality of the information provided (see chapter 9 for details, in particular para. 9.5 on data processing and validation). In this context, it is critical that Customs is working with the traders or brokers that enter the information to ensure that the data required for statistical purposes is adequately captured in the customs declarations. At the same time the responsible agency needs to make customs aware of these requirements (see chapter 5 for details).

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 countries⁶³, allows to import and manage the data necessary to the development of the external trade statistics (in particular the customs data), to treat these data, in particular by carrying out quality controls and the application of standards and to work out and calculate a certain number of aggregates, in particular indices of the Foreign Trade and to export them for dissemination and publication. Eurotrace consists of the following separate applications that work together, the Eurotrace DBMS, the Eurotrace Data Editor and the Comext Standalone Data Browser.

8.22. *Eurotrace applied in Trinidad and Tobago.*⁶⁴The Central Statistical Office (CSO) of the Republic of Trinidad and Tobago has developed a Eurotrace application that 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.⁶⁵Further improvements depend largely on the implementation of ASYCUDA at customs 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 via 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 8.1

63 Eurotrace is implemented by many African countries but it is also is some member countries of Asia and the Caribbean, supported by Eurostat as part of the European Community's development cooperation in Africa, the Caribbean and Pacific (ACP) (see <http://circa.europa.eu/irc/dsis/eurotracegroup/info/data/en/users.html>).

64 The subsequent information is directly taken and derived from the following document: Eurotrace Applied to Trinidad and Tobago Trade Statistics - Overview document, Central Statistical Office, Ministry of Planning, Economic and Social Restructuring and Gender Affairs, Trinidad and Tobago, October 12, 2010.

65 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 a following document: Technical Brief, 2nd Regional Award for Innovation in Statistics, Eurotrace Applied to Trinidad and Tobago Trade Statistics, Central Statistical Office, Ministry of Planning, Economic and Social Restructuring and Gender Affairs, Trinidad and Tobago, August 20, 2010.

Table 8.1
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*	“Imports”, “Re-imports”, “Exports” and “Re-exports”
Commodity Code	According to the Harmonized System (HS) at the most detailed commodity level available (6-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 US dollars); CIF for imports and FOB for exports
Net weight**	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)^a	
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 US dollars); FOB for imports
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)
Custom 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

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

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

*** 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 respectively to countries that compile only FOB-type values.

**** This information is requested to obtain additional information about 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 considerable and in might not always possible to derive the desired information.

8.24. *Experience of the Philippines.* In 2003, the National Statistics Office (NSO) of the Philippines entered into a Memorandum of Agreement with the Bureau of Customs, for the latter to provide the NSO 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 origin, Commodity description, Gross weight (in kilogram), 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 destination, Commodity description, Gross weight (in kilogram), 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 and which is relevant for compilation of trade statistics (either for inclusion into statistics or for verification purposes) includes the ones shown in table 8.2. It should be noted, however, that not all information items listed in the table are required in all countries.

Table 8.2
Information relevant or required to complete a goods declaration*

- *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;⁵³
- *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);⁵⁴
- *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 which 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;
- *License number:* validated import or export license number, for goods subject to import or export license;
- *Related party transaction* (i.e., one between parent company or sister company);⁵⁵
- *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, 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 to which the exported goods will be designated;
- *Terms of delivery:* the transaction terms of delivery is required to be reported, usually INCOTERMS 2000;
- *Freight:* the freight charges;
- *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 (multiply unit price 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 the transaction occurs is required to 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 sufficient description of the commodity to permit verification of the classification code or the description and specification as shown on the validated import or export license;
- *Gross weight (kg)*: the gross weight of shipments in kilograms, 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 (kg)*: the net shipping weight in kilograms, 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*: report the amount 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. The unit of quantity specified in the transaction is also required to 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 discharge*;
- *Country of purchase*.

* However, not all types of information are mandatory for many customs procedures.

Chapter 9 Data quality: assurance, measurement and reporting

9.1. *Introduction.* This chapter is based on IMTS 2010, chapter 9, 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 it describes the process of producing quality reports and the measurement of quality, and provides examples and best practices. Data quality assurance needs to be a top priority for data compilers. Countries face the challenge to develop a detailed road map leading towards achieving the goal of producing and disseminating trade statistics which are of the highest possible quality. This chapter aims to provide necessary information and to describe good practices to guide countries in making quality assurance, measurement and reporting operational. Aspects of data quality are also discussed in chapter 5.

9.2. *Quality management system.* Data quality assurance, measurement and reporting must be viewed as parts of a quality management system, often also called quality management framework (QMF). A QMF often contains the following elements: (a) a quality policy which would indicate the commitment to quality management, (b) a quality model which provides a definition of quality, often formulated in terms of its components, (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.⁶⁶

A. Quality assurance

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

9.3. *Systematic approach to quality assurance.* IMTS 2010 calls for a systematic approach to data quality. This means “[...] that all aspects of the entire trade statistics program be examined and evaluated against certain principles and standards in order to more effectively identify and implement appropriate action to further improve data quality.”⁶⁷ Quality assurance as treated in part (i) of this chapter has a more narrow focus on data quality as it only takes a view on some specific considerations 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, awareness and enforcement of a conceptual framework for foreign trade statistics, preferable in line with the international recommendations. Considerations in respect to treatment of transactions in specific categories of goods (scope of trade statistics), of transactions destined 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

66 See Eurostat, ESS Handbook for Quality Reports, 2009 Edition, p. 15.

67 IMTS 2010, para. 9.4.

the existence of a clear methodological framework. Any automated quality assurance and data validation is 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 and creating of trade records, their validation and their integration into datasets encompassing all records of a specific period. The following validation checks are commonly used: completeness, validity of codes, range check of values, internal consistency and aggregate consistency. Often, the estimation and insertion of missing values and codes is integrated into the completeness check. Tools for the validation include validation at data entry (“in dialog”), batch validation/ creation of error lists, generation of error statistics, flagging of significant transactions, classification of errors into must vs. possible errors and automated vs. manual error correction. The inclusion of information of additional sources of information would usually require manual corrections as this information is external to the system. In some offices manual corrections would always require that additional and/ or external sources are used (such as contacting the declarant). However in might not always be possible to obtain the additional information in the available time and manual corrections might be made with or without the use of such additional sources.

9.6. *The information problem at data entry.* The starting point of statistical quality assurance is when the information is provided. This is usually when the customs declaration is completed as customs records are the main and normally preferred data source for merchandise trade statistics. Customs declarations itself are administrative records containing selected information about commercial (or non-commercial) transactions and the logistics of providing 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 not, for example, derived electronically from existing information and the ones completing the customs declarations (commonly the shipping agent or trader) might not have complete information about the transaction, the logistics and subsequent further transactions.

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

2. Quality assurance at customs

9.8. *Priorities.* Security and safety and the generation of revenue are the core functions of customs and must be seen 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. However, this traditional view is not an adequate

description of the situation in many countries. Many customs offices have statistical units which are focusing on the quality of statistical information in a comprehensive way. Further, quality assurance, seen as a comprehensive concept and supported by the automation at customs is bound to improve quality for all parts of the data. The calls for an integrated data pipeline from the buyer to the seller (see para. above) shows that the singular emphasis on import information is misplaced, as in a possible future global customs system the information for export and imports are integrated and treated as the two sides of one transaction.

3. Quality assurance at the responsible agency

9.9. *Characteristics.* The responsible agencies are expected to conduct a systematic quality assurance program covering all elements of the statistical information, using the full range of validation checks and tools as specified 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 that are compared with the ones from previous periods. However, often, special attention is also given to certain transaction that might be of particular importance or value, or might potentially outside of the scope of IMTS (e.g. repairs, 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 depends on the data provision by customs, unless, of course, customs itself is the responsible agency.

4. Major quality issues and how to approach them

9.10. *The major quality issues from user perspective:* Lack of coverage, asymmetries in partner information, the quality of quantity information and timeliness are often perceived as the major quality issues of merchandise trade data. The issues are raised but only briefly discussed as some country practices cited later on address some of these issues in more detail.

9.11. *Coverage.* Some major coverage issues such as application of the special trade system or need for confidentiality of certain transactions are beyond the scope of the regular quality assurance at responsible agency. However, in many countries transaction in certain commodities such as oil, gas, electricity or raw materials, ships and aircraft are not or not adequately captured by customs or the responsible agency. In other countries border or shuttle trade are important but not fully recorded by the responsible agency. The issue of lack of coverage can also arise in the case of the applications of various thresholds for simplification purposes at customs (see chapter 18, section E). Possible approaches to these issues of coverage are to use additional data sources and, if necessary and appropriate, to address 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 need to be developed.

9.12. *Asymmetries in partner data.* Asymmetries in partner data, that is differences between the compiling country's own exports and imports and the partner countries imports and exports, can have several reasons (timeliness, commodity misclassification, partner country attribution, trade system, confidentiality etc.) and many bilateral studies have been conducted to improve the data quality. However, an important factor in these asymmetries is the trading partner information

which can be difficult to determine due to conceptual but also practical reasons,⁶⁸ 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 information not only for imports but also for exports. One way to examine and address these asymmetries is to conduct reconciliation studies (see part C)

9.13. *Quality of quantity information.* Users and producers of trade statistics agree in general that quantity information (quantity and net weight, if quantity is not in terms of net weight) is the weakest data element in the core dataset for trade statistics. In some countries the provision of quantity or net weight is not mandatory,⁶⁹ or often the information is not complete for other reasons. Information on the supplementary quantity is only internationally comparable when reported by countries in a uniform way. However, often quantities are reported in units different from the ones recommended by the WCO for each specific commodity. An important quality problem is further that the quantity or net weight might not be reported correctly, which might be difficult or impossible to detect. There are several possibilities of improving the quantity information. For example, as part of a standardized quality assurance procedure suspicious high quantity values can be identified and the data provider can be contacted to verify them and suspicious or missing quantities can 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. Another possibility is to allow data providers to estimate missing information using empirical values or to allow the provision of supplementary quantities from which net weight can be derived using appropriate conversion factors. Whatever the method used, it should be documented in the metadata made available to users.

9.14. *Quantity aggregation.* The quantity and net weight information provided by countries at the 6-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 6-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 estimation for any non-standard quantity units in order to provide the correct net weight and quantity at different levels of aggregation, or refrain from providing aggregations that are not of sufficient quality. The difficulties in quantity and net weight aggregation constitute a quality issue on its own which has to be carefully addressed in view of the multiple and growing uses of these data, including for health and environmental policy making. It is a good practice for the responsible agency to work closely with customs on this issue.

68 For imports it is recommended to record the country of origin. 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 to record the country of last known destination, although the objective is to obtain the country of last or final destination. As indicated in para. 9.6 above, the ones completing the customs declaration might not have full information about the previous or future transactions the goods have been and will be subjected to.

69 In the European Union's Intra- and Extrastat system it is not mandatory to provide net weight if the supplementary quantity is different from net weight, however Member States are obliged to estimate net weight when not collected.

9.15. *Timeliness.* The relevance of trade statistics is greatly increased if the data is provided in a timely manner. However, in many countries the information is provided much later than suggested (see IMTS 2010, para 10.3) requiring data users to make their own estimates. One way to improve the timeliness of information is to review the data production process in light of existing best practices and to publish preliminary data (see IMTS 2010, para. 10.8).

5. Country examples and best practices

9.16. *Effect of Mandatory Electronic Filing on Export Data – United States experience.*⁷⁰ Effective July 2, 2008, the U.S. Census Bureau (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 via 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 on-line validation checks that immediately detect reporting errors and refer these errors back to the filer for correction before the data can be submitted which resulted in a significant decrease in reporting error rates on export transactions. The timeliness of the data eliminated also the need for estimation of data that was received too late. Risks associated with electronic filing include unresolved edit failures that could result in under coverage and estimations by filers. The AES Report Card provides a tool of monitoring of filers and hereby to identify further actions to improve the 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 computerized system which integrates customs, commercial and foreign exchange information.⁷¹ Annex 9.1 explains its main 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

⁷⁰ The information presented is taken and derived from the following note "Effect of Mandatory Electronic Filing on Export Data", available at: <http://www.census.gov/foreign-trade/aip/mandatoryelectronicfiling.html>

⁷¹ The government control of Brazilian foreign trade is decentralized, consisting 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 (SECEX) of the Ministry of Development, Industry and Foreign Trade (MDIC) and other consenting agencies. The customs control covers the verification of documents and the examination of goods under the regular tax by the Brazilian 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). The RE is the "authorization to export" and must be requested before the goods are shipped abroad. The export processing begins with the RE and the provision of commercial, financial, fiscal and exchange rate information. Currently, the Brazilian agency responsible for producing statistical foreign trade (SECEX/DEPLA) is responsible for the validation of specific fields of the Export Registration.

data can jeopardize the whole data processing and can provide incorrect results. In this regard, ASYCUDA insures 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 stay 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 9.2 for details).

9.19. *Harmonized framework for data validation – Eurostat.*⁷² Eurostat proposed for its member states a harmonized framework for data validation in external trade statistics that covers the trade in goods between countries of the European Union (intra-EU trade statistics) but also the trade of members countries with countries outside of the European Union (extra-EU trade statistics). Regarding extra-EU trade statistics the following is covered: Validation of the input data by the customs offices, validation of the input data by the competent national authorities (responsible statistical authority), validation of the output data by the competent national authorities and validation of the output data by Eurostat. 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 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 (i.e. commodity code against mode of transport), whether numerical values or combinations of numerical values (i.e. statistical value against quantity expressed in net mass) are within a certain range and whether aggregated numerical values (i.e. aggregated statistical value by flow and commodity code) are within a certain range. These validations referring to individual SADs are expected to be performed via 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, on 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 harmonized framework contains an Annex which 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.

9.20. *Validation rules of the Eurotrace DBMS.*⁷³ The Eurotrace DBMS allows the definition of validation rules to control and maintain the quality of data within a dataset. 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 SQL⁷⁴. 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

72 Eurostat, Proposal for a harmonized framework for data validation in external trade statistics, 2010 version.

73 See European Commission, Eurotrace DBMS, Version 2.2., User Guide, 2003, p. 220-275.

74 More specifically, SQL for the Microsoft Access Jet database engine.

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 algorithm) can be applied when importing data into a dataset from a file, when exporting data out to the Eurotrace editor, and when importing data back into a dataset 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.⁷⁵

B. Quality measurement and reporting

1. Steps and guidelines for producing data quality reports

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

(a) Collection and review of existing standards, guidelines, requirements, practices and examples within the same office (for past quality reports or quality reports of other units) 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, type and frequency of the quality report under consideration of the purpose and available resources;

(c) Assembly of team and allocation of resources;

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

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

(f) Drafting of report;

(g) Review of report;

(h) Dissemination and communication.

9.22. *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 in a comprehensive way. 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 Eurostat⁷⁶ provides recommendations for preparing comprehensive quality reports for the full range of statistical processes and their outputs. The ESS Handbook for Quality Reports⁷⁷ provides much more detailed guidelines and examples of quality reporting practices.

75 See European Commission, Eurotrace Editor, User Guide, 2003.

76 ESS Standard for Quality Reports, 2009 Edition, European Communities, 2009.

77 ESS for Quality Reports, 2009 Edition, European Communities, 2009.

9.23. *Specific objectives of the ESS guidelines.* The specific objectives of the ESS guidelines are (i) to promote harmonised quality reporting across statistical processes and their outputs within a country and hence to facilitate comparisons across processes and outputs, (ii) to promote harmonised quality reporting for similar statistical processes and outputs across countries and hence to facilitate comparisons across countries; and (iii) to ensure that reports include all the information required to facilitate identification of statistical process and output quality problems and potential improvements.

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

1. Introduction to the statistical process and its outputs – an overview to provide context;
2. Relevance – an output quality component;
3. Accuracy – an output quality component;
4. Timeliness and punctuality – output quality components;
5. Accessibility and clarity – output quality components;
6. Coherence and comparability – output quality components;
7. Trade-offs between output quality components;
8. Assessment of user needs and perceptions – covering all aspects of output quality;
9. Performance, cost and respondent burden – process quality components;
10. Confidentiality, transparency and security – process quality components;
11. Conclusions – summary of principal quality problems and proposed improvements.

9.25. *ESS 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

9.26. *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 data quality assessment framework that 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 ongoing basis as part of the metadata provided to users and are updated regularly.

9.27. *Quality report of Germany.*⁷⁸ The quality report for the foreign trade statistics of Germany consists of the following parts: 1. General information about the statistics such as name of statistics, reporting period, subject, respondents, legal framework and confidentiality; 2. Purpose as defined by data variables, justification and users; 3. Compilation methods, describing how the data is obtained and burden on respondents; 4. Accuracy describing coverage, customs and statistical threshold and estimations and revisions; 5. Timeliness; 6. Comparability with data

⁷⁸ The information is derived from the following publication: *Qualitätsbericht Außenhandel*, January 2011, Statistisches Bundesamt, Wiesbaden 2011.

of others and over time; 7. Coherency, describing the relationship to related statistics and 8. References to additional information.

9.28. *United States merchandise trade statistics quality report.*⁷⁹ The report “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 and mandatory electronic filing has reduced these errors and improved data coverage.

9.29. *Eurostat merchandise trade statistics quality report:* The report “Eurostat - Quality Report on International Trade in Goods Statistics” provides the users with quality indicators and information regarding the EU Member States' practices. It summarizes the main outcomes of the national quality reports the Member States have to supply to Eurostat each year within a fixed deadline. Its structure and contents follow the ESS guidelines for quality reports.

9.30. *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 the 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 Eurostat's and the EU Member States' data dissemination.

9.31. *IMF's SDDS on international merchandise trade.*⁸⁰ Countries that subscribe to the IMF's 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's Dissemination Standards Bulletin Board (DSBB). One of the areas covered 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 International Monetary Fund (IMF/Fund)'s SDDS was established to guide members that have, or that might seek, access to 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

9.32. *Characteristics.* Producer oriented quality reports aim at identifying strengths and weaknesses of the statistical process and leading to, or containing the definition of, quality

79 See U.S. Merchandise Trade Statistics - A Quality Profile, U.S. Census Bureau, Washington 2002.

80 See <http://dsbb.imf.org/Pages/SDDS/Home.aspx>.

improvement actions. Producer oriented quality reports can be 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, such as a specific external requirement or to deal with specific issues or problems.

9.33. *Individual assessment report of EU member states.*⁸¹ 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 Euro 1,000 in value and 1,000 kg 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..

9.34. *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 to create guidance and impetus to address institutional or general data compilation issues and will focus on these particular areas. In other cases assessments have been conducted as parts of technical assistance activities which aim at the overall application of the international recommendations for international merchandise trade statistics and accordingly focused on these aspects. As it concerns 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 as, in contrast to the previous recommendations, the entire data compilation process is covered.

4. Measuring data quality

9.35. *Use of quality measures and indicators.* The measurement of 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 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 (IMTS 2010, para. 9.13).

9.36. *Quality measures and indicators.* Quality measures directly reflect a particular aspect of quality. For example, the time lag from the end of the reference period to the release of particular international merchandise trade statistics is a direct quality measure. However, in practice, quality measures can be difficult or costly to calculate. Instead, quality indicators may be used

81 European Commission – Eurostat, United Kingdom – 2009 Individual assessment report, final version.

for the quality assessment. Quality indicators provide summarized quantitative or qualitative evidence about the quality of the data. They are generally defined with respect to some reference point and can assist in making different types of comparisons. (IMTS 2010, paras. 9.14-9.15).

9.37. *Methods and tools for measuring data quality.* Methods for quality measurement are documentation/ reporting, the calculation of indicators, auditing procedures, self-assessment or questioning the users. The Eurostat Handbook on Data Quality Assessment Methods and Tools (DatQAM) aims at facilitating a systematic implementation of data quality assessment in the European Statistical System (ESS). 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 labeling and certification. The handbook provides a concise description of the data quality assessment methods currently in use. Furthermore, it gives recommendations on how these methods and tools should be implemented and how they should reasonably be combined. The methods and tools presented in this handbook facilitate an assessment of statistical products, statistics production processes, as well as the user perception of statistical products. Annex A includes a background paper on the position of data quality assessment in the general framework of quality management and Annex B presents good practice examples in some more detail. The handbook is primarily targeted towards quality managers.⁸²

9.38. *Information on quality measurement – United Kingdom:* The following metadata on quality is provided to users of the United Kingdom’s trade statistics: 1. Quality Standards against which the quality is measured. and 2. Assessment (including self assessment) against some of these quality standards including (a) quantitative assessment against indicators for the six output quality dimensions, (b) qualitative assessment of our methods and adherence to EU legislation and (c) channels for and results of post-publication quality assurance.

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

9.39. *Goals of bilateral reconciliation studies.* Reconciliation studies help explain discrepancies between the bilateral imports and exports statistics of trading partners by identifying conceptual and methodological differences in their respective data collection and processing. Sometimes it is assumed that exports of country *A* to country *B* should be equal to imports of country *B* from country *A*; this is theoretically possible only if both countries compile data using of the same methodological principles and if no mistakes are made in the process. However, these are necessary but not sufficient conditions, as there data may match due to several other reasons (see para. 9.44 below). A short-term aim of reconciliation studies may be limited to the identification of major differences in the statistics of the two countries. However, the reconciliation process may reveal systematic measurement errors and gaps, which should be corrected immediately. On a larger scale, the aim may include assessing the causes of differences and making adjustments to various data components. The longer-term objective can be viewed as the harmonization of the conceptual framework of 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 to improve the overall quality of foreign trade data. The results of reconciliation can help each partner to better understand bilateral trade flows. At the policy level, a reconciliation exercise will portray a common perception of the facts and

82 Handbook on Data quality Assessment Methods and Tools, Eurostat, 2007

thus might facilitate the development of bilateral economic negotiations and international cooperation.

9.40. *Limitations of the reconciled data.* The reconciled data do not represent any change to 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.

9.41. *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 basic procedures; (b) establishing a common conceptual framework for reconciliation purposes; (c) converting official 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) formulating 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 that identifies all additions and subtractions which need to be performed in order for the trade data of one partner to appear the same as the trade reported by the other be prepared as one of the outputs.

9.42. *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 since, in general, those data were 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 was viewed to be more accurate for the same reasons.)

9.43. *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 adopting the same definitions and classifications for use in the reconciliation study. Issues to be considered at this stage are, among others: what are the major conceptual differences; whether information is available on country of origin/last known destination or other basis; whether there are significant differences in compilation procedures (such as for the suppression of confidentiality or low-value trade) that will affect bilateral

comparability; and whether there are certain transactions (such as processing trade) for which there are streamlined reporting provisions that could affect comparability. The common framework serves as a practical working tool to facilitate comparison of data between the two countries; it does not 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 done on a monthly or an annual basis (if exchange rates are fluctuating significantly, annual conversion could create additional discrepancies).

9.44. *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 conceptual reasons 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)⁸³; (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 U.S. and China (see below for details). Other reasons for discrepancies on 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 after export, currency conversion, etc.), the timing of recording, coverage (geographic coverage, different treatment of trade in special categories of goods, thresholds, underreporting of transactions above threshold), classification, and confidentiality. Some of these reasons are based on conceptual differences, however many are not. For a detailed discussion of these data items please see Annex 9.3.

9.45. *Methods and approaches for reconciliations studies – reference materials.* The conduct of a bilateral reconciliation study requires an agreement of the two partner countries that usually would specify the responsible or involved national agencies, the purpose, the scope, 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;⁸⁴ few examples are provided below:⁸⁵

- *The experience of Canada-Mexico-United States:* Reconciliation of merchandise trade for the period 1996-1997. The reconciliation studies between Canada and Mexico, and between Mexico and the United States, allowed to identify the sources of significant differences in the 1996 and 1997 official trade statistics. The studies have been useful for the three countries involved to evaluate their trade statistics and identify areas for further improvement (see IMTS Compilers Manual, Annex D.4, page 63-68)

83 Indirect trade describes the situation when exports of country *A* are sent to country *B*, from where the goods are re-exported to country *C*. The term tri-angular trade is usually used to refer to trade within the European Union when goods are sold from a company in Member State *A* to a company in Member State *B*, which in turn sells it 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 of *B* being recorded as partner country, or of *B* itself reporting a trade transaction.

84 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).

85 The United Nations Statistics Division will establish a reference website for materials on the topic of reconciliation.

- *United States and China*: Report on the statistical discrepancy of Merchandise Trade. Both countries established a statistical working group to examine the bilateral merchandise trade due to the unusually large and growing statistical discrepancy 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 due to larger discrepancies in this direction. The distinction was made between trade moving directly from China to the United States, and indirectly through intermediary countries. The working group identified causes that explained the majority of the bilateral statistical discrepancies.⁸⁶
- *Sweden and Denmark*: asymmetry exchange project. The goal of this project is to reduce the asymmetries in the trade data of both countries. The available documentation provides useful information on how to conduct such project (e.g., 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 entails examination of data at the enterprise level.⁸⁷
- *European Union*: symmetries in the intra-EU 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 to identify the asymmetry causes and to reconcile the mirror figures wherever possible.⁸⁸
- *Brazil*. In Brazil, the statistical harmonization (reconciliation) of trade data has two objectives: (i) to improve the quality of statistical data for national purposes and (ii) to submit to the trade negotiators figures that are accepted by both countries. For further details, see Annex 9.4

9.46. *Cross-country comparability*. Cross-country comparability is an important quality dimension and the basic working assumption when comparing data from two or more countries. To a large degree it depends on the extent to which the international concepts and definitions for international merchandise trade statistics are applied by countries, and on the impact that the various deviations have on the data. The United Nations Statistics Division has conducted multiple studies in which countries were asked about their compliance with the international recommendations. IMTS 2010, para. 9.23 (a), recommends that countries inform in their metadata about their practices and any deviations from the international standards.

9.47. *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

86 Report on the Statistical Discrepancy of Merchandise Trade between the United States and China, Ministry of Commerce of the People's Republic of China, U.S. Department of Commerce, Office of the U.S. Trade Representative, October 2009. Additional research has been conducted, see: Reconciling Trade Statistics from China, Hong Kong and Their Major Trading Partners - A Mathematical Programming Approach, Z. Wang, M. Gehlhar and S. Yao (GTAP Technical Paper No. 27), September 2007.

87 Establish an asymmetry exchange project between Sweden and Denmark, in: Economic Statistics 2008:10, Statistics Sweden, 2008.

88 For further information see Quality Handbook – Volume III, Section “Tools for reconciliation of Intra-EU trade statistics”.

implemented January 1990, and both countries consequently eliminated the requirements for 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 United States perspective, this eliminated undocumented shipments to Canada, increased the accuracy of the data, and increased inclusion of data in the correct statistical month. However, as the data exchange was implemented when both partners primarily used paper export declarations but the capability to collect export declarations electronically has improved, the benefits may now be relatively less significant.

9.48. 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 or both partner countries may have a gap in data. For example, Canada does not collect containerization information on imports from the United States, so containerized value and shipping weights are excluded from U.S. data on exports to Canada. The data exchange has also not handled trade transiting one partner en route from the other to a third country well, leading to possible coverage and country of destination attribution errors. These and other problems have been identified and efforts are made to measure them and minimize their impact on statistics. A joint report was prepared by the U.S. Census Bureau and Statistics Canada that discusses the effects of the data exchange, and is made available by both agencies.

D. Inter-agency collaboration on data quality

9.49. *WTO Common data set.*⁸⁹The CDS is a joint effort by Eurostat, OECD, UNSD, UNCTAD and WTO 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, co-ordinated by WTO, consist of scrutinising significant differences between the agencies' data to determine the best value. In many instances, this results in finding an agreement on substitution values and estimates, with the objective for each participating agency to review and correct their own data. The CDS database gives access to statistics and documentation of both officially reported and reconciled series. It covers annual total merchandise export and import values of over 200 economies, whose series are updated annually and presented back to the year 1995.⁹⁰

9.50. *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 regular basis. Members of this TF-IMTS regularly participate on the Expert-Group in IMTS which assists UNSD in the update of the international recommendations and this compilation guide. Further, OECD and UNSD implemented a coordinated collection of annual data which avoids duplication of efforts and ensures that both organizations use exactly the same data for OECD countries. However, both organizations went much further and agreed on the processing

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

90 See para. 10.14 for an additional example on the harmonization of trade statistics within the ASEAN region.

standards for annual trade statistics and implemented a joint processing system. All international organizations have full access to UNSD's UN Comtrade database which allows the use of exactly the same data by all organizations and which ensures that there is ongoing interest by international organizations that highest quality standards are followed and arising issues are addressed.

Annex 9.A. Brazilian statistical data validation system (exports example)

9.A.1. The statistical validation system of Brazilian exports is applied at three different moments: (1) Preventive validation – at date entry (in dialogue) before the export register is actually accomplished; (2) continuously – during the operations (export registers with significant values and others criteria's); and (3) “A posteriori” (Post validation) – after the exports operations are 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 Brazilian 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 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).

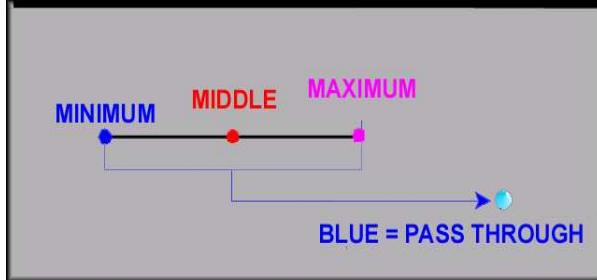
9.A.3. The FOB-type value in US dollars, the net weight in kilograms, and the supplementary quantity are used to calculate the average value of the parameters (the latter, for the cases of products that are sold in units different than kilograms). In order to avoid slowing operations or creating difficulties for the exporter, there is a tolerance for minimum and maximum values of one decimal (-90% and +900%). 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), which can communicate with the exporter through the system, 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 analyzes and compares them to the middle value by commodity. This preventive validation stage leads to various possible cases, as illustrated in Box A9.1.

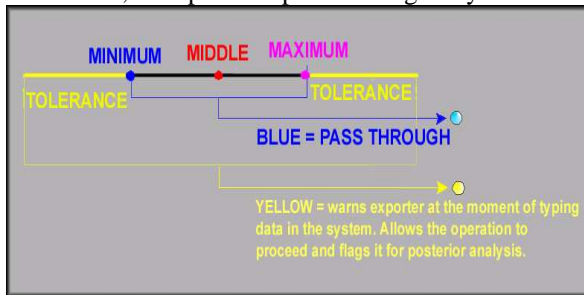
9.A.5. Most causes for forwarding (centralizing) an export record for statistical analysis are errors in the following information: (a) FOB value in US dollars; (b) net weight (in kilograms); (c) supplementary quantity; (d) commodity code (NCM – HS); (e) currency unit; (f) the INCOTERMS rule applied. The centralized review of export records amounts to approximately 1% of twenty thousand daily operations for exports. More than 99% of these centralized records have typing errors.

Box 9.A.1 Detailed operation of SISCOMEX

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



Outside the minimum and maximum parameters for the specific merchandise AND out 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 to solve them.



The exporter may receive the following alert codes:

- 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.
- 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.
- 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.
- 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.
- M99 (posterior analysis only) – Operations with FOB value over one million dollars which receive check and confirmation of values.

Box 9.A.2

Operation the centralized review of export records

The basic methodology is comparative. Most of errors happen on filling in the fields of values and quantities (net weight and supplementary quantity) with the wrong shift of the decimal point, provided, in most cases, by the U.S. punctuation criteria adopted by the Central Bank of Brazil (decimal point and comma for separating thousands).

The following fields should be checked in sequence:

- (a) *Framework*: The identification of the administrative procedures on exports contributes to the solution of some cases, especially those with very low average price, such as used material operations.
- (b) *Incoterms*: The most used INCOTERMS rule in exports is Free on board (FOB). When it 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 mostly be due to typing (decimal).
- (d) *Currency code*: Incorrect reporting can occur. For example, 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 by SH-6 more two additional digits)*: Some cases are caused by the wrong classification of the product, i.e., all information is correct, but the NCM code was entered wrong. As the parameter table is directly related to the NCM, the analysis ends up being made for another product other than the exporter wants to export.
- (f) *Net weight in kg*: The field net weight in kg is responsible for most errors, caused by the displacement of the decimal point. In some cases, the exporter repeats the same number of quantity, although sometimes it is not equal to the net weight in kilograms.
- (g) *Supplementary Quantity*: In most of the NCM's, this field does not require completion as the supplementary unit is kg. The error that occurs with some frequency is the same as for net weight, i.e., typing error by moving the decimal place or repetition of the same entry as for net weight when the supplementary quantity is different.

2. Continuous and post validation

9.A.6. 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.A.7. Post validation is executed after the conclusion of the export operation (shipment), based on validation reports such as:

- (a) Comparison between net weight and value;
- (b) Checking of the relation between merchandise by country for past periods;
- (c) Analysis of the Export Registers flagged by yellow and red occurrences.

Annex 9.B. ASYCUDA Data quality assurance, measurement and reporting – Controls and reports

1. Existence controls

9.B.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 while it is prohibited in Country B).

2. Data Format controls

9.B.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.B.3. It 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 according to the defined time period (date of validity). The simple example is the list of (partner) countries, which also includes its validity.

9.B.4. There are more than 40 reference tables exist, some of them are the following (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.B.5. Additional information: the Customs Integrated Tariff is a particular and complex reference table allowing the check of the Customs commodity code and other related elements (e.g. quantity units associated with a specific tariff).

4. Consistency controls

9.B.6. This validation makes sure that:

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

(b) The existence of a specific data element is depending from 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.B.7. In addition to the checks explained above (which focuses during data entry), ASYCUDA also provides statistical reporting module. These reports are intended to provide a summary or overview in a specific time period; however they can also be used as validation purposes. As an example, see below the summary report by commodities:

Commodity code	Import			Export		
	Quantity (in kilos)	CIF Value (national currency)	Number of stat. units	Quantity (in kilos)	FOB Value (national currency)	Number of stat. units

Annex 9.C. Detailed discussion of data items that affect statistical discrepancies between countries and further guidance

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

9.C.2. *Trade systems.* If one partner uses the special system of trade and the other 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 any 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 bringing of shipments to the point from which the international carrier will depart; warehousing while waiting for international transport; arriving at the point of destination; warehousing while waiting to clear customs formalities; and the filing and recording of various documents at different stages and having them recorded on the basis of different conventions. For example, in one country the 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. As a result, a given import may be recorded as having occurred in a different month/year from the corresponding export.

9.C.4. There may also be differences resulting from reporting practices in the two countries, such as 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. 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.5. *Interpretation and application of the commodity classification.* All trading countries have adopted the Harmonized System for commodity classification. Despite that significant achievement there are differences in interpreting and applying 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 is very much advisable. 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. The reasons for this include the use of different threshold values for various commodities so that, depending on where a particular commodity is classified, it may or may not be included in the statistics.

9.C.6. *Valuation.* Since exports are normally recorded on an FOB basis and imports on a CIF basis, 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 to remove them, for comparison to FOB export values. If the actual freight charges are not known, estimates may be derived from unit value differences or 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 Valuation. IMTS 2010, para 4.4 recommends that countries adopt the WTO Agreement on Customs Valuation as the basis for valuation of their international merchandise trade for statistical purposes (whether a country is a WTO member or not) for both imports and exports.

9.C.7. There can also be specific reasons for valuation differences. In such cases as charitable/relief shipments, barter trade or related party transactions, since products are not actually bought and sold their value in export and import records can be estimated differently. The valuation of commodities which have a high service component (e.g., computer software or repair transactions) may vary considerably and requires a detailed knowledge of the partner country's practices to develop compensating adjustments.

9.C.8. Currency conversion practices 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. The use of differing procedures by the customs services for converting the values of goods invoiced in foreign currencies, as well as 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.9. *Partner country attribution.* Attribution of imports to the country of origin and exports to the country of last known destination can explain many significant differences between the statistics of trading partners in cases when goods move from the country of origin to the country of destination via third countries. Suppose goods were produced in country A, sold and shipped

to country *B* and afterwards resold and dispatched to country *C*. In such a case, the trade statistics of country *B* will show exports to country *C*, but statistics of country *C* will not attribute its imports to country *B*; they will indicate that goods were imported from country *A*.

9.C.10. If countries have different rules of origin, the trade flows will be differently recorded also. 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 that processing in country *A* as origin-conferring). The reverse situation may arise if country *A* does not consider processing as origin-conferring and does not include those goods in its exports (e.g., it may treat them as goods for temporary admission and dispatch) while country *B* treats the same processing as a substantial transformation and records such goods as imports from country *A*. Those examples illustrate the necessity of developing harmonized rules of origin.

9.C.11. *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 being substantially transformed while abroad. Some countries record such goods as re-imports from country *B*, while others treat them as imports from themselves. 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.12. *“Through trade” operations.* With the lowering of tariffs, “through trade” operations are increasingly taking place. That is, 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 in the export data of country *C* and the import data of country *B*. As more and more tariffs are reduced or eliminated, that reason for discrepancy in trade statistics is likely to increase.

9.C.13. 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 the trade flows followed through with exporters to identify final destination.

9.C.14. *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.15. *Other sources of discrepancy.* A considerable discrepancy between import and export statistics may exist since import documentation is normally more complete than export documentation. Differences in data-collection procedures may also noticeably contribute 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.16. *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 to align data as closely as possible. 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 are needed at all times but are more difficult to track and may affect only selected commodities when countries record imports of special commodities separately and do not include them in regular official statistics (however, those amounts must be incorporated to balance the trade for the relevant commodity group; e.g., trade in military aircraft should be included in total trade in aircraft); and (c) irregular adjustments, that is, adjustments which may change over time (e.g., coding and processing errors). Adjustments may be based on supplementary information or derived by a series of estimates.

9.C.17. Depending on the reconciliation methodology and procedures agreed upon, adjustments are applied at either high-level aggregates or detailed product levels. Adjustments at high-level aggregates 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.¹³⁹ Classification adjustments may also be applicable, especially if items shown in chapters 98 and 99 of 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 it is difficult to establish which data are more reliable for adjustment purposes without involving 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.18. *Conclusions of the reconciliation study.* The partners must decide at what point to consider the study to be “done”. They must also decide 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 be concluded by 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.

Annex 9.D. Conduct of reconciliation studies – the experience of Brazil

9.D.1. 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, confidential data), value increases in intermediary countries, differences in classification of goods, time lags in reporting, differences in valuation, including CIF/FOB differences, currency conversion, methods of partner country attribution, and trade via third country intermediaries. Although such divergences may be substantially reduced by the adoption of the concepts and definitions recommended in the IMTS 2010, they may also 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. Brazil has participated in several Statistical Harmonization Groups within the framework of bilateral trade and investment negotiations, with the aim to improve 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 Statistic Harmonization (WGSB), composed by 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 to exchange information on methods of data quality control and dissemination

9.D.3. Normally, more than two meetings are necessary. In a 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 to agree on the layout of the files,⁹¹ the agenda and the schedule for exchanging data, in order to complete a statistical harmonization between the two countries or, at least, to identify the causes of differences and propose solutions to reduce them. In a second meeting, the focus is on the analysis of the flows that present the biggest divergences. In a third meeting, the study is completed with the analysis of the other flows and a document is prepared by both countries with their conclusions.

9.D.4. Initially, data are exchanged for the previous three years and the available months of the current year. Later, the analysis is complemented with the remaining monthly data at the greatest possible detail. To facilitate the exchange of data, the Secretariat of Foreign Trade (MDIC/SECEX) creates mechanisms for the electronic transfer of data in ASCII format according to an agreed layout (via 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 20th day of the following month.

91 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 6-digit or 8-digit level), supplementary quantity, supplementary quantity unit of measurement code, net weight (in kg), FOB value (in US dollars), insurance (in US dollars, only for imports), freight (in US dollars, only for imports).

9.D.5. Working Groups on Statistic Harmonization (WGSH) are characterized by the following aspects:

(a) Confidential data are not exchanged. The data exchanged are used only for the purposes of the WGSH 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 which, for operational reasons, cannot be adopted by the parties.

(c) If both parties adopt IMTS 2010, the concepts and definitions which 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. To identify data differences and their causes, the WGSH usually follows the steps below.

Step 1 - An initial comparison is done at the 2-digit level of HS (chapters), considering always more than one year.

Step 2 - After identifying the differences at the 2-digit level, the analysis is expanded to a greater detail (4-digit, 6-digit, or if possible, 8-digit level), even if there are differences in the tables of commodity codes.

Step 3 - The WGSH then checks whether the various differences within the same positions at the 4-digit or 6-digit levels compensate each other, in which case the problem would lie on the different classification of goods for the same group of products. Moreover, the WGSH checks if differences in tariffs may induce companies to classify products in codes that represent payment of lower duties.

Step 4 - The WGSH also checks 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 differences in time of recording, including the characteristics of the products traded, entrepôt of time, distance between countries and type of transport, as well as different administrative and customs procedures (see Chapter 12 for further details). The WGSH 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% are considered normal.

Step 5 - WGSH examines if the persistent divergences are of values or quantities. If the quantities are similar, there may be a problem of under-valuation or over-valuation of goods and it becomes a fiscal problem. In these cases, the WGSH checks the original records of each country relating to the same operations. In this specific case, it is very important that the technicians who are making the harmonization have unrestricted access to all data of the operations of export and import, in sufficient detail to allow clear identification of the cause of divergence. If the values are similar, but the quantities not, there may be differences related the unit of statistical quantity adopt by each country. The use of different units for the same product generates significant distortions

and it is, in most cases, part of differences of quantities. This happens a lot in the cases of error or different classifications for the same product.

Step 6 - Other aspects to be considered by the WGSB are the effects of indirect trade and the criteria adopted for the registration of the partner country. The values and quantities of imports whose origin are not equal to the country of origin—except the known cases of free deposits that some countries have in other countries—must be excluded from the analysis. For instance, when the partner country is a member of European Union, the “Rotterdam effect” may cause significant divergence.

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

9.D.7. There are other causes of divergences, like coverage, trade system and method of currency conversion, which must be examined according the IMTS 2010. In this matter, special attention is given to transactions in products like energy, board consumption, airplanes, ships, etc, or when countries has special customs regimes in your territory.

9.D.8. The most advanced WGSB already resulted in significant benefits for the quality of statistics produced in both countries. Some suggestions for correction are implemented immediately by the authorities entrusted with the statistical production, such as issues related to coverage and valuation. Other questions have a fiscal nature, for example, differences in goods classification and under-invoicing 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 for them to take appropriate action.

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

Chapter 10 Data compilation in the case of customs union

10.1. *Introduction.* This chapter describes briefly the variety of existing customs unions, concentrating on the implications for trade data collection and compilation. Practices in organizing data collection mechanisms under various circumstances are identified. Attention is given to the cooperation of the member states of customs unions to facilitate timely compilation and dissemination of comparable data on intra-union and extra-union trade. Also further possibilities of multi-country data exchanges are discussed. This chapter is linked to chapter 7, which discusses the data compilation from different sources, as well as to chapter 9, 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: Customs unions as a single market

10.2. *From a tariff union to a single market.* The European Union started in 1968 as a tariff union that abolished all customs duties on trade between its Member States. The new export opportunities gave a boost to the economies of the Member States. Between 1958 and 1972 intra-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. Also technical barriers such as different product standards etc. and barriers related to taxation need to be addressed to establish a single market for goods and services. 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.⁹²

Box 10.1

Definition of customs union, free trade zone and common market⁹³

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 that offers 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 definition, a country cannot be member of two customs union. Some trade agreements might be referred to as customs union without complying with the above definition.

⁹² For more information, please see *Europe in 12 lessons*, by Pascal Fontaine, October 2006, Chapter 6: “Single Market”, available from http://europa.eu/abc/12lessons/index_en.htm.

⁹³ See <http://www.britannica.com/>

Box 10.2

Definition of customs union by WCO⁹⁴

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.

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 the internal borders. This led also to the creation of Intrastat⁹⁵ - 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 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 to verify the completeness of the data collected and to make adjustments for non-reported trade;
- (c) a maximum reduction of the workload on 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 is 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 that allows intra-EU traders not to report on their transactions or 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 set in each Member State has to guarantee that at least 97 per cent of a Member State's total value of dispatches and 95 per cent of a Member State's total value of arrivals (which is 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 percent in value consists of about 70-80 percent of VAT registered traders in the European Union who trade between the Member States.

94 See World Customs Organization, Glossary of International Customs Terms, October 2011.

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

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 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. Only a reduced data set (eight data elements) compared with customs data is now required for the 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, the 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 method, the EU statistics relating to the trading of goods between Member States are based on European Union 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 and countries have to provide their information to Eurostat according to these requirements which are also referred to as EU concept. The legislation also includes measures such as a regular quality reporting. Compilation and all other relevant issues are regularly discussed between Eurostat and the Member states. Based on these discussions Eurostat provides guidance on the overall compilation and specific compilation issues to its Member States.

10.9. *Community vs. 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 are as follows: (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, secondly, 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. This phenomenon is sometimes referred to as the “Rotterdam effect”⁹⁶ (c) General trade: Some Member State compile extra-EU trade statistics according to general trade system while the EU concept is based on special trade (relax definition).⁹⁷

96 See *IMTS Supplement to the Compilers Manual*, 2008, para. 6.41.

97 For more information see Eurostat, *Quality Report on International Trade in Goods Statistics*.

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 aim to gain information relevant for the analyses of globalization. This is a challenge given the policy to minimize at the same time the burden on respondents. A long running 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 enables the implementation of centralised customs clearance (see below for more details).

2. Customs unions of developing and transitional countries

10.11. *The Southern African Customs Union (SACU)*⁹⁸. This customs union consists of 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 and 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; and 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 labor are able to move freely across national frontiers.⁹⁹ COMESA has a strong statistical program in support of these goals. The overall objectives of this program 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 for trade statistics is the installation and support (including training) of the Eurotrace software which has been installed in most member states and which is instrumental in data harmonization. COMESA also adopted "Rules and Regulations for Compilation of International Merchandise Trade Statistics (IMTS) in the COMESA Region" which came into force in 2010 and which aim at the uniform application of the IMTS concepts and definitions as contained in IMTS 2010.

98 For more information on SACU, please visit the website <http://www.sacu.int/index.php>

99 The following 19 countries are members of COMESA: Burundi, Comoros, Democratic Republic of the Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Libyan Arab Jamahiriya, Madagascar, Malawi, Mauritius, Rwanda, Seychelles, Sudan, Swaziland, Uganda, Zambia and Zimbabwe. For more information on the goals and activities of COMESA please go to <http://www.comesa.int/>.

10.13. *Association of Southeast Asian Nations (ASEAN)*. The member countries of ASEAN agreed to establish an ASEAN Community by 2015.¹⁰⁰ One of the pillars is the ASEAN Economic Community (AEC) which entails 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 is 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.¹⁰¹

10.14. *ASEAN harmonization of trade statistics*¹⁰². The above requirements lead 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 – IMTS and SITS/FDIS. The purpose of the IMTS pilot project is two-fold: First, it shall help to 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 ASEAN Stats. Second, the active data handling and processing within the pilot project shall help to improve the quality of IMTS on 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 has completed the data checking, loading and processing of all the 10 countries, produced Q1 and Q2 2010 publication and will finalize Q3 and Q4 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 as far as the member states were able to provide such data. The model publication will finally evolve into a quarterly periodical on ASEAN Trade Statistics, being regularly published by the ASEAN Secretariat. By 2012, the EASCAB Technical Assistance Team shall hand over the IMTS production process to the ASEAN Stats (Reference: *EASCAB Quarterly*).

10.15. *Customs Union between Belarus, Kazakhstan, Russia*. On 1 July 2011 Belarus, Kazakhstan and Russia lifted the customs controls between their countries as part of their customs union agreement. This means that information on trade between the member countries is not available from customs declarations anymore and that additional sources of data have to be used.

100 The following ten countries are members of ASEAN: Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam. For more information, please go to http://www.asean.org/about_ASEAN.html.

101 See ASEAN Economic Community Blueprint, ASEAN Secretariat, 2008, p. 6.

102 The ASEAN Framework of Cooperation in Statistics (AFCS) was adopted by the ASEAN Heads of Statistical Offices Meeting (AHSOM) on 19 October 2010. The overall objective of AFCS 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 is to provide relevant, timely and comparable ASEAN statistics in support of evidence based policy and decision making and enhance the statistical capacity of the Member States and ASEAN Secretariat. In strengthening ASEAN statistics, among others, priority is given to the 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). Reference: *Strategic Plan for the Establishment of the ASEAN Community Statistical System (ACSS) 2011 – 2015*

Box 10.3

Example of the Customs Union between Belarus, Kazakhstan, the Russian Federation

The Republic of Belarus, Kazakhstan and the Russian Federation signed on 6 October 2007 a treaty establishing a single customs territory and the formation of Customs Union with the main objectives of ensuring free movement of goods in mutual trade, the creation of favorable 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 July 1, 2011 after the abolition of all forms of customs control at internal borders of the Customs Union became fully functional. On 18 November 2011 member states signed the Declaration of the Eurasian economic integration, which involves launching, beginning from January 1, 2012, of a single economic space, and by January 1, 2015 creation of a Eurasian Union.

The plan of action for the formation of 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 analyze 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, 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 Center 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 the Customs Union members were 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 which will be responsible for collecting data on international trade and which 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. For this purpose customs data on exporters of goods to countries that will enter into a customs union, and importers of goods from those countries will be used. 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 data on exports and imports of goods from countries that enter the customs union, 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 establishing and periodical updating the survey frame and defining the thresholds for exemption from the reporting

The member states, in particular, the Republic of Belarus, already have 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 undertaken efforts 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 foreseen changes.

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 and with the goal to create a common market.¹⁰³ However, a customs union which is a critical step of 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 the national sovereignty and because of the many consequences and required work program it appears unlikely that there will be a rapid formation of additional customs unions around the world. Even in cases where countries enter a customs union it is likely that customs controls will remain in place for security and other reasons. Instead, countries will seek other forms of economic integration such as regional trade agreements that will rely 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 the adoption of an uniform nomenclature of goods, uniform rules of origin, 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 on a more detailed than the six digit HS level). Also, the clarification of the customs territory (and accordingly the statistical territory) appear 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 a good practice in order to provide 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 mid- or large size enterprises which might be very limited in number which might be relatively easily surveyed; while the imports of certain goods might be equally concentrated (i.e. by national importer, retailer, wholesales) an increasing part of imports might result from direct transaction 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.

103 See, for example: Cooperation Council for the Arab States of the Gulf (GCC) (<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 Arab League's 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;

10.19. *Challenges for the compilation of extra-union trade.* In the European Union, which is the most developed customs union, the statistical data collection remained under the responsibility of the individual Member States. Statistics on extra union trade is therefore a combination of the national statistics of all member countries. In order to be able to combine the statistics of the members into reliable extra-union statistics it is necessary that the national statistics fulfil a certain quality standard and are sufficiently harmonized which can constitute a major challenge due to the different circumstances in countries.

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 its 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 were to a certain degree mirrored after the requirements for extra-union trade which allows to some extent to have exactly the same statistics on national level as 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, non customs sources will never provide the same set of information as customs records and maybe most important, to require similar or same information from non-customs sources as from customs records (i.e. in terms of commodity detail) puts significant burden on the data compilation and data providers for intra-union trade statistics. The development of an intra-union trade data compilation system needs to take into account the data requirements on national and customs-union level, 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 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 custom 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/ information in order to obtain information regarding their trade with countries outside the custom union unless additional information systems or sources are 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.* Trading partner can agree not to compile export information but to replace it with the import information compiled by the trading partner, as the information on imports is considered more reliable (USA-Canada data exchange – see para. 9.46). A country could also entirely refrain from compiling export and import information for a trading partner and instead adopts the partner's export and import data as its imports and export with this trading partner, if this would provide the best available data. Many further variations of mutually beneficial data exchanges and use of mirror data can be developed and implemented. However, it needs to be carefully considered whether such data exchanges constitute best or desirable practices, as the differences in mirror statistics are a major quality concern (see Chapter 9, section C). One particular concern is 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 centralised customs clearance for extra-union trade within the European Union requires the systematic data exchange between countries since all Member States' customs administration act as one administration within a single market. Regarding intra-union trade it could be imagined that the required information is partially (i.e. for specific commodities such as oil and gas) or entirely compiled centrally on the union level and not on country level.

10.25. Example of the *European Union: Single Authorization (SA), Single Authorisation for simplified procedures (SASP) and Centralized Customs Clearance (CCC)*. Single Authorisation is an actually applied customs scheme, in which an authorisation is granted by customs in one Member State (the Supervising Member State) permitting in all participating Member States especially the use of customs procedures with economic impact (CPEI).¹⁰⁴ Where an authorisations covers the use of the simplified declaration procedure (SDP) or the local clearance procedure (LCP) it is referred to as SASP. Such an authorisation is a trade facilitation measure that 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 SASP will pave the way for the implementation of CCC, a future standard procedure under the EU's Modernised Customs Code. CCC will systematically allow economic operators to centralise and integrate accounting, logistics and distribution functions with consequent savings in administrative and transaction costs, thus providing a genuine simplification.¹⁰⁵

104 The term 'customs procedure with economic impact' is defined in the EU Customs Code and it is understood as applying to the following arrangements: customs warehousing, inward processing, processing under customs control, temporary importation and outward processing.

105 See website of the European Commission at http://ec.europa.eu/taxation_customs/customs/procedural_aspects/general/centralised_clearance/index_en.htm.

10.26. *Implications for trade statistics.* SASP and the future CCC make it necessary to redefine the importing 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 suitable territories to allocate imports or export in statistics. Only the concepts of “Member State of destination” for imports and “Member State of actual export” enables to allocate the trade in closer connection to the economic impact of a Member State with a better use for Balance of Payments and National Accounts.¹⁰⁶ Since the customs declaration as source of information on imports/exports is lodged in another Member State, compiling Member State has to either collect information directly from economic operators (as it is done actually under SASP for national purposes) or receive information from Member State where the customs declaration was lodged (as it is expected for CCC when the mutual exchange of information should be implemented).

¹⁰⁶ See *Report of the Project Group on Single Authorisation for Simplified Procedures (SASP)*, September 2007, pages 9-10.)

Chapter 11 Integrating trade and business statistics

11.1. *Introduction.* This chapter describes the benefits and challenges in integrating trade and business statistics in data compilation and data dissemination. Possible approaches of 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. It is related to chapter 7 but is different from it, as chapter 7 deals with the integration of data from different sources for the compilation of IMTS, 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 in 2006, the United Nations Statistical Commission endorsed the concept of an integrated approach to economic statistics and recommended its operational use in national economic programmes. It 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 to improve coordination among international organizations and work groups engaged in economic statistics.¹⁰⁷

11.3. *Statistical Commission report of 2008.* At the thirty-ninth session of the Statistical Commission in 2008, the Friends of the Chair group on integrated economic statistics presented its final report. The Commission supported the conclusions of the Friends of the Chair (see Box 11.1) and

(a) 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;

(b) 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;

(c) also agreed that there might be a need to develop a framework for establishing such guidelines, and recommended that such guidance of integration should focus, in particular, on practical aspects.¹⁰⁸

¹⁰⁷ See Report on the thirty-seventh session of the United Nations Statistical Commission (E/CN.3/2006/32), available from <http://unstats.un.org/unsd/statcom/sc2006.htm>.

¹⁰⁸ See E/2008/24 in its decision 39/105.

Box 11.1

Conclusions of the Report on Integrated Economic Statistics^a

- (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.

a) See E/CN.3/2008/6.

11.4. *Integrated approach for international merchandise trade statistics.* Reconciliation of data from customs and non-customs sources as well as 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 its long history as separate and distinct statistical domain and its reliance (in most countries) on custom records as its main data source, foreign trade statistics should be seen as integral part of business statistics in compilation and dissemination in order to realize its full potential as a main source for information on globalization.

11.5. *Need for linking business and trade statistics.* Linking and integrating trade and business statistics is important for data compilation and analytical purposes. A major development in economics statistics in recent years is the establishment and use of national statistical business registers (SBRs) that not only provide a framework and basis for the conduct of business surveys but also allow to link 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 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 (IMTS 2010, paras. 11.5-11.6).¹⁰⁹

11.6. *Vision for the future of trade statistics.* In 2010 at its forty-first session the United Nations Statistical Commission endorsed new international guidelines for merchandise trade statistics and the international trade in services.¹¹⁰ 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

109 Countries increasingly realize the need for an integrated approach. The members of the Steering Group for the Regional Programme on Economic Statistics (SGRPES) for the Improvement of Economic Statistics in Asia identified among other things coordination (lack of clear division of work across different parts of the National statistical Office and a need for statistical legislature) and the statistical infrastructure (in particular quality assurance and business registers) as key constraints for the production of the core set of economic statistics.

110 See Report on the forty-first session (document E/2010/24).

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 the co-operation among national stakeholders. In a background note titled International Trade Information System in 2020 (also called 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 which concern international aspects.¹¹¹

11.7. *Trade in value added.* There is very strong interest of policy makers and other user groups to analyze 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 analyze the share of value added generated in individual countries during the production of single products.¹¹² It should be noted that these studies are 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. It 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.¹¹³ 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 (see chapter VIII of IMTS 2010) might further assist the analysis of global value chains. However, the feasibility of provision any additional data relevant to estimation of trade in value added on a routine basis has to be assessed by individual countries themselves.

B. The 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 11.5 below). 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 frequently many countries participate in the production of one single product.¹¹⁴ Also, integrating trade and business statistics can allow obtaining more information about specific trade transactions such goods for processing and intra-firm trade, or provide information for other statistical domains such as transport statistics. Further, trade

111 See http://unstats.un.org/unsd/trade/s_geneva2011/outcome.htm.

112 See for example: Hal R. Varian, An iPod Has Global Value. Ask the (Many) Countries That Make It, The New York Times, 28 June, 2007.

113 See presentations at the Global Forum on Trade Statistics, 2-4 February 2011, Geneva, Switzerland, , available at http://unstats.un.org/unsd/trade/s_geneva2011/geneva2011.htm; also see The “Made in the World” initiative by WTO at http://www.wto.org/english/res_e/statis_e/miwi_e/miwi_e.htm.

114 See Eurostat, International Trade by enterprise characteristics, in Statistics Explains at:

statistics can be part of a business micro-data set or data warehouse analysis for many different purposes. A further benefit is that the integration of trade and business statistics on the micro level allows for checks of consistency between both statistics

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 requires major efforts. Also, business registers need to be maintained on an ongoing basis. Also, integrating different statistics requires very 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.

11.11. *The taxonomy developed by Italy.* To provide business analysts and policy makers with information about key actors and drivers of 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 that can 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:

- Type one: By reclassifying trade-flow 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;
- 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.
- 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 such as on multinationals and international sourcing. This allows conducting 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 (MNE) to foreign trade, and provided additional analyses on firms involved in international trade. ISTAT is in the process of setting up an integrated firm-level data warehouse by integrating a number of national surveys, foreign trade in goods, outward and inward multinational enterprise data and international databases that will allow to effectively monitor the behavior of firms deeply engaged in globalization. One challenge is that product-based and enterprise based-surveys are not fully harmonized. Also, there is need for benchmarking and calibration with respect to different target populations. It is intended 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 - Brazil experience.* The Brazilian SISCOMEX system 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 declaration of exports and imports. When a company enters its code, SISCOMEX accesses automatically the database of companies registered at the Ministry of Finance, whereby 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 4 following 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 exports by company size, industry or state. Information deemed confidential is only accessible to the enterprise itself and authorized government officials, while the public information is available on the internet on-line system ALICEWEB2 (<http://aliceweb2.mdic.gov.br>).

11.14. *OECD-Eurostat trade by enterprise characteristics (TEC) database.* TEC is a joint OECD-Eurostat exercise in which datasets are compiled by linking micro data (data at trader level) with business registers. Under 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 11.5 below for details). However, currently the tables 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 countries, the revisions of EU trade statistics legislation make the annual compilation of these statistics compulsory from reference years 2009 and 2010 onwards, respectively.

D. Ensuring quality of the linked data sources and the quality of the linked/integrated data

11.15. *Linking of trade data with enterprise characteristics – U.S. experience.* The U.S. Census Bureau collects export transaction level data from two main sources: the Automated Export System (AES) and the Canadian 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 U.S. Internal Revenue Service, and for Canada records it is the trader's name. Transaction level data is 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 straight forward, the Canada records involve some complicated name matching routines and manual matching procedures. The quality of the linked data is very good as seen in the high match rates. The U.S. Census Bureau typically matches about 89% of the export value to the Business Register; AES match rates exceed 94%, while Canada match rates are lower, close to 74%. Import transaction level data are also matched to enterprise characteristics in the Census Business Register. Import trader's unique identifiers are all reported as EINs, so these linkages are also fairly straight forward. Initial match rates have been about 87%, 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 U.S. Importing and Exporting Companies, which is the publication based off of the databases. The first exporting company profile was published with 1987 data, with annual publications issued 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 – EU experience.* 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 on what conditions micro data linkages are possible and, secondly, to define new statistics which can be derived from the combined dataset. At the conceptual level, the methodology can be simplified into 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 very much 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 have been very high, particularly when measured in terms of trade value.¹¹⁵

11.17. *Business registers – EU experience.* Data in 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 data cover only a few key economic variables (employment and turnover), they can be used to obtain comprehensive data with detailed breakdowns across a full range of activities, in contrast to data that are largely based on surveys such as Structural Business Statistics. The business registers play an important role in bringing trade statistics closer to the

115 See http://epp.eurostat.ec.europa.eu/portal/page/portal/external_trade/documents/External_trade_statistics_by_enterprise_characteristics.pdf.

business statistics. The links between legal units in the business registers and intra- and extra-Community trader identification codes need to be recorded in the business registers. Thus, the business registers provide a tool to link detailed external trade micro data with the statistical units used in business statistics.¹¹⁶

Box 11.2

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; consignor refers to the natural or legal person identified on the customs declaration which is sending the goods to another country; the terms exporter, seller and consignor can in general be used synonymous;

Importer/ buyer/ consignee:

The importer is the institutional unit that brings goods from abroad/ frequently the importer is the buyer of the good; 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; however the consignee is not necessarily the importer or buyer;

Brokers/ traders / agents:

These are institutional units that facilitate the sending of the goods to another country;

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 11.3

Statistical units in a business register

For the statistical production process the principle statistical units are the enterprise group, the enterprise and the establishment (local kind of activity) units:

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, paras. 4.6 and 5.2).

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);

Box 11.4

EU definitions of exporter and enterprise

The EU legislation currently only defines the terms of exporter and enterprises (the discussion about "importer" has been recently launched).

The exporter

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 (see Article 788 of Commission Regulation (EEC) No 2454/93 of 2 July 1993).

Enterprise

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

¹¹⁶ See *ibid.*

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 belongs 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.

Source: Council Regulation (EEC) No 696/93 of 15 March 1993 as last amended 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 (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 enterprise as the statistical unit and are expressed in terms of number of enterprises and trade value.

Box 11.5

Indicators of Trade by enterprise statistics

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 – two approaches.* 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 the national economic activity, and in the absence of a link at the micro level, enabling the identification of companies in the customs records and industrial surveys, countries might opt for the alternative of building a macro level correlation table between the classifications of industries and products. Countries may find this correspondence useful when analyzing trade flows by activity categories. However, the alternative approach to

obtaining information on trade flows by activity (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 on trading enterprises.* Certain information, such as trade between related enterprises or goods for processing without change of ownership, often cannot be derived from customs records. The link with the business registers allows conducting surveys of specifically identified enterprises in order 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.* In its Decision 41/110 on Global geographic information management in 2010 the Statistical Commission recognized the importance of the integration of geographic 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.¹¹⁷ Linking trade information to the business registers allows regional analysis of trade patterns, i.e., the Secretariat of Foreign Trade (SECEX) of the Ministry of Development, Industry and Foreign Trade (MDIC) of Brazil publishes, using the address of the enterprises, a report on trade balance by states and municipalities.¹¹⁸ Linking this trade information with localized employment or tax information (i.e., 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 the cooperation of different agencies responsible for different parts of the business statistics programs are required to develop and implement a program of integrated economic statistics. The cooperation itself as well as the development and implementation of such a program 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

¹¹⁷ See E/2010/24.

¹¹⁸ The results can be distorted if the headquarters reside elsewhere than the place 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 impossible to compile reliable business and trade information on local unit basis.

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 using information on individual enterprises between these agencies which is otherwise subject to confidentiality.

11.25. *Access and use of information at dissemination.* Business registers and data warehouses contain sensitive information about businesses. According to principle 6 of the Fundamental Principles for Official statistics, 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 requires solving issues of confidentiality and the protection of the highly sensitive business data.

Part III: Compilation of particular data items

Chapter 12 Time of recording

12.1. *Introduction.* This chapter provides additional clarification on the statistical concept of time of recording defined in IMTS 2010, chapter 1 on scope and time of recording, and describes good practices in the approximation of time of recording both in the case of use of customs records (chapter 2) and non-customs data sources (chapters 3 and 4). Section A explains the basic concept and data sources for determining the time of recording while the other 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 registers¹¹⁹ (or accepts) the declaration for processing taking into account that certain customs requirements were satisfied.¹²⁰

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

119 The term “registers” is used in several RKC standards, for example, in standards 3.26 and 3.30.

120 See para. 2.17.

assessment and collection of duties and taxes, the compilation of statistics and the application of Customs law.” (General Annex, Chapter 3, 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.” (General Annex, Chapter 3, Standard 3.13). 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 (General Annex, Chapter 3, Standard 3.25). 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.

12.6. *Use of time of lodgement.* In view of 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 a good practice that trade statistics compilers consult with national customs authorities about the rules which define the date of lodgement and assess in what cases it can serve as an acceptable approximation of the time of recording and when it should be replaced with more appropriate dates. Practices and terminology vary across countries and 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 those dates reflect an appropriate approximation of when goods enter or leave the economic territory.

12.7. *Use of non-customs sources.* It is a good practice to use non-customs sources 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 what data sources and rules should be used while establishing the time of recording to ensure compliance with the international recommendations and ensuring the high quality of national data is the responsibility of the national compiling agency. It is a good practice to develop clear and practical rules to ensure that (a) the time which 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) 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 a good practice to use the boundary of the customs territory as a 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 which 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 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 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 which 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 entering directly in the customs 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 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 for trade statistics compiler in the determination of 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 for the time of recording exists. For example, in the United States, 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.

Box 12.1

Time of recording in Brazil

In Brazil, the time of recording of exports is 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 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 provides the missing information afterwards within the specified period in an additional declaration. The lodgement of the additional declaration and the time when goods cross the border of the customs territory may be far apart from each other. However,

both declarations refer to the same transaction and must be linked during the data processing.¹²¹ Compilers are advised, (a) to use the provisional or incomplete declaration to identify the time of lodgement and collect provisional data, and (b) to use the additional declaration to revise/complete trade data while time of recording remains unchanged.

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/exported goods without waiting for collection of the documents needed for completion of the declaration. It is a good practice to include the data provided in such declarations in the monthly statistical reports corresponding to the months when the goods actually enter or 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 declaration.* When goods are imported (exported) frequently by the same company/person, the RKC recommends that customs allow a single goods declaration to cover all imports (exports) by that company or person for a particular reference period. That facility may be granted if the company/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 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 a 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 coincide with the period used by customs for the statistical reporting.

12.16. *Time of recording in the case of split consignments.* For 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/importation is not completed until the last part leaves/enters the country, it is a good practice to use the date when the last part is declared to the customs of the exporting/importing country instead of the time of lodgement of the declaration covering all 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/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 of the general guideline on time of recording by taking into account the peculiarity of national rules on administrative procedures and the need in consistency in the application of the selected method.

121 In the EU also simplified and supplementary declarations are used and treated as one.

D. Use of non-customs data sources

12.18. *Use of shipping manifests, bills of lading and other transport documents.* It is a good practice to use such documents for the verification purposes or when customs declarations are absent. However, it is recognized that such practice can be limited to the exceptional, important cases due to the resource constraints and other considerations.

12.19. *Time of recording in enterprise surveys.* Countries applying general trade system usually have to make use of enterprise surveys to ensure complete coverage of their trade statistics. The date of exports/imports indicated in such surveys reflects business accounting practices which, normally, will not coincide with the date of lodgement of the corresponding customs declaration or with the time of physical crossing the country's border, but rather when goods change ownership.

Box 12.2

Eurostat experience on time of recording in Intrastat

The time of recording, in the EU defined as reference period, for 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. 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 being effected when VAT shall 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 delay. Majority of Member States adopted the VAT principle of recording for Intrastat.

Member States may adapt the period of reference where the Customs declaration is used for intra-EU trade statistics. In such case, 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 when the general guideline of recording goods when they enter or leave the economic territory is not applicable or is insufficient (for example, trade in ships and aircraft), IMTS 2010 recommends to use the criterion of change of ownership to determine whether and when 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 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 a different accounting period. It

is therefore a 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 transmission of oil, natural gas or water, power lines for transmission of electricity, etc.) should be allocated to the proper shortest reference period based on (a) the actual period of transmission recorded in the customs declarations submitted by the lines operators, or (b) their administrative records following the same requirements as for any other enterprise surveys conducted for the purposes of compilation of trade statistics. It is a 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 13 Harmonized Commodity Description and Coding System

13.1. *Introduction.* This chapter describes the Harmonized Commodity Description and Coding System (HS) which is recommended by IMTS 2010 for the collection, compilation and dissemination of international merchandise trade statistics at the most detailed level¹²². It is based on IMTS 2010, chapter 3, on commodity classifications. The chapter provides an overview of the HS and details of the latest 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 chapter 9), and describes country experiences in the use of HS for data dissemination and analytical purposes. Knowledge of HS by trade data compilers is necessary to understand better the classification decisions made by the national customs authorities, to set up appropriate validation and editing checks, to communicate more effectively with both customs authorities and the user community, and to be able to assist in the formulation of proposals for future revisions of the HS. Other international classifications relevant primarily to the dissemination and analysis of international merchandise trade statistics are described in chapter 27.

A. Recommendation to use the HS

13.2. *HS as the recommended classification for IMTS compilation and dissemination.* The International Convention on the Harmonized System (HS Convention) was adopted by the Customs Co-operation Council (CCC) in 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 the 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, set out in the Annex to the HS Convention.¹²³ The United Nations Statistical Commission, at its twenty-seventh session (22 February to 3 March 1993), recommended that countries adopt the HS for the compilation and dissemination of their trade statistics.¹²⁴ IMTS 2010 recommended that countries use the HS at the most detailed level for the collection, compilation and dissemination of international merchandise trade statistics and encouraged countries to use the most current version of the HS.

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, as the strengths and weaknesses of the HS are also identified.

122 IMTS 2010, para. 3.11

123 Customs Co-operation Council, *The International Convention on the Harmonized Commodity Description and Coding System*, Brussels, 1983. As of 31 May 2011 there were 139 Contracting Parties to the Convention, and about 60 countries or territories which 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 wrong tariff codes in the goods declaration may entail legal consequences.

124 See Official Records of the Economic and Social Council, 1993, Supplement No. 6 (E/1993/26), para. 162 (d).

B. HS 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 statistical nomenclatures into conformity with the HS; and to make its import and export trade statistics publicly available at the 6-digit level or beyond.¹²⁵ 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 HS as well as all Section, Chapter and Subheading Notes; and that they follow the numerical sequence of the HS.¹²⁶

13.5. *Maintenance of the HS.* 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), which is composed of representatives from each of the Contracting Parties and which meets twice a year. The HSC is assisted in its work by its Working Party, by the Review Sub-Committee, and by the Scientific Sub-Committee. 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 WCO issues and periodically updates the following supplementary information:

- The Explanatory Notes to the Harmonized System;
- The Alphabetical Index to the Harmonized System;
- the Compendium of Classification Opinions to the Harmonized System;
- the Harmonized System Commodity Database;
- the E-learning Modules on the Harmonized System;
- the Correlation Tables between the latest and previous version of the HS.

13.7. *HS revision policy.* The WCO revises the HS as necessary, approximately every five years. From 1 January 2012 onwards, the HS Nomenclature 2012 edition (HS12) is the valid version applied in international trade transactions. Details of the HS12 are provided in the section 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 that the WCO take fully into account the statistical implications of any changes proposed for the HS and the statistical needs and capacities of developing countries. It is a good practice for the compilers of trade statistics to work closely with the national customs authorities in developing proposals for future HS amendments.

¹²⁵ Developing countries, however, are permitted to apply the HS partially, i.e. they may decline, at least initially, to apply all or some of the subheadings and yet fulfill the obligations arising out of Article 3.

¹²⁶ IC, *op. cit.*, Article 3 (a).

C. 2012 edition of HS (HS12)

13.8. *HS12 structure and the classification scheme.* The HS is a structured nomenclature comprising a series of 4-digit headings, most of which are further subdivided into 5- and 6-digit subheadings. The 2012 edition of the HS comprises 5,205 groups of goods identified by a 6-digit code (compared to 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,¹²⁷ the latter being themselves arranged in 21 Sections. The headings are identified by a 4-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.

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

Box 13.1

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 which are either directly observable or which 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:

¹²⁷ 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. The revised IMTS Compilers Manual will contain more information on the practices of countries regarding the use of Chapters 98 and 99.

- “Live animals; animal products” (Section I), “Vegetable products” (Section II), “Mineral products” (Section V), are defined by natural origin or material of production; while
- “Products of the chemical or allied industries” (Section VI), “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, 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” are 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 sub-headings. 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), and
- *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% of all 6-digit codes. Such subheadings may cover quite 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.

Split of headings into “one-dash” subheadings. Some headings are split into several “one-dash” subheadings. Each such subheading is identified by a 6-digit code, where the first four digits represent the heading’s code, and the latter 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: “Sheep” (0104.10), and “Goats” (0104.20).

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 which do not contain subheadings. Headings which do not contain subheadings are treated, for data processing purposes, as 6-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 or 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 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 United Nations’ Food and Agriculture Organization (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. However, 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 and ozone layer depleting substances controlled under the Montreal Protocol. 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. *Re-use of codes.* Whenever revisions are made to the HS, some existing items are deleted and new items are added by the creation of new headings (4-digit codes) or subheadings (6-digit codes). In order to accommodate users who maintain data in different versions of the HS, code numbers for commodities which have been deleted are not re-used until a certain period has elapsed, unless unavoidable. Where possible, compilers are encouraged to follow the same practice for the more detailed commodity codes used in national commodity classifications.

13.12. *Correlation tables.* The WCO Secretariat has issued the correlation tables between the HS12 and HS07 versions of the HS,¹²⁸ and updated HS publications, such as the Explanatory Notes, the Compendium of Classification Opinions and the Alphabetical Index. Customs administrations also have a serious task to ensure timely implementation of HS12, as required by the HS Convention. Trade data compilers are advised to cooperate with national customs administrations in order to ensure that data collection in terms of HS12 is carried out on time.

D. Application of the HS 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 to ensure uniform legal interpretation. There are six of these rules, known as the General Rules for the Interpretation, also known as 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 is provided in the boxes below.

Box 13.2

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.

128 See WCO Web site at www.wcoomd.org/home_hsoverviewboxes.htm.

Box 13.3

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., electro-mechanical 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 13.4

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 refer 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 which 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. It applies only if Rule 3 (a) fails. According to this rule goods are classified in the heading applicable to the material or component which 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 which 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 13.5

General Interpretative Rule 4 (GIR 4)

GIR 4: Goods which are not specifically covered by any heading.

Goods which 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, purpose.

Box 13.6

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 which 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 13.7

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 4-digit headings; in any event, the terms of the subheadings or Subheadings 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 which, 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 1-dash subdivision within that heading and only thereafter in its appropriate 2-dash subheading within the predetermined 1-dash subdivision; at each step no account being 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 which cannot be settled by direct negotiation are referred through the WCO Secretariat to the HSC which after examination makes appropriate recommendations for their solution. If the HSC 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 HSC 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 which 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 advised, 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 a 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.

Box 13.8

Examples of use of chapters 98 and 99 in the Combined Nomenclature of the EU

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-EU 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 the intra-EU trade. They are optional within the extra-EU trade so Member States' Customs authorities may choose not to apply them.

Trade under military secrecy:

9999xx99 (xx is the CN Chapter)

9999xxxx (xxxx is the HS4 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, which 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:

(i) 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.

(ii) school outfits, educational materials and related household effects

(iii) coffins containing bodies, funerary urns containing the ashes of deceased persons and ornamental funerary articles

(iv) goods for charitable or philanthropic organisations and goods for the benefit of disaster victims

These codes are optional so Member States' Customs authorities may choose not to apply them.

E. Measures to ensure proper classification

13.17. *Knowledge of compilers about the HS.* It is a good practise that compilers 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 HS, not only in order to ensure effective revenue collection, but also for the compilation of consistent international trade statistics. 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 a 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 about their obligation and the importance of properly classifying goods for policy and analytical purposes.

13.19. *Training and tools for customs officers and traders.* Another important way of ensuring proper goods classification is organizing training for customs officers, traders and trade statisticians in the application of 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/imported goods or on traders with a significant share in total country exports/imports. Also, appropriate assistance and tools for assigning the appropriate HS 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, the 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 given in classifying a sample 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 this answer, it can ask that the matter be referred to the HSC 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. 13.20 below). In addition, representatives of intergovernmental and other international organizations are often invited to be present at HSC meetings, where they are able to make the Committee aware of the need for new elements in the classification, of industry practices which affect classification (e.g., of the use of an unusual form of measurement, or a particular means of distinguishing quality, with regard to a given commodity), and of difficulties traders have with classifying certain goods.

13.21. *Customs Laboratories.* One important measure helpful in assisting declarants is establishing 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, prompt and relevant analyses of such samples are performed and results are expeditiously reported. The WCO has prepared a *Customs Laboratory Guide*¹²⁹ to serve as a practical handbook to establish or improve customs laboratories in developing countries.

129 World Customs Organization (Brussels, 1996).

F. Country experiences in the use of the HS

13.22. *Benefits and challenges in the use of the HS.* The HS is in use since 1988. During this period both benefits and challenges in its use became apparent. Compilers should be aware of them in order to use the benefits to the maximum extent possible while properly dealing with the challenges of its application, e.g., through the use of other classifications more suitable for particular needs (see chapter 27).

13.23. *Benefits of using the HS.* 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 because:

(a) HS provides the legal text and extensive explanatory notes which ensure the maximum possible uniform interpretation of the definition of commodity groups thus creating a universal language applicable both in commercial practice and in trade negotiations;

(b) HS enables international comparability of trade statistics at the 6-digit level, facilitating detailed analysis of international trade and its role in the globalization of national economies;¹³⁰

(c) The universal application of HS allows to conduct effective trade data reconciliation studies;

(d) HS contains detailed descriptions of commodities and its headings and sub-headings can be used, therefore, as the building blocks for other product classifications;

(e) The HS Convention allows each country to add its own level of statistical detail beyond the 6-digit level, thus providing the necessary flexibility to accommodate national needs;

(f) The establishment of data conversions from HS to other classification and its widespread use in data collection allows to easily provide information for various purposes (see chapter 27).

13.24. *Challenges in the implementation and use of the HS.* The most frequently cited challenges in the use of HS include the following:

(a) HS is relatively complex and difficult to implement without very extensive training, e.g., to avoid serious classification errors. Also, the HS Explanatory Notes, which are critical for classification guidance, are not cost-free, which may reduce their use by trade analysts;

(b) HS does not provide stand-alone descriptors of its 6-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 such¹³¹ descriptors;

(c) Definition of commodity groups in the HS is not always satisfactory for economic analysis, and therefore it is necessary to develop various analytical classifications (see chapter 27);

(d) Commodities are not always classified in a way which reflects countries circumstances and statistical priorities, particularly at the most detailed levels of classification. Many countries

130 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.

131 Countries are advised to consult the WCO web-site for additional materials on such descriptors.

further divide HS sub-headings to provide the detail required for their tariff and statistical purposes; sometimes countries use alternative groupings for certain commodities to better suite their analytical needs;

(e) As part of the HS, the WCO recommends the use of certain standard units of quantity on the 6-digit HS level (see chapter 17 for details). However, the recommended units of quantity don't always reflect the quantity units used in industry practices, which in certain cases creates additional difficulties in the HS implementation and analytical use¹³²;

(f) Frequent revisions of HS result in the discontinuation or merging of some codes every five or so years. This causes breaks in time series needed for analytical purposes.

13.25. It is recognized that most of the challenges listed above are inherent and unavoidable to a large degree in a multipurpose international commodity classification. Countries are advised to build upon the strengths of the HS while minimizing its weaknesses, e.g., by providing more detailed commodity breakdowns beyond the 6-digit HS-level. Also, it is a good practice to use other product classifications such as SITC, CPC and BEC as well as ISIC, as applicable (see chapter 27 for details).

Box 13.9

Eurostat 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, 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 Harmonised System that introduces 8-digit codes below the 6-digit level of HS. These 8-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 the EU 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 HS

The said Commission Regulation shall be published not later than 31 October in the Official Journal of the EU and it shall apply from 1 January of the following year.

To help in classifying commodities, CN Explanatory Notes are produced on an ad-hoc basis, although they are not legally binding.

132 For example, natural gas traders work in BTUs, and not in m3. This is also particularly true in the textiles area.

Box 13.10

Canada's stand-alone commodity descriptors

Merchandise trade data disseminated by Statistics Canada is often supplied with 'stand-alone' descriptors 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 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.

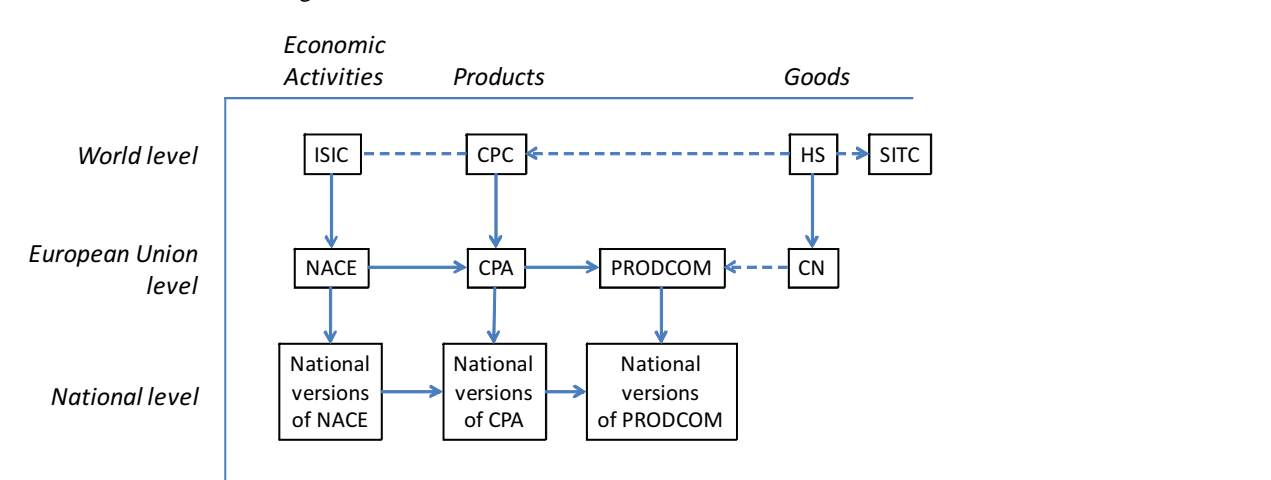
This has been shortened by a Statistics Canada stand-alone description: "Television receivers, colour, incomplete or unfinished."

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 provide an easier understanding of the basic data series.

Box 13.11

Relationship between HS, the European Union's 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 from a reference classification to a derived classification. Solid arrows indicate classifications linked by structure. Dotted arrows and lines indicate classifications linked through conversion tables.



ISIC: International Standard Industrial Classification of all Economic Activities.

NACE: Statistical Classification of Economic Activities in the European Communities

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 statistics on industrial production in the EU.

Chapter 14 Valuation

14.1. *Introduction.* This chapter elaborates on the recommendations and encouragements contained in IMTS 2010, chapter 4, on valuation. It contains details on the compilation of the statistical value of both the “cost, insurance and freight” (CIF) and the “free on board” (FOB) types of value, based on the invoice price and terms of delivery (using Incoterms 2010).¹³³ 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 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 are 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 are not already included in the transaction value. FOB-type value comprises components (a) and (b), while CIF-type value is 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 price/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 the knowledge of advantages and limitations of various data sources.

14.4. *Definition of transaction value.* IMTS 2010 recommends that the transaction value of the goods should be established in accordance with the WTO Agreement on Customs Valuation which defines it as “the price actually paid or payable for the goods when sold for export to the

¹³³ 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 (A/CN.9/479) (available on-line from <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/V00/530/93/PDF/V0053093.pdf>). Further information on Incoterms 2010 is available from the ICC website at <http://www.iccwbo.org/incoterms/>, as well as in IMTS 2010, Annex E.

country of importation adjusted in accordance with the provisions of Article 8¹³⁴ (IMTS 2010, Annex D, article 1). 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”; payments can be monetary or in the form of specified goods or services.¹³⁵ 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:

- (a) commissions and brokerage, except buying commissions¹³⁶;
- (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.

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 recommends that for statistical purposes the transaction value of all imported and exported goods should be established on the basis of the Agreement (IMTS 2010, para. 4.4).

14.6. *Relationships between transaction value, customs value and statistical value.* Compilers should be aware of the fact that the Agreement 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. 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.

134 World Trade Organization, *The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts* (Geneva, 1995), page 198

135 Ibid. Annex 1, Note to Article 1 and General Introductory Commentary, para. 1, p. 211

136 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., US Customs and Border Protection (2006), “Buying and Selling Commissions”.

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 a 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 with food and other humanitarian aid), the statistical value should be estimated using valuation principles contained in IMTS, chapter 4 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 in 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., 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 cost items included/not included in the invoice price can be identified and compilers are in a position to make needed calculations to obtain the recommended statistical value (see sections 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/unloading of the goods, fulfilling 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 in order to be included or excluded 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, broadly following the definition of the transaction value of goods as provided in the WTO Agreement on Customs Valuation. It is further advised that the 2008 SNA and BPM6 guidelines on valuation of services be taken into account whenever appropriate.

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 are¹³⁷:

- (a) Cost of the goods at “factory” gates;
- (b) Cost of loading on internal transport;

¹³⁷ Further details on the cost items (including on the cost items in the case of customs unions) will be provided on the UNSD website as they become available.

- (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 is either equivalent to the customs value or can be derived from it by adding the cost of certain services as per Article 8.2 of the WTO Agreement. The consequence of this provision of 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., may or may not include insurance and freight. If a country chooses to include all the required cost items in the customs value, then the customs value will be the statistical value. If not, compilers need to add the costs (possibly estimated) of these services to the customs value 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; and;

(b) The terms of goods delivery are CIF or CIP¹³⁸, 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

¹³⁸ The Incoterm CIP (Carriage and Insurance Paid to) is the containerized transport/multimodal equivalent of the CIF rule.

accepted as the statistical value, provided that the appropriate adjustments were made by the customs or the trader to the invoice price. 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. An outline of the required adjustments to the invoice price is contained in Table 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 which are included in the customs value, depending on the terms of delivery. If such a declaration is available, it is a good practice, in the case of high value shipments, to review the cost components listed in it in order to assess whether any adjustments to the customs value are necessary. It is also advised that compilers cooperate with the 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 Agreement, or if there is no customs value, compilers should derive or estimate the statistical value following the principles of the Agreement. The Agreement is reproduced in IMTS 2010, annex E.

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 needed, 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 by the seller of the goods to the buyer. The price of the goods negotiated between traders and reflected in the invoice (also referred to as invoice price) depends on the terms of delivery. The terms of delivery are an agreement between the seller and the buyer as to who is responsible for the cost and risk of delivering the goods to the agreed place. Types of terms of delivery used in international commerce, including FOB-type and CIF-type, are defined by the International Chamber of Commerce and are described in IMTS 2010, Annex E. 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 14.1 describes the various terms of delivery (top row) in terms of a list of cost items that need to be added/subtracted from the invoice price (left-hand column) to obtain 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/exclusion from the invoice price might be different from one transaction to another (for the purposes of tables 1, 2 and 3, it is assumed that cost of the goods at “factory” gates is included in the invoice price), depending on national legal requirements and on the contractual agreements between the parties. The CIF column of the table identifies cost items which are covered by the definition of the CIF-type value, and which are assumed to be normally included in the invoice price of imported goods when delivered under those terms (marked with the letter Y). Other columns of each table indicate whether a cost item is assumed to be (a) included in the invoice price when the goods are delivered under those terms, with no adjustment needed (marked with the symbol “*”); (b)

excluded from the invoice price and to be added to it (marked with the symbol “+”); or (c) included in the invoice price and to be subtracted from it (marked with 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, that item should be subtracted or added as appropriate. The term FCA is marked FCA/x to indicate that it is interpreted as FCA, border of exporting country.

14.18. The use of Table 14.1 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 14.1
Adjustments to invoice price to obtain CIF-type value of imported goods

Cost items	Terms of delivery										
	C I F	E X W	F C A /x	F A S	F O B	C F R	C P T	C I P	D A T	D A P	D D P
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)	Y ^{b)}	+	+	+	+	*	*	*	*	+	*

exporting countries, if processing systems and confidentiality rules allow declarations to be accessed.

14.22. *Adjustments to invoice value to obtain FOB-type value of imported goods.* Table 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 2)

Table 14.2
Adjustments to invoice price to obtain FOB-type value of imported goods

Cost items	Terms of delivery										
	F O B	E X W	F C A /x	F A S	C F R	C I F	C I P T	C I P	D A T	D A P	D D P
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											-

Legend: (Y) cost items which are covered by the definition of FOB-type value and normally included in the invoice price; when delivered under FOB terms, (*) normally included in the invoice price, when the goods are delivered under the terms indicated in the columns headings, with no adjustment needed; (+) excluded from the invoice price and to be added; (-) included in the invoice price and 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. 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 would also fall). The insurance companies which insure goods when they leave countries are possible sources of information on insurance.

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 recommends that countries adopt the WTO Agreement on Customs Valuation as the basis for valuation of all goods flows (IMTS 2010, para. 4.4). This approach builds on Article VII of GATT 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 implementation of the Article VII of GATT with respect to the customs value of exported goods¹³⁹. IMTS 2010 recommends that an FOB-type value be used as the statistical value of exported goods.

14.25. Customs administrations are free in their interpretation 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 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 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 are established with a clear deviation 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 statistical value on the basis of cost of production, including cost of materials, compensation of employees and other relevant information.

139 See World Trade Organization, *The Results of the Uruguay Round of Multilateral Trade Negotiations: The Legal Texts* (Geneva, 1995), p. 495.

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 if:

(a) the transaction value was established in accordance with Articles 1 - 8 of the Agreement and

(b) provided that the terms of delivery were:

(i) "Free on board" (FOB)¹⁴⁰ at port on the frontier of the exporting country (for goods dispatched by sea or inland waterway);

(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. Compilers should ascertain that, if the terms of delivery are other than FOB or FCA, 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 3, below¹⁴¹ (see para. 14.17 for explanation of the notation used in table 2).

Table 14.3.

Adjustments to invoice price to obtain Fob-type value of exported goods

Cost items	Terms of delivery										
	F O B	E X W	F C A/x	F A S	C F R	C I F	C P T	C I P	D A T	D A P	D A P
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					-	-	-	-		-	-

¹⁴⁰ If the term DAF, as defined in Incoterms 2000, was applied then the customs value also can be accepted as the statistical value

¹⁴¹ It should be noted that table 14.3 is identical to table 14.2 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.

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												-

Legend: (Y) cost items which are covered by the definition of the FOB-type value and normally included in the invoice price when delivered under FOB terms, (*) normally included in the invoice price when the goods are delivered under the terms indicated in the columns headings, with no adjustment needed, (+) excluded from the invoice price and to be added, (-) included in the invoice price and 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. Additional guidance on valuation of selected categories of goods is provided below to assist countries in setting up the appropriate valuation procedures and to ensure better international comparability. This section relates to IMTS 2010, para. 4.15 which provides also information regarding some additional categories of goods as well the valuation of transactions without valuation.

14.30. *Media, whether or not recorded.* According to IMTS 2010, para. 1.18, 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 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 software is identified and excluded should be provided in metadata. If a significant value of customized software or software written for a specific client or originals is suspected, it is a good practice to contact the declarant and ask about the details of the product content. It should be noted that the license agreements on the usage of software (e.g., subsequent purchase of additional usage rights) which are not directly connected with a transfer of relevant media are not relevant for the valuation of media

Box 14.2

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 MSITS2010, para 3.225 as well para.3.257 for mass-produced audiovisual products). In contrary, 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 case the software will be used for more than one year, the company records it in the balance sheets as an asset (and not in the Profit & Loss). The full amount of the cross-border payment as an import will be recorded in the moment when the software changes ownership.

Box 14.3

Experience of Italy in distinguishing customized and regular software

The correct classification and measurement of trade in goods is very problematic when the momentary 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 which make the possibility to have a clear cut distinction between goods and services more and more difficult. These examples include machine-tools incorporating services for their installation as well as technical assistance on demand.

A country example of a goods transaction containing a relevant part of services concerns the case of a resident company in Italy which imported ground flying trainers consisting of a simulator and its related software. The software was declared together with the simulator as 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 was possible on the basis of the following additional information:

- The commercial invoice sent by the company upon our request for clarification contained a detailed description of the two products (simulators and software) and their specific value.
- The company confirmed that the software was not standardized but 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. (excl. air combat simulators and parts thereof)" (HS 2007 code 880529) and the software developed to use those simulators (HS 2007 code 854340). The commercial invoice, the transport documents and the direct contact with the respondent were very useful to make a decision on this kind of transaction and to measure the correct statistical value of the good.

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 from price statistics (see also chapter 21 for more details regarding the recording 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, 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 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 which cross borders as a result of transactions between related parties.* The proper statistical valuation of goods which 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 Valuation agreement. In these cases the invoice may not reflect the true market value. The existence of a problem is 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 a good practice to replace the transfer prices of such goods by their estimated statistical value following the methods provided in the WTO Valuation agreement, i.e., based on the value which would have been realized in the event of a purchase or sales under normal market conditions. This type of estimation should also be adequately reflected in the metadata (see chapter 20 for more details on the trade between related parties).

14.34. *Returned goods.* According to IMTS 2010, para. 1.23, 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 the valuation at the initial transaction value applies. In all other cases re-imports 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, para. 1.14, important transactions relating to humanitarian aid in high-value goods 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/imports without such detail is deemed appropriate. In the United States, 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. The value of these goods is required to 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 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;

(b) The national currency unit is the preferable reference unit of account, however, if it is subject to significantly larger fluctuations than other currencies, it might be appropriate to use another more stable unit of account;

(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;

(f) For 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.

14.38. Rules for currency conversion of transactions to the national currency are established in most countries by customs. In general, the conversion is done 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. 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 comply.

14.39. *Currency Conversion – experience of Germany.* Currency conversion is usually done by customs or by the declarants and can refer to (a) official rates which are applicable for customs purposes (published monthly by Customs Administration), (b) the exchange rates which 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 is carried out in national currency (Euro). However, for international comparisons the results are published in Euro as well as in Dollar. The conversion

from Euro to Dollar is made by the Statistical Office and the conversions factors are based on the average currency exchange rates monthly calculated and published by the European Central Bank (Euro reference rates). This method is also applied for the currency conversion of yearly figures (i.e. no usage of annual average exchange rates). Currency conversion may be a reason for asymmetries in mirror statistics.

14.40. *Currency conversion – experience Brazil.* The foreign trade operations in Brazil are controlled by a system called SISCOMEX, which is characterized by integrating the activities of recording, monitoring and control of foreign trade operations through a single flow of computerized information's, involving the following stages: commercial, customs and exchange. The integration of this system allows record the values of all transactions in a automatically conversion to the equivalent value in U.S. dollar, using the official exchange rate of Central Bank on the day of the registration of the export or import operations

Box 14.4

Experience of Eurostat on 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 VAT purposes, when this is established; or
- the official rate of exchange at the time of completing the declaration or that applicable to calculate 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. This practically 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 issues 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 from those recorded on the last Wednesday of a month by 5 %.

Chapter 15 Quantity measurement

15.1. This chapter focuses on good practices in the collection, validation and reporting of quantity information based on the recommendations contained in IMTS 2010, chapter 5, on quantity measurement. It provides details on the WCO standard units of quantity and elaborates the concept of net weight. The chapter describes also good practices in the conversion of non-standard quantity units to the WCO standard units and net weight, and in estimating and imputing missing quantities. Annexes to the chapter contain mathematical conversion factors and conversion factors applied by UNSD. Chapter 9 contains additional, however more general information regarding the quality assurance of quantity and net weight information. This chapter is also linked to chapter 13 on the Harmonized System (HS) as the standard units of quantity are specified in terms and as part of the HS.

A. An overview of the WCO standard units of quantity

15.2. *IMTS 2010 recommendations regarding units of quantity.* IMTS 2010 **recommends** that countries collect or estimate, validate and report quantity information in the WCO standard units of quantity and in net weight¹⁴² on all trade transactions.¹⁴³ 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;¹⁴⁴

(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.¹⁴⁵ The WCO standard units of quantity are:¹⁴⁶

142 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.

143 A few exceptions may apply; e.g., net weight does not apply to HS sub-heading 271600 “Electrical energy”.

144 It is acknowledged that WCO standard units of quantity do not necessarily reflect industry norms for trade in certain subheadings in all countries.

145 See WCO Recommendation on the use of standard units of quantity at http://www.wcoomd.org/home_hsoverviewboxes_tools_and_instruments_hsrecommendation.htm.

146 See WCO Recommendation on Quantity Units, introduction, para. 4.

- Weight: - kilogrammes (kg)
 - carat (carat)
- Length: - metres (m)
- Area: - square metres (m²)
- Volume: - cubic metres (m³)
 - litres (l)
- 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 (set/pack))

15.4. *WCO Recommendation.* In the WCO Recommendation, one of the above standard units of quantity is specified for each HS six-digit subheading.¹⁴⁷ 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 this WCO Recommendation, employing as many as possible, but not less than 90 per cent of the HS subheadings. 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 conversion factors to net weight and, if required by users, to the appropriate WCO standard units of quantity.

15.5. *Recommended quantity units on HS chapter, heading and subheading level.* For more than 75.8 percent of the 6-digit subheadings of HS 2012 the recommended unit is kilograms and for almost 21.3 percent it is number of items. 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 entire heading. This indicates that the recommended quantity is the same for many commodity groupings.

147 See latest WCO Recommendation on standard units of quantity: 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, Annex. This WCO Recommendation takes into account the amendments contained in HS2012 and revokes the previous Recommendation on the use of standard units of quantity.

Table 15.1
Quantity units of HS 2012 6-digit subheadings

WCO quantity unit ^a	WCO Abbreviation	Number of sub-headings per quantity unit	Share of quantity units in percent
No Quantity	-	1	0.0%
Area in square metres	m²	50	1.0%
Electrical energy in thousands of kilowatt-hours	1000 kWh	1	0.0%
Length in metres	m	10	0.2%
Number of items	u	1106	21.3%
Number of pairs	2u	24	0.5%
Volume in liters	l	22	0.4%
Weight in kilograms	kg	3949	75.8%
Thousands of items	1000u	1	0.0%
Number of packages	u (jeu/pack)	1	0.0%
Volume in cubic meters	m³	32	0.6%
Weight in carats	carat	8	0.2%
Total		5205	

^a The WCO Recommendation mentions, in its introduction, the standard unit “dozens (12u)”. However, this standard unit has never been attributed to any of the 6-digit subheadings of the HS Nomenclature.

15.6. *Practices in the application of the supplementary units in the European Union.*

Supplementary units used in the EU to measure quantity other than net mass are laid down in the Combined Nomenclature (CN)¹⁴⁸ (see Box 15.1). 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 the net mass. EU supplementary unit may differ from those recommended by WCO, for example the volume for HS 2711 21 (Natural gas) is expressed in Terajoule (gross calorific value). The EU supplementary units are subject of annual revision of the Combined Nomenclature.

Box 15.1

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 C ₅ H ₁₄ ClNO	Kilogram of choline chloride
kg H ₂ O ₂	Kilogram of hydrogen peroxide
kg K ₂ O	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)

¹⁴⁸ 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 8-digit level, adding sub-divisions to the HS. For further details on the CN, see Box 13.1.

kg/net eda	Kilogram drained net weight
kg P ₂ O ₅	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
m ²	Square metre
m ³	Cubic metre
1 000 m ³	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 packing¹⁴⁹. 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 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 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 when 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.

Box 15.2

Net weight definition adopted by China

Because the net weight information often refers to transportation document, in practice, the net weight is often the weight excluding the weight of outer package. According to the Guideline for Filling 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, 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 the goods of beverages, spirits or similar products, the net weight of goods is the weight of liquid, which should exclude the package even if they are for retail packing

149 See WCO data set for V2.0 of the WCO Customs Data Model, available from <http://www.customs.gov.au/webdata/resources/files/dataset.pdf>

Box 15.3

Net weight (mass) definition used in the European Union

In the EU, completion of 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 chapter 2) 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 the subsequent sections C and D.

The Boxes 15.4 to 15.6 below provide country experiences in the use of non-customs data sources for the compilation of quantity data.

Box 15.4

Compilation of quantity information in the Intrastat system of the EU

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 case Member States either define a list of codes exempted from reporting the net mass or the net mass is not collected for the CN codes with 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 either to use the Eurostat provided list of conversion factors or any other estimation method.

In Member States which apply a simplification threshold, PSIs may be exempted from providing information on quantity (net mass or a supplementary unit) if they belong to the group which 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 which fall under the standard rules for compiling EU trade in goods statistics. Namely, the quantity is optional for industrial plant, goods delivered to vessels and aircraft (except for net mass of goods belonging to CN chapter 27) and goods delivered to and from offshore installations (except for goods belonging to CN chapter 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-EU and extra-EU statistics.

Box 15.5

Norway – direct reporting of quantity of exports of petroleum products

Significant parts of the Norwegian petroleum exports are produced outside the Norwegian Custom territory and are hence not included in data received from the Customs. As an alternative way of reporting figures for Norwegian exports of crude oil are received both from government institutions and directly from the oilfield operators.

Crude oil. Preliminary figures for Norwegian exports of crude oil are received directly from the oilfield operators. There are different reports depending on transportation; by oil tankers and pipeline respectively. Monthly field reports of transportation by oil tankers contains lifting date, cargo number, name of vessel, name of shipper, destination, net barrels (bbls) and net metric tones. The report of transportation by pipeline contains volume, barrels per terminal. Destination countries for transportation by pipeline are based on reports from Norwegian authorities. On 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 Norwegian exports of natural gas are received monthly from the oilfield operators. There are two means of transportation; a significant amount of the pipeline exports goes through the pipeline transportation system, but there also to some extent transportation by gas tankers (LNG). Monthly reports of transportation by pipeline contain volume, standard cubic metres (scm). Destination countries for transportation by pipeline are based on reports from Norwegian authorities. Field reports of transportation by tankers (LNG) contains lifting date, cargo number, name of vessel, name of shipper, discharge port and net metric tones. 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 15.6

Uganda – quantity units used in the informal cross border survey

In Uganda, prior to execution 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 to guide data collection. The weight of a commodity was derived by physically weighing the commodity (especially for agricultural products) or by using already established packaging weights of ICBT practitioners. Nevertheless, there were challenges encountered in obtaining weights of assorted commodities in the same package and conversion of certain weights into internationally recommended weights for a particular product.

C. Conversion factors from non-standard to standard units of quantity

15.10. *Converting units of quantity.* There are two ways 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) converting from one unit to another unit using for example the specific gravity of the commodity or commodities involved.

15.11. *Mathematical conversion.* Annex table 15.1 below gives examples of conversion (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 United States and United Kingdom systems of measurement. Those factors are applied by the United Nations Statistics Division to convert volume measures into weight for a number of HS and SITC headings. Such conversion factors are very general and will necessarily be inaccurate in specific cases. If national or sub-national conversion factors for certain HS headings are available, then those factors will give more accurate estimates. It is a good practice to establish a comprehensive list of conversion factors and to be published and circulated 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 board and other organizations publish

conversion factors for some of those.¹⁵⁰ Other reference materials gather many of those commodity-specific sources together.¹⁵¹ Still other references deal with smaller groups of commodities.¹⁵²

15.12. *Specific gravity.* The use of specific gravity to convert, for instance, litres of a certain commodity into kilograms is much more complicated and less accurate, 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 or 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 table 15.2 below).

15.13. *Use of specific vs. broad-based conversion factors.* The best conversion of volume into weight or of pieces into weight is done at the national or even sub-national level. For instance, to convert to cubic metres (m³) the volume of sawnwood originally reported by Canada and the United States in 1,000 board feet, FAO applies the country-specific conversion factor of 2.36 m³ per 1,000 board feet, as sawing conventions in those countries generally result in the volume being less than the nominal volume.¹⁵³ In contrast, broad-based conversions at the national or international level are inaccurate by definition and can only serve the purpose of making quantity (especially weight) estimates for general trade or transport analyses. Some examples of the use of broad-based conversion factors by FAO are:

(a) When countries record coconuts in number instead of weight, amounts are converted to weight on the average basis of 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) Wine, vermouth and similar beverages. Quantities are expressed in weight; for countries recording their statistics in volume, it is assumed that 1,000 liters = 1 metric ton.

D. Quality issues

15.14. *The need for quantity information.* Quantity is an important dimension of international trade statistics that 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 environment, and the verification

150 See, for example, *Quarterly Bulletin of Cocoa Statistics*.

151 See, for example, *The Economist Desk Companion: How to Measure, Convert, Calculate and Define Practically Anything* (New York, John Wiley and Sons, 1998).

152 See, for example, *Weights, Measures, and Conversion Factors for Agricultural Commodities and Their Products*, special report (Washington, D.C., United States Department of Agriculture, June 1992).

153 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". For further details, see the FAO web site (www.fao.org).

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. There are several reasons for these problems. For instance, when a shipment contains several different commodities, it happens that the quantity is given as the gross weight of the shipment. Further, in commercial practice a quantity different than the recommended quantity is sometimes used, for example 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 for exports, since quantity information is in some cases used to determine import duties and to determine the unit values used to validate the price and value information declared by the importers rather than exporters.

Box 15.7

The USA approach to validation of quantity data

In the United States, all eligible export shipments are required to be reported electronically through the Automated Export System (AES). The AES ensures quality 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 due to invalid data and that their shipment has not been accepted. They 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 programs 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 to fill customs declarations devote sufficient attention to the correct declaring of quantity information on the customs forms.

15.17. *Quantity aggregations.* The compilation of quantity aggregates has both an analytical and a quality dimension, due 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., transportation issues), it is a 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 a good practice to estimate and impute quantity data and reflect the estimation and imputation methods in metadata.

15.19. *Estimation of quantity data – current practice in Germany.* Missing or erroneous quantity data are generally estimated. Quantity data is regarded as erroneous and is 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 case an error is detected, as a general rule it is assumed that the declared quantity has led to the mistake (not the declared value, which is assumed to be more reliable). The acceptable range is checked 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 twelve months. The average values are updated permanently. There are some commodities where -in addition to the net mass- a supplementary unit is used for measuring the quantity (e.g., meters, litres). If available, the supplementary quantity unit (instead of the unit value) is used for the estimation of the net mass by using specific conversion factors. It has to 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/quantity imputation – The Canadian experience.* Prior to the advent of the current editing system, Statistics Canada employed a parameter-based approach in which calculated unit values were compared to expected high and low unit values. However, this approach had several limitations: 1) given the number of classification codes, it became increasingly difficult to maintain an up-to-date set of parameters for each code; 2) although the Harmonized System provides a very detailed product classification, numerous codes contain 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 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 by imputing a corrected quantity. The principle advantages of this system are: 1) the dynamic parameters are based on more current prices, 2) the effects of seasonality are at least partially compensated for; 3) 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 two cases: (a) data has not been provided; (b) the data provided does not conform with, and cannot be mathematically converted into, 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 only serve the purpose 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 15.A. Conversion factors for mathematical conversion

Table 15.A.1
Conversion factors for mathematical conversion

<i>Reported units of quantity Name (abbreviation)</i>	<i>WCO standard units of quantity Name (abbreviation)</i>	<i>Conversion factors from the reported unit to the WCO unit of quantity</i>
Barrel (BBL)	litres (l)	159.000
Board foot (BFT)	cubic metres (m ³)	0.00236
Cubic foot (CF)	cubic metres (m ³)	0.02832
Cubic yard (CYD)	cubic metres (m ³)	0.7646
Cord (CD)	cubic metres (m ³)	2.550
Centimetre (CM)	metres (m)	0.010
Cubic centimetre (CC)	litres (l)	0.001
Cubic metre (CBM)	litres (l)	1000.000
Dozen (DOZ)	thousands of pieces/items (1,000u)	0.0120
Dozen (DOZ)	pieces/items (u)	12.000
Foot (FT)	metres (m)	0.3048
Gallon (GAL)	litres (l)	3.785
Gram (GM)	kilograms (kg)	0.001
Gross (GR)	pieces/items (u)	144.000
Hundredweight (CWT)	kilograms (kg)	45.360
Linear feet (LFT)	metres (m)	0.3048
Long ton (LTN)	kilograms (kg)	1016.000
Litre (LTR)	cubic metres (m ³)	0.001
Metric ton (TON)	kilograms (kg)	1000.000
Number (NO)	thousands of pieces/items (1,000u)	0.001
Ounces (OZ)	kilograms (kg)	0.02835
Pound (LB)	carat (carat)	2268.000
Pound (LB)	kilograms (kg)	0.4536
Pair (PR)	dozens (12u)	0.1667
Square centimetre (SCM)	square metres (m ²)	10000.000
Square feet (SFT)	square metres (m ²)	0.0929
Square inch (SQT)	square metres (m ²)	0.0006452
Square yard (SYD)	square metres (m ²)	0.8361
Short ton (STN)	kilograms (kg)	907.200
Thousand metres (THM)	metres (m)	1000.000
Thousand (THS)	pieces/items (u)	1000.000
Thousand board feet (MBF)	cubic metres (m ³)	2.360
Thousand square feet (MSF)	square metres (m ²)	92.900
Troy ounce (TOZ)	kilograms (kg)	0.03110
Wine gallon (WG)	litres (l)	3.785
Yard (YD)	metres (m)	0.9144

Annex 15.B. Quantity conversion factors used by the United Nations Statistics Division

Table 15.B.1

Factors used by the United Nations Statistics Division to convert volume (V) and number/units (N) to weight (W) for selected categories of goods

<i>HS code</i>	<i>From</i>	<i>To</i>	<i>HS heading</i>	<i>Conversion factor</i>
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 & vegetable juice, other	1
200990	V	W	Mixtures of juices	1
210500	V	W	Ice cream	0.7
220110	V	W	Mineral & aerated waters	1
220190	V	W	Ice & snow & 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

Table 15.B.1 (continued)

Factors used by the United Nations Statistics Division to convert volume (V) and number/units (N) to weight (W) for selected categories of goods

<i>HS code</i>	<i>From</i>	<i>To</i>	<i>HS heading</i>	<i>Conversion factor</i>
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 16 Partner country

16.1. *Introduction.* This chapter elaborates on the recommendations on partner country attribution contained in IMTS 2010, chapter 6. 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.

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, 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. 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 its usefulness for economic analysis. To provide more comparable data, IMTS 2010 recommends that country of consignment is recorded for imports as the second partner country attribution alongside with 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. Also, IMTS 2010 recommends that the economic territory of the trading partners constitute the basis upon which the statistics on trade by partner are compiled (IMTS 2010, 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 to interpret 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 the internationally accepted detailed rules of origin the only international guidance in this area is provided in 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.* 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 which are subject to various kinds of commercial policy measures (such as the application of the Most Favored Nation (MFN)-clause, antidumping 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.¹⁵⁴

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 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 RKC, goods produced wholly in a given country shall be taken as originating in that country. Also, only the following goods shall be taken to be produced wholly in a given country:^{155, 156}

- (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;

154 See the RKC, Annex K, E1.

155 See the RKC, Annex K, Standard 2.

156 The list provided in the RKC is seen by some trade statistics compilers as not exhaustive since certain goods, which appear to be wholly produced in a given country, are not included in it (e.g., wheat).

(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;

(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 items (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's definition of the "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.¹⁵⁷ 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). It should be noted that the concept "essential character" is defined neither in RKC nor in the HS Convention. However, the General Interpretive Rules of HS imply that articles classified in different subheadings of HS have different essential character. Therefore, any manufacturing or processing which 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; and

(b) for the goods produced, either the ex-works price or the price at exportation, according to the provisions of national legislation.

16.10. *Operation which should not be regarded as substantial transformation.* The RKC stipulates that operations which do not contribute or which 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:

(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 which have been mixed.

¹⁵⁷ See RKC, Annex K, Chapter 1, Definition E3./F1.

16.11. *Special cases.* There are certain special cases where the RKC identifies the recommended practice, namely:

(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.

(b) An unassembled or disassembled article which 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.

(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.

(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.

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.

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. If imported goods are being admitted to the country on a not-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.* The WTO Agreement on Rules of Origin (the principles, the establishment of committees, etc.) came into force as part of the Agreement Establishing the WTO 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 WTO in Geneva, have been undertaking the harmonization work which forms part of the Agreement and which aims at harmonizing the non-preferential rules of origin. Both 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; (b) elaborate upon substantial transformation expressed by change in HS tariff classification; (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. 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 used for government procurement and trade statistics”.¹⁵⁸

16.16. *Status of work.* In 1999, the TCRO concluded the technical review of the Harmonized Rules of Origin and these final results were forwarded to the CRO for consideration. As of 2011 these results were still under consideration by the WTO. In June 2010 the CRO had reached consensus on 349 of the 486 technical questions submitted by the TCRO but the remaining 137 questions (the most difficult ones) were still pending. The harmonization work programme could not be completed yet due to sensitive aspects of trade policy and political aspects and the very important question of “implications” of the Agreement on Rules of Origin on other WTO Agreements.¹⁵⁹ In November 2010, the CRO issued its latest consolidated draft of non-preferential rules of origin which are contained in the working document G/RO/W/111/Rev.6. The text is drafted in HS 96 and therefore needed to be transposed into the actually applied version of the HS (i.e., HS 2007 version or later). There are currently 83 countries which have notified WTO on the application of non-preferential rules of origin.¹⁶⁰

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 which 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 which originate and are traded within the particular preference area, i.e., whose origin is particular specified countries.

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, the WTO Agreement on Rules of Origin, in annex II (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 their administrative

158 Agreement on Rules of Origin, Article 1, Paragraph 2.

159 In its 2009 annual report, the group acknowledged that members had considerable differences 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.

160 See WTO Committee on Rules of Origin, “Seventeenth annual review of the implementation and operation of the Agreement on Rules of Origin” - Note by the Secretariat (G/RO/71), 2 November 2011

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 the Specific Annex K of the revised Kyoto Convention.* Most countries broadly follow the RKC, Specific Annex K 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.

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 its provisions in certain commodity groups which might be of particular interest to the compiling country.

16.22. *National practices in defining substantial transformation.* As RKC does not contain detailed definition of the substantial transformation, especially with regard to the "ad valorem" percentage rule, it is a good practice to elaborate a national definition of this concept and make it available to users in trade statistics metadata. For example, in some regional blocs like COMESA the definition of substantial transformation is based on the Rules of Origin and is specified as value addition to the product exceeding 35 percent.

16.23. *Practical difficulties in determining the country of origin.* Having national rules of origin in place is important but, still, countries face numerous challenges in practice 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 have the same quality because of variations in the requirements to produce documentary evidence. The requirement to present a certificate of origin of goods is defined by the tariff law of the 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 trading 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 which 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.¹⁶¹ 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 para. 16.23).

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, the “country of destination” may usually be found in the terms of delivery 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 a good practice to restrict it to goods of a very high value or to various 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., Hong Kong SAR of China, 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 the partner country values.

¹⁶¹ 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.

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. 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.. 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 which 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, that last intermediate country where such transactions or operations took place 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 which change the legal status of the goods taking place in any intermediate country. If there are several intermediate countries, then the first intermediate country after leaving the exporting country should be recorded as country of consignment.

2. Compilation 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 a good practice to provide such a list of commercial transactions or other operations that change the legal status of goods and to include in it change of ownership of the imported goods and their substantial transformation. In the EU practice, for instance, any halts not inherent in goods transport 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 trans-shipped from the original country of consignment and, therefore, not included in that country's imports thus creating the incomparability in partner statistics. For imports it is important that country of consignment is not automatically identified as the country

from which goods were shipped.¹⁶² 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 goods importation 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 not be a mandatory field in the customs declaration), non-customs sources should be used to the extent possible. It is a 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 which 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 deemed not applicable by trade compilers. For example, in case of antiques, used cars, aircrafts or vessels the use of country of consignment might be preferable. In such cases it is advised that the partner country attribution is 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 contains 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).

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. These statistics may continue to be based on the same criteria as in trade with third countries, that is, on country of origin for import statistics and country of last known destination for export statistics. 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 country of destination. If such customs records do not exist, compilers need to use non-customs sources to compile trade statistics, including identification of country of origin and country of last known destination. If member states are considered 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

¹⁶² 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, 6.12). 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).

apply another definition of partner for intra-union trade more suitable or adequate for customs union's purposes (e.g., country of arrival/country of dispatch). However, a Member State might decide to use different criteria for partner attribution in its national trade statistics than applied to the data reported to the customs union secretariat, in which case the data available from the customs union secretariat and from the national statistical office will be different.

16.37. *Example European Union - Partner attribution according to the community concept.* For the reporting of the Member States' intra-union trade data to Eurostat according the community concept, the partner Member State is the Member State of consignment for arrivals and the Member State of destination for dispatches (see chapter 10, para. 10.9 for details). 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 which are not inherent in their transport taking place in any intermediate Member State. Member States of destination means the last Member State to which it is known, at the time of dispatch, that the goods are to be dispatched. A halt is any temporary interruption of the physical movement of the goods before continuing the movement 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.

F. Partner country coding for statistical purposes

16.38. *UN standard country or area codes for statistical use.* Countries are encouraged to adopt the UN *standard country or area codes for statistical use* provided on the UNSD website (IMTS 2010, para. 6.28).¹⁶³ 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 UN coding system for data-processing and reporting purposes if it suits their systems.

16.39. *Trade with itself and trade with free zones* (IMTS 2010, para. 6.29). It is possible that in the case of re-imports (imports of domestic goods which were previously recorded as exports) a country registers imports from itself as country of origin. Yet, it is neither recommended nor 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 (i.e. after minor processing which 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.

163 See <http://unstats.un.org/unsd/methods/m49/m49.htm>.

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.¹⁶⁴ 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.

¹⁶⁴ This is not applicable in cases when two (or several) countries consider themselves as a single statistical territory (e.g., France, and Monaco)

Chapter 17 Mode of transport

17.1. *Introduction.* This chapter elaborates on the recommendations contained in IMTS 2010, chapter 7, on mode of transport. It contains a description of good practices in their implementation. Due to its importance, the recommendation to compile international merchandise trade statistics by mode of transport was re-introduced and strengthened in IMTS 2010, after it was not contained in the second revision of IMTS although it had been mentioned in the first revision.

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 for other analytical purposes. 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), and

(b) the mode of transport which 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.

The basic concepts and data sources used in the compilation of MoT are briefly described in this section.

17.3. *Mode of transport and means of transport.* For the purposes of international merchandise trade statistics mode of transport is understood as the method of transport used for the carriage of goods.¹⁶⁵ It is a specific solution that 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

¹⁶⁵ See UNECE document TRADE/CEFACT/2001/19 of 15 January 2001. Recommendation No. 19, by Centre for Trade Facilitation and Electronic Business (UN/CEFACT), Section A.

- 4. Not elsewhere classified
 - 4.1 Pipelines and cables¹⁶⁶
 - 4.1.1 Pipelines
 - 4.1.2 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 (1-digit) of the above classification and, if countries wish to do so, use the detailed (2- or 3-digit) categories. However, the above classification is not intended to limit the flexibility of countries to implement 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 the mode of transport. Confidentiality rules may significantly affect the level of MoT detail that can be published.

17.6. It is a good practice to adopt such a national classification, which would make possible to easily reconcile it with the international classification, at least on 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 air, water and land. The category 4.4 “Other” is to be used when the available information does not allow to attribute 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 based on the *Glossary for transport statistics* prepared by the EU/ECE/ECMF Inter-secretariat Working Group on Transport Statistics (Fourth edition, 2009)¹⁶⁷ is provided in Annex to this chapter. Countries can use these descriptions when defining the components of their national mode of transports classification.

17.8. *Multimodal transport.* The term “multimodal transport” can be used when 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 country¹⁶⁸. 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 (which however is not in force). If a country

166 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.

167 Compilers are encouraged to consult the Glossary of transportation terms developed by the UNECE, Eurostat and International Transportation Forum (ITF), available at http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-RA-10-028/EN/KS-RA-10-028-EN.PDF

168 See UNCTAD document “Implementation of multimodal transport rules” [2001] available at <http://www.unctad.org/en/docs/posdtetlbd2.en.pdf>

identifies the transport of certain goods as multimodal, it is a good practice to provide in the metadata information of how multimodal transport is defined, identified and recorded.

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 customs records, is not the most relevant information for analytical purposes and 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 which 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 (or even multiple modes) of transport as necessary (i.e. in the case of landlocked countries), taking into account their data needs and circumstances. It is a good practice to clearly explain reasons and methodology of such determination of MoT 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 for the compilation of other trade data, i.e., customs records and the non-customs data sources described in chapters 2, 3 and 4. 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 a good practice to use mode of transport as indicated in customs records¹⁶⁹.

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 the verification and estimation purposes.

17.12. *Estimation 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 to distinguish sources of information for estimating MoT at different stages and levels of the compilation process depending on user requirements. MoT could be estimated at the initial data collection stage on the micro level, based on additional documentation for individual transactions, or at later data compilation stages on macro-level, 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 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 want to consider presenting information on MoT in a way that takes into account that goods might have entered the statistical territory from free zones or customs warehouses. An

¹⁶⁹ In Brazil, MoT data are obtained from the records of the field "unit of the customs boarding or unloading" of electronic documents for export and import of SISCOMEX, which are linked to the modes of transport correspondent to each customs unit.

appropriate explanation should be provided in trade statistics metadata.

C. Country practices in the compilation of trade statistics by MoT

17.14. *Country practices.* Countries 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.

17.15. *Country practice of the United States.* 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 vessel and air general exports and general imports 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 U.S. Customs bonded warehouses and Foreign Trade Zones are included in the “all methods” 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 the United States regardless of the transportation mode between Canada or Mexico and the country of origin or destination. So, for example, if something 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 of Canada.* Canada follows the general trade system. The main features of the Canadian experience are:

(a) *Imports:* For imports, the mode of transport information represents 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 Western U.S. port via marine mode and arrive in Canada via rail. Such shipments are recorded as imports from China via rail in Canadian 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 arrived by ship in Toronto but are not cleared in Canada until they reach another city by truck, the mode reported in Canadian international trade statistics will be truck.

(b) *Exports*: Exports by land modes of transportation represent Canadian trade with a second country that has been transshipped via a third country, generally the United States. For exports, the mode of transport information represents the mode of transport by which the international boundary is crossed. For Canadian exports via the United States to other overseas countries, the mode reported would be the mode used to cross the Canadian/U.S. border. 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 U.S. port to the United Kingdom, the mode reported in Canadian international trade data in this table will be truck.

17.17. *Country practice of Mexico*. Mexico follows the general trade system and compiles MoT trade statistics in the following way:

(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 Mexican 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 Mexican 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) In the case of Mexico, the records of the transportation authority (Ministry of Communication and Transport) provide data at a general level on the transported volume by mode, and this information is a supplement to the data on value provided in the customs records.

17.18. *Country practice of 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 EU (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 has to declare the presumable mode of transport.

(b) *Exports*. Exports are treated accordingly (presumable mode of transport when leaving customs territory).

17.19. *Country practice of 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 in the moment when goods enter or leave the country. Brazil also adopts the IMTS 2010 recommendation to classify modes of transport as follows: sea, air, railway, road, pipeline, cables, inland waterway (divided in river and lakes), self-propelled goods, postal consignments, mail or courier shipments, and others. In practice these data are obtained from the records of the field “unit of the customs boarding or unloading” of electronic documents for export and import of SISCOMEX, which are linked to the modes of transport correspondent to each customs unit.

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 a good practice to develop various cross-checking procedures and to document them in trade statistics metadata.

17.21. *Quality assurance in the United States.* The U.S. Census Bureau quality assurance procedures include checking that reported MoT codes and ports are valid and performing relational checks between the ports and the method of transportation. In the 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 or the shipping weight of a commodity shipped by vessel cannot exceed the maximum allowed.

17.22. The Census Bureau is substituting Canadian import statistics for U.S. exports to Canada. In accordance with this data exchange, Canada requires its importers to report the MoT by which the goods departed from U.S. However, Canada does limited edit checks of this field, which can lead to inaccurate information collected for exports to Canada. Additionally, Canada does not collect containerization information on the US exports as part of the data exchange and as such 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.* 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) *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 unloading, world area, country of origin, and by method of transportation. Final data are released monthly.

(c) *USATradeOnline* provides port statistics by 6-digit HS and country for value, shipping weight, and method of transportation. State export statistics that include 6-digit HS or 4-digit NAICS and country are provided for value, shipping weight and method of transportation.

(d) *U.S. Exports and U.S imports by port* provides export and import statistics by port of export and port of unloading respectively by HS commodities at the 6-digit HS level data for value, shipping weight, and method of transportation on an monthly, quarterly or annual basis.

(e) *Trans-border statistics files:* U.S. Imports and exports from and to Mexico and Canada and U.S. imports and export transshipments through Mexico and Canada in disaggregated MoT

are provided to the U.S. Bureau of Transportation Statistics (BTS). These data, that include separate details on land (e.g. truck, rail) and other modes (e.g. mail, flyaway aircraft), are published by the BTS.

17.24. *Cooperation between Canada, Mexico and the United States.* Box 17.1 provides information the North American Transportation Statistics On Line Database (NATS OD).

Box 17.1

The North American Transportation Statistics On Line Database (NATS OD)

The NATS OD database¹⁷⁰ presents information on transportation and transportation-related activities among Canada, the United States and Mexico, both within individual countries and between the countries. This database, presented in French, English, and Spanish, is accessible in table and time series formats, and covers twelve 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. Underway 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 from Canada; the Secretaría de Comunicaciones y Transportes (SCT) (Ministry of Communications and Transportation), the Instituto Mexicano del Transporte (IMT) (Mexican Institute of Transportation) and the Instituto Nacional de Estadística y Geografía (INEGI) (National Institute of Statistics and Geography) from Mexico; and the Bureau of Transportation Statistics (BTS) and the U.S. Census Bureau from the United States. Other agencies throughout the three countries participated and provided data and expertise.

Major objectives of the North American Transportation Statistics working group are to: (a) identify key information that 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) begin discussions for reducing comparability differences and data gaps through cooperative activities.

The focus is on data, methodology, and analysis that provide information necessary 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 the merchandise trade by MoT.

170 Available from <http://nats.sct.gob.mx/nats/sys/index.jsp?i=3>.

Annex 17.A. Description of modes of transport for IMTS purposes

Table 17.A.1
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, which are undertaken wholly or partly at sea. One port transport (movements of goods shipped to off shore installations, or for dumping at sea, or reclaimed from the sea bed and unloaded in ports) is included. While bunkers and stores supplied to vessels in port are excluded, bunker oil shipped to vessels off shore is included. Fluvio-maritime movements of goods by merchant ships are included. Movements of goods on inland waterways vessels 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 which 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 rail vehicle only the movement of the carrying vehicle (active mode) is being considered. Railway network is understood as all lines of communication made up by rail exclusively for the use of railway vehicles. 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	Pipelines and cables	Any movement of liquid products in a given pipeline or cable network.
4.1.1	Pipelines	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.
4.1.2	Cables	Any movement of products in a given cable network.
4.2	Postal consignments, mail or courier shipments	Any movement of goods via postal, mail or courier services not separately classified in headings 1,2 and 3.
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	For example, power lines carrying electricity.

^a *Illustrated Glossary for Transport Statistics*, 4th edition (2009), prepared by and the International Transport Forum, Eurostat and the UN Economic Commission for Europe.

Chapter 18 Customs procedure codes

18.1. *Introduction.* IMTS 2010 recommended that information about the customs procedures applied to individual transactions be part of the dataset provided by customs to the agency responsible for the compilation of trade statistics (IMTS 2010, paras. 2.9 and 8.6). It is a good practice to include customs procedure code as additional data field in the dataset used for international reporting. This chapter explains the importance and significance as well as limitations of this new data fields, and describes experiences of countries that obtain and use this information.

A. Customs procedure code as a new data field

18.2. *Request for custom procedure codes as new data field.* Following the adoption of the revised recommendations contained in IMTS 2010, the United Nations Statistics Division and the Organisation for Economic Co-operation and Development (OECD) revised their data request to countries¹⁷¹ 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) Custom procedure code (or applicable transaction code) – see Table 18.1 for details.¹⁷² The TF-IMTS as well as the EG-IMTS have been informed about these new data items.

Table 18.1
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 US dollars) FOB for imports
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)
Custom 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 chapter 8, Table 8.1, 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 dataset 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. Further, it is recommended

171 UNSD and OECD cooperate in the collection of annual merchandise trade data. OECD is requesting the data from its member countries and immediately forwards the received data to UNSD.

172 The revised data request is available at the UNSD website at:
<http://unstats.un.org/unsd/trade/IMTS/datacollection.htm>.

that, if the customs is not the agency compiling trade statistics, this information be regularly included in the dataset provided by customs to the agency responsible for the compilation of trade statistics of a country.

18.4. *Information about customs procedures.* IMTS 2010, para. 8.6, recommends that information about the customs procedures applied to individual transactions be part of the dataset provided by customs to the agency responsible for the compilation of international merchandise trade statistics.

C. Importance of compilation and international reporting

18.5. *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, as those procedures indicate whether certain transaction should be included or excluded in trade statistics (IMTS 2010, paras. 8.5 and 8.6), as well as for the separate identification (recording) of certain trade transactions (see, chapters 18 and 19). For example, the ASYCUDA system uses customs procedure codes for determining the trade type (system) and flow.¹⁷³ Moreover, the customs procedure applied to an individual transaction contains information about the purpose of the transaction needed for analytical purposes.

18.6. Often, the information on customs procedure code is not included in the dataset provided by customs to the trade statisticians. In part, this is because in the past this information was not seen in some countries as suitable or relevant for statistical purposes. However, due to globalization, the goods production processes are increasingly split over many countries and there is a strong need to obtain additional information about the nature of the trade transactions in order to analyze the impact and relationship of trade on employment, growth or the environment.

18.7. *Limitations of information and compilation issues.* Most countries broadly follow the revised Kyoto Convention (RKC) and apply certain standard customs procedures.¹⁷⁴ However, countries usually developed their own, often extensive set of customs procedures that 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, useable statistical information. Also, the national information might be difficult to make internationally comparable. One practical consideration is that the differentiation of trade transactions by customs procedure codes might significantly increase the dataset.

18.8. *Minimum goals for the future.* The development of the information on customs procedures into relevant and internationally comparable data is expected to require several years. The minimum goal for the near future would be that all countries be able to identify re-exports, re-imports, and goods for processing in their trade data, and that they make this information available to all users. An important intermediate step in this regard would be to create an

¹⁷³ ASYCUDA is a computerized customs management system that covers most foreign trade procedures. For further details, see paras. 8.16 and 8.17 in Chapter 8 of this Manual.

¹⁷⁴ See Chapter 2, Sections B and C, of this Manual.

inventory of the customs procedures that are currently applied by individual countries, and to make it publicly available in a convenient way to users.

D. Customs procedures applied by countries

18.9. *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 what customs procedures are applied by individual countries.

18.10. *Customs Regime Code Used in China's Merchandise Trade Statistics.* China customs developed an extensive set of customs procedures to suit the needs for customs control and trade statistics. The structure of 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 18.2 for further details)

Table 18.2
Customs regime codes used in China's International Merchandise Trade Statistics

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	Entrepot Trade by Bonded Area
35	Equipment Imported into Export Processing Zone
39	Other

18.11. *Customs Procedures Codes (CPC) used in the Philippines.* The CPC (4-digit code and with extension of 3-digit) is found in Box 37 of the Import Entry and Internal Revenue Declaration. See Table 18.3 for the list of 4-digit codes used in the Philippines.

Table 18.3
Customs Procedures Code (CPC) used in the Philippines

Code	Description
1000	Permanent export of domestic origin
1021	Permanent Export after TE for customs outward processing procedure
1022	Permanent Export after TE 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	Reexport after customs inward processing procedure
3053	Re-export after T.A. for return in unaltered state
3071	Reexport 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 TA 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 Shortshipped
5200	Temporary Import for customs inward processing procedure
5300	Temporary Import for return of goods in unaltered state
5371	TI for return in unaltered state after customs warehousing
6021	Reimport after TE for customs outward processing procedure
6022	Reimport after TE for return of goods in unaltered state
7100	Direct entry for customs warehousing procedure
7152	Entry for customs warehousing after TI 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	Transshipment Entry to Warehouse
7900	Entry for Customs Warehousing Shortshipped
8800	Transshipment

18.12. *Harmonization of customs procedure codes in COMESA.* COMESA achieved for the majority of its member countries a harmonization of customs procedures and that this information is automatically included in the dataset provided to statistics. Based on this dataset, countries are for example able to provide their data following the special and the general trade system. For further details see Annex 18.A.

18.13. *European Union practices.* In the European Union, the following elements of information are compiled: (a) customs procedure code, (b) statistical procedure codes, and (c) nature of transaction codes. The customs procedure code defines the difference between general and special trade, while the transaction code determines other aspects like change of ownership. See Annex 18.B for the list of nature of transaction codes used in the Extrastat system of the European Union.

Annex 18.A. Harmonization of customs procedure and codes in COMESA

18.A.1. *Background.* The COMESA Common Statistical Rules (CSR), which were adopted by Council of Ministers in April, 1997 at Lusaka, 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 have migrated to ASYCUDA++ and 5 others are at the various implementation stages. Thus COMESA found it necessary to revise the CSR's provisions with those following the ASYCUDA++ format.¹⁷⁵

18.A.2. *Composition of the customs procedure code.* The complete set of the Asycuda++ 7-digit CPCs 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 2 parts, the requested procedure and the previous procedure. The requested procedure comprises the first 2 numbers of the 4 digit extended procedure. It represents the customs procedure that is being asked for. The previous procedure comprises the last 2 numbers of the 4 digits extended procedure, which represents any previous customs procedure that the goods concerned have been entered under. Both the requested and the previous procedure are derived from general procedures shown in box 18.A.1 and which are based on the Standard CPC Regimes Type or Model of Declaration (see Box 18.A.2). For example, goods for import into a bonded warehouse would be entered under extended procedure 7100, which stands for requested procedure '71' (Warehousing) and previous procedure '00' (No previous procedure). The list of extended procedures is provided in Box 18.A.3. The special national rebates, etc., are handled by the last set of 3 numbers that make up the complete set of the Asycuda++ 7 digit CPC. These additional /national codes follow as near as possible national laws of Member States.

18.A.3. *COMESA customs procedure codes.* The combination of extended procedure and additional/ national codes results in about 350 customs procedure codes recommended to be used by COMESA Member States. Table 8.A.1 provides as example the custom procedure codes for the Standard CPC Regimes Type or Model of Declaration of Exportation ('EX 1').

Box 18.A.1

COMESA - 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	Re-importation
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

¹⁷⁵ See COMESA report COMESA Regional CPC Consultancy Project, October- December 2007.

Box 18.A.2**COMESA - The 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	Re-importation
IM 7	Warehousing / Free Trade Zones
IM 8	R.I.B / R.I.T (transit/transshipment)
IM 9	Other Import Procedures being Travelers Imports (Private Importations)

Box 18.A.3**COMESA - 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 EPZ / 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 EPZ / 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-EPZ/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	Re-importation after outright exportation
6021	Re-import after temporary export for outward processing procedure
6022	Re-import 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-RIB
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

Table 18.A.1
COMESA – Harmonized CPC’s – 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 organisations
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

KEY TO TRADE TYPES: (2) Applicable in the case of both Special and General Trade types, (G) Applicable in the case of General Trade Type, only; Applicable in the case of Special Trade Type, only, (0) No Trade Type applicable.

Annex 18.B. List of nature of transaction codes for Extrastat¹⁷⁶

Table 18.B.1
List of 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

^a Financial leasing covers operations where the lease instalments are calculated in such a way as to cover all or virtually all of the value of the goods. The risks and rewards of ownership are transferred to the lessee. At the end of the contract the lessee becomes the legal owner of the goods.

^b Processing covers operations (transformation, construction, assembling, enhancement, renovation ...) with the objective of producing a new or really improved item. This does not necessarily involve a change in the product classification. Processing activities on a processor's own account are not covered by this item and should be registered under item 1 of column A.

¹⁷⁶ Commission Regulation (EU) No 113/2010 of 9 February 2010, Annex II.

**Part IV: Compilation of data on trade in selected
categories of goods**

Chapter 19 Scope of IMTS

19.1. *Introduction.* The chapter is based on IMTS 2010, chapter 1, on scope and time of recording. It elaborates on the implementation of the general guideline to record in IMTS all goods which 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 introduction on the interpretation of the general guideline in IMTS 2010. Section B focuses on the definition and comparison of categories of goods which might be difficult to distinguish, such as goods on consignment, etc. Section C concentrates on categories of goods where the application of the concept of economic territory requires further explanation, such as trade in ships and aircraft, etc. Sections D and E deal with the issues of cross border trade and smuggling, customs and statistical threshold. The subsequent chapters 20 to 24 deal with additional categories of goods that are within the scope of IMTS but are either difficult to identify separately or are difficult to compile.

A. The general guideline

19.2. *Recommendation.* As a general guideline, it is recommended that international merchandise trade statistics record all goods which 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 and other chapters of IMTS 2010 and, in particular, to the specific guidelines set out in IMTS 2010, chapter 1, 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, secondly, the goods need to add or subtract from the stock of material resources of a country. The interpretation of this general guideline depends of what is to be understood as a good, what is to be considered as the economic territory, and what does it mean 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. 1.5 to 1.7). The discussion of specific categories of goods in this and subsequent chapters of part IV on the Compilation of data on trade in selected categories of goods are touching upon these three definitions.

B. Comparison of specific categories of goods

19.4. Table 19.1 below summarizes the definition and comparison of categories of goods which might be difficult to distinguish.

Table 19.1
Definition and comparison of specific categories of goods*

Category of good	Definition	IMTS 2010	Distinguish from	Additional considerations
<i>Goods on consignment</i> (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
<i>Goods for processing with or without change of ownership</i> (IMTS 2010, para. 1.19)	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
<i>Goods for storage/ Goods transferred from or to a buffer stock organization</i> (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).	
<i>Goods simply being transported through a country</i> (IMTS 2010, para. 1.41)	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 for free circulation are to be included	Goods simply being transported include goods under "in transit" or "in transshipment" customs procedures but are not limited to them
<i>Goods temporarily admitted or dispatched</i> (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 and Istanbul Conventions as goods covered by the "temporary admission subject to re-exportation in the same state" customs procedure.	Exclude	Goods for processing and goods on financial lease are to be included (see IMTS 2010, paras 1.19-1.20 and 1.28)	It may be not 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
<i>Goods for repair or maintenance.</i> (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 and 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.

**Note:* Re-exports (and re-imports) 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 which were previously recorded as imports and reimports are imports of goods which were previously exported. Re-exports and reimports are recommended to be separately identified (see IMTS 2010, paras. 2.15-2.18). Goods for processing is the goods category that usually entails a re-export and reimports unless the processing operations conveys origin or the processed goods remain (e.g., are sold) in the country where the processing takes place (see chapter 19 for details). Goods on consignment can be returned and should in this case be identified as re-exports and reimports at return.

19.5. *Example of goods on consignment.*¹⁷⁷ A typical case of goods on consignment is when goods are sent to a marketplace specific for that type of good in another country for the purpose of being sold. Such marketplaces can exist for diverse goods, such as live animals, cars or crude oil. The marketplace brings together buyers and sellers. The physical inspection of the goods at local or global distribution centers or changes in the market condition might result in the goods not being sold and subsequently returned. There might be many other situations and circumstances under which goods were sent to another country with an intention for sale but which were not actually sold when they were crossing the border, and even the sale price has not been established at the time of exportation.

19.6. *Example of goods for processing.* Global manufacturing and global production chains exist for many products such as cars or for electronics (e.g., mobile phones). In all such cases parts of the production process and the manufacturing of the components of the final product takes place in several countries. In this sense, all trade that precedes the shipment of the final product to the country where it is consumed can be considered as trade in goods for processing.

19.7. *Example of goods for storage.* Certain important commodities such as oil and gas or wheat and rice are frequently stockpiled at specific locations for the purpose of their future distribution and use. For example, some small island States store large amounts of fuels to ensure that ships and aircraft can be properly refueled. These supplies might be fully under control of a foreign entity but nevertheless form part of the material resources of the country.

19.8. *Example for goods simply being transported through a country.* Large trading places such as Rotterdam (for oil) and Dubai and Hong Kong (for merchandise) are frequently the

¹⁷⁷ Goods on consignment in this Manual refer to goods on consignment as defined in IMTS 2010. Countries might have additional and divergent definitions for goods on consignment and might have a specific customs procedure for goods on consignment which might or might not be in line with the above statistical meaning of the term. 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 for the special case of “Relief consignments” procedure covered in Annex J (chapter 5).

destination of goods that are then reloaded to another destination. It can be difficult to distinguish whether these goods are entering the country on consignment, for storage or only as good in transit.

19.9. *Example for goods temporarily admitted or dispatched.* This category includes, but is not limited to, goods identified in the revised Kyoto Convention (RKC) and the Istanbul Convention¹⁷⁸ 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 person's resident abroad. In cases where movements of goods are not covered by a specific customs procedure, the statistical authorities should establish criteria for determining whether the goods movement 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 result into an essentially new product whose import and subsequent export need to be included in IMTS.

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 and stores and enclaves/ exclaves etc.

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 reporting country. However, they are nevertheless to be viewed as part of the material resources of a country if the owner is resident of that country. This can be seen as a convention which allows for the recording of ships and aircraft which is most meaningful and, despite its difficulties, most practical. The attribution of ships and aircraft to the material resources of a country could be also based on the degree of physical presence and maintenance which however, would be less meaningful given the importance of ownership and less practical.

19.13. *Bunkers and stores.* As indicated in IMTS2 010, para. 1.32, the recording of bunkers and stores is conceptually and practically without much difficulties if these transactions take place within the own economy, i.e., in the case of refueling of foreign aircraft and ship as the supplies are very apparently leaving the economic territory on board of the foreign vessels and ships. It is appears obvious that such exports need to be recorded as imports by the country where the economic owner of the ship resides, despite the fact that these supplies will never cross the geographic-economic border of these countries. To further justify this practice on conceptual grounds it can be pointed out that ships and aircrafts need to be viewed as quasi economic territory of the country where the economic owner resides. These ships and aircraft contribute to

178 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.

the value added/GDP of the countries where their economic owner resides by at least their operating surplus and hence all inputs 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.

D. Cross-border trade and smuggling

19.15. *Three cases to distinguish*. Goods acquired by all categories of travelers, 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., smuggling, 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, there can be also fraudulent activities that can artificially inflate the recorded trade. The case of the declaration of a too high trade value, e.g., for exports to receive an export subsidy, is a valuation issue (see chapter 14) and a matter of statistical quality assurance (see chapter 9). However, in some cases (for instance, the so-called carousel fraud in the European Union) a series of trade transactions of significant value is created to commit value added tax fraud without the goods necessarily ever moving. It is a good practice that compilers stay in close contact with the responsible tax and customs authorities in order to properly remove such fictitious trade transactions from the data once identified.

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 travelers (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 which 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 (IMTS 2010, para. 1.3). Box 19.1 provides information on the different thresholds applied in the EU Intrastat system and Box 19.2 describes a practice of estimation of trade below threshold.

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 transaction 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 declaration refers to the case when for certain transactions only part of the usually required information is requested by customs. In the case of 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). However, in the case when 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 goods would constitute smuggling and should be excluded from IMTS (see para. 19.15 above).

Box 19.1

Thresholds applied in EU Intrastat system

Exemption threshold

The exemption threshold as defined in Article 10(3) of Regulation (EC) No 638/2004 is a mandatory threshold, i.e. each Member State shall set the thresholds below which PSIs (parties responsible for providing information) 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 exceeds the applicable thresholds, or
- (b) the cumulative value of trade with other Member States since the beginning of the year of application exceeds the applicable thresholds. In this case, information should be provided from the month in which the thresholds are exceeded.

Simplification threshold

The simplification threshold as defined in Article 10 (5) of Regulation (EC) No 638/2004 is optional, i.e. Member States may apply a simplification threshold. The Member State has the possibility to select which type of simplification is implemented:

- (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) subheadings and regrouping other products according to partner Member State under code 9950 00 00.

Small transaction threshold

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(5) of Regulation (EC) No 1982/2004 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 authorisation for the application of this simplified reporting.

Statistical value threshold

The statistical value threshold as defined by Article 8(2) of Regulation (EC) No 1982/2004 is set mandatory in those Member States which collect the statistical value. The threshold is usually applied to the collection of the optional data elements as well.

Box 19.2

Estimation of trade below the threshold – EU experience (Germany)

Exporters/importers are exempted from the declaration of intra EU-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 (on 2-digit level) and partner countries according to the structure of the enterprises just above the threshold. The idea behind is that the trade structure of the companies nearby the threshold should be quite similar. The quantities are calculated proportional to the share of the estimated values in the total values.

F. Confidential data and incomplete coverage due to data omission

19.19. *Confidential data.* Some countries consider certain commodity and partner information as confidential due to security concerns or other considerations. Examples are imports of military or other sensitive goods or information on exports of oil and gas. IMTS 2010 recommends that data that are considered confidential be included at the next higher commodity or partner detail that ensures the required confidentiality. Confidential trade flows are within the scope of IMTS and the application of confidentiality should not result in under-coverage (see Chapters 1 and 26 for further details and good practices).

19.20. *Omission of data.* There are examples where information on trade transactions which are not covered by regular customs recording are omitted from inclusion in the 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 on the detailed commodity and partner data level. However, in line with the general guideline on the scope of IMTS, this trade should be included on the total level in order to provide full coverage.

Chapter 20 Goods for processing

20.1. *Introduction.* This chapter defines and provides examples of goods for processing (Section A), while also explaining what is not to be considered as such (Section B). Information on the treatment of goods for processing in the 2008 SNA/ BPM6 is provided in Section C. Challenges in the identification of goods for processing, including goods for processing where no change of ownership takes place are described in Section D. Section E contains country experiences in the identification of goods for processing. This chapter on goods for processing is linked in particular to chapter 21 which covers trade between related parties and chapter 23 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 is often described as global value chains. This is having significant impact on employment and 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 the national economies. In this connection, the separate identification and provision of further information on goods for processing is of great analytical importance. The urgency to improve the availability and the quality of data on goods for processing is also a consequence of the need to identify goods for processing where no change of ownership over the goods takes place for national accounts and the balance of payments purposes, in view of the recent change in the statistical treatment of such goods in these systems. It is expected that most countries will be able to provide over time more information on goods for processing and improve its quality. However, due 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, might be treated as a good for processing (see section 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 a 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 adopted definitions of goods for processing based on a specific customs procedure, 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.¹⁷⁹ 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 very reliable way via customs procedure codes. Some customs procedures such as ‘inward processing’ and ‘outward processing’ provide clear definitions of goods for processing. However, depending on the national regulations and practices, also procedures such as ‘free zone’ and ‘drawback’ could include goods for processing. In general, specific customs procedures for goods for processing are set 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 sufficient information about nor a reliable definition of goods for processing, as in many cases using such procedures may not be seen as beneficial by traders due, 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 leaving the country.¹⁸⁰ In that case, there may be no way to identify imports for processing based on customs records. Identifying exports for processing or the re-exports of processed goods may be even more difficult. Also, for trade within a customs union there could be no customs procedures that could identify goods for processing.

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 that might reflect specific information requirements - see example in Box 20.1 below

Box 20.1

Definition and identification of goods for processing in the European Union

The 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. It is specified that this does not necessarily involve a change in the product classification. However, the statistical recording of goods for processing via a so called nature of transaction code in the Extra- and Intrastat system of the European Union is limited to processing under contract without transfer of ownership to the processor.* This means that processing activities on a processor’s own account are not covered.¹⁸¹ 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.

* See Annex 17b.B for the list of nature of transaction codes.

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 stay the owner of these products. The subcontractor sends the processed good after processing back to the ordering party or out to

179 See revised Kyoto Convention (RKC), Specific Annex F/ Chapter 1/ E3. See also chapter 2 and chapter 18 of this Manual.

180 Also, according to the most favored nation agreements goods can be exempted from import duties and may be admitted via the customs procedure goods declared for home use (free circulation) and hence, the customs procedure used is not necessarily an indication of a processing activity.

181 Commission Regulation (EU) No 113/2010 of 9 February 2010, Annex II and Commission Regulation (EC) No 1982/2004 of 18 November 2004 as last amended by Commission Regulation (EU) No 96/2010 of 4 February 2010, Annex III.

another trader to whom the ordering party has sold the processed good.

20.8. *Operations considered processing.* The following operations are frequently considered as processing but countries might treat some other operations as processing as well.¹⁸²

- Manufacturing/assembly of goods (e.g. semi-conductors);
- 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’. The following examples may facilitate the identification and delimitation of repair and service operations:¹⁸³

(a) Repairs:

- The 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 a really improved item, it is a process;
- Repair of damage to goods incurred during transport;
- Re-painting should be treated as repair/maintenance. However, the painting of unpainted goods should be treated as processing.

(b) Services:

- For aircraft,¹⁸⁴ technical maintenance activities which are carried out due 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.

182 This list should not be seen as prescriptive nor as complete; it is rather a reference list of activities that could be considered as constituting processing, depending on country circumstances.

183 In the past, this list of examples has been in use within the European Union. It might require further review and elaboration, but appears to be largely acceptable to most countries.

184 For further details on the recording of aircraft (and ships) please see chapter 22.

20.10. *Difficulties.* In practice, many borderline cases might exist where repair and service can be difficult to differentiate from processing. Examples of such borderline cases are a repair in which a replacement part, a new model with better performance is used or 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 and 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 recommends that goods for processing be recorded when they enter or leave the economic territory, irrespective of whether a change in ownership takes place (see IMTS 2010, paras 1.19-1.20 above). 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 transaction in the balance of payments statistics compiled according to BPM6. Instead, the BPM6 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 (BPM6, paras. 10.22(f) and 10.62-10.71). The previous version of the BPM inputed a change of ownership in the case of goods for processing, but the BPM6 reversed this practice, thereby establishing a major conceptual difference to merchandise trade statistics.

20.12. *Recording of the sale of goods to a third country after processing in the 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 (BPM6, paras. 10.22(f) and 10.62-10.71).

20.13. *Definition of goods for processing in the BPM6.* Manufacturing services on physical inputs owned by others cover processing, assembly, labelling, packing, and so forth 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, the ownership of the goods does not change, so 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 those incidental to transport, which are included in transport services) (BPM6, paras. 10.62-10.63).

D. Identifying trade in goods for processing – with or without change of ownership – and implications for the balance of payments compilation

20.14. *Recommendation to identify trade in goods for processing.* According to the recommendations for merchandise trade in all cases, 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 the countries at their full (gross) value. Countries are encouraged 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. (IMTS 2010, paras. 1.20-1.21). Further, it is recommended that information about the customs procedure applied to individual transactions (or the nature of transaction) be included in the dataset for trade statistics in order to facilitate the identification of re-exports and re-imports but also of other types of trade, such as goods for processing, trade between related parties, goods on consignment etc. as far as possible. For BOP compilers the measurement of manufacturing services on physical inputs owned by others is required.

20.15. *Identifying goods for processing.* Customs procedures can provide a very reliable way 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 not accurate (see also para. 19.4). A further difficulty can be to distinguish goods for processing from goods for repair and service. Also, customs records would usually not indicate whether there is a change of ownership and whether a transaction takes place between related parties. However, compilers are encouraged to use additional means such as special surveys or studies and 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 (IMTS) is 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 balance of payment basis from merchandise trade statistics, BOP compilers have to undertake several adjustments, among which the following three concern goods for processing:¹⁸⁵

- (a) subtract goods sent for or returned after processing without a change of ownership
- (b) add 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) add goods sold abroad after processing in other economies as exports (BPM6, para. 10.66)

185 For an example please see Development of Trade in Goods and Services Statistics in Hong Kong, CHAN Ka-lin, Census and Statistics Department, The Hong Kong Special Administrative Region, China, presentation during the Global Forum on Trade Statistics, Geneva, 2-4 February 2011: To collect additional information for consignments imported from the Mainland involving processing of goods under the arrangement of “processing and assembling”: (a) the value of processing fee paid by Hong Kong traders; and (b) the value of raw materials / semi-manufactures concerned sent to the Mainland for processing with breakdowns into (i) those procured by the Hong Kong traders and exported from or through Hong Kong; (ii) those procured by the Hong Kong traders and exported directly from place(s) other than Hong Kong; and (iii) those procured by the Mainland processing factories.

Only for the case (a) the transactions are within the scope of international merchandise trade statistics and would usually be included in the custom 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 of information to capture the required information regarding the transactions indicated in (b) and (c).

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 statistics, probably often reflecting the role of goods for processing without change of ownership but also other differences. 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 does not add up to a total figure for trade. The agencies responsible for the dissemination on the trade in goods on IMTS and BOP/NA basis should agree on a uniform dissemination strategy that would entail uniform labeling of the different data and the provision of a reconciliation table.

E. Country experiences

20.18. *Goods for processing – example of China.*¹⁸⁶ Processing trade accounts for a large share of Chinese exports and imports.¹⁸⁷ 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 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 Chinese producers. The placement of goods under the inward processing procedure requires authorization and customs monitors the processing operation. The external trade statistics collects information on the enterprise transaction level.

20.19. *Goods for processing – example of China, Hong Kong SAR.* An example regarding the compilation of information on Hong Kong’s outward processing (OP) in the mainland of China is provided in chapter 4.

20.20. *Goods for processing – example of Iceland.*¹⁸⁸ 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 identify on the customs declaration if the good imported is for processing. Raw material imported for manufacture is exempted from excise tax and duties (Customs regulation), which provides an incentive for the enterprises to

186 China’s Practice in Statistics of Goods for Processing, H. Jin, Statistics Department, General Administration of Customs of the People’s Republic of China, presentation during the Global Forum on Trade Statistics, Geneva, 2-4 February 2011.

187 Around 50 percent of exports and 30 percent in imports (ibid.).

188 New manuals of trade in goods and trade in services: Goods for processing in Iceland, A. Ó. Svavarsdóttir, Statistics Iceland, presentation during the Global Forum on Trade Statistics, Geneva, 2-4 February 2011.

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 product and the foreign enterprises provide the raw material and sell the good after processing (no change of ownership). There is high influence of goods for processing in the Icelandic trade data for goods and services.

20.21. *Goods for processing- example 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 as goods for processing. Semi-conductors and garments are examples of consigned goods. Consigned goods are determined on the following bases:

(a) Check that “FOB value of imported raw materials” in Box 40 of the Export Document (ED) has an entry. This item must always have an entry if the goods exported are consigned goods. $\text{FOB value of consigned goods} = \text{Labour cost} + \text{FOB value of imported raw material}$;

(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 items, or the value of imported materials or processing cost. The value should coincide with the value declared in Box 40;

(c) Look for CMT (Cut Make Trim) value or CMP (Cut Make Pack) value written in the export document. $\text{FOB Value of Consigned goods} = \text{CMT/CMP Value (Labour Cost)} + \text{FOB Value of imported raw material}$.

Some export documents have blank entry for Box 40. In this case, the attached invoice and notes written in the document serve as basis in 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 only updated whenever the exporter changes its line of commodity.

20.22. *Example of Morocco - Compilation of transactions accomplished as part of the temporary importation for active refinement with and without payments.* The information on transactions performed under the regime of the temporary admission for active refinement are obtained from customs declarations (single declaration of goods (DUM)) filled by the merchants engaged in any operation of importation or exportation of the goods. The merchant is required to point out on the DUM the customs regime under which the goods will be accepted in the national economic territory. One can differentiate between two types of regimes of active refinement:

(a) Active refinement without payment: this regime that allows to accept on the customs territory with a hold on imports taxes and duties, 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 so 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 and without payment). Concerning active refinement with payment, the value of imported raw materials as well as of re-exported goods after transformations are reported on the DUM. As for active refinement without payment, in addition to the DUM which contains only

the value of the transformation, the Office of Exchange also receives another file containing the audit of the account of the temporary importation without payment which includes the value of imported raw material. The staff of the Office of Exchange undertakes the determination of the raw value for every re-exportation. The value of re-exportations consists of the value of the raw material that has been subject 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. However, this valuation of goods for/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 of processing. Users should be informed in the metadata how certain transactions of high value are recorded.

Chapter 21 Goods which cross borders as a result of transactions between related parties

21.1. *Introduction.* This chapter elaborates the concept of trade transactions between related parties contained in IMTS 2010, para. 1.22, and discusses the importance of identifying these transactions. Ways to identify trade between related parties are discussed and a country example is provided. This chapter is related to the chapter 20 on goods for processing, as frequently goods are sent to another country for processing in branches belonging to the same enterprise.

21.2. *Recommendation to separately identify trade between related parties.* Trade between related parties is an important dimension of international trade and there is a need to obtain more information on this kind of trade. While trade between related parties has always been included in the scope of IMTS, 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 them to users. It is acknowledged, however, that depending on their specific data needs and overall compilation strategies, countries may find it more appropriate, rather than identifying such goods in their regular trade data compilations, to estimate their share in imports/exports by conducting periodic surveys of companies that have foreign affiliates or are affiliates of the foreign companies.¹⁸⁹ 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 encourages countries to use the definition of related parties as provided in Article 15(4) of the WTO Valuation Agreement (see Box 21.1) which provide provisions for the appropriate valuation of goods traded between related parties as the prices paid between related parties might be influenced by their relationship.¹⁹⁰ Countries might diverge from this recommendation and use another definition of related parties such as the OECD benchmark definition for foreign investment (BD4)¹⁹¹. Countries should state in their metadata what definition is used.

189 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 needed on a monthly basis.

190 Long-terms 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. Transfer pricing does not always go by the OECD guidelines. Countries might have transfer pricing policies outside the OECD guidelines.

191 Related parties can also be defined according the BPM6 and the OECD benchmark definition for foreign investment (BD4) as parent cooperation 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 21.1.

WTO Definition of related parties

Article 15(4) of the WTO Valuation Agreement:

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 common 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 favorable production conditions in the latter country (e.g., lower costs of inputs or a favorable tax regime) or related to market access or to the distribution of the goods. However, frequently trade between related parties is part of much more complex global production and distribution processes that stretch over multiple countries. A special case is trade of goods for processing (see chapter 20), whereby goods are brought into a country under a specific arrangement between the involved parties (which may or may not be related, and which may or may not include the change of ownership of the goods) and for specific operations.

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 valuation agreement but also, although not covered by this agreement, customs makes efforts to ensure the correct valuation of all imports and of 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 chapter 14). The value of goods declared by related parties can be influenced by their relationship as shown by long terms studies of inter-company prices. In this connection, information on whether any given transaction takes place between related parties or not would facilitate significantly the monitoring and assessment of the valuation practices and provide the basis for making any adjustments to the declared values if 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 of a large share of global trade. These enterprises are considered as 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) provides insights into the trade of large enterprises by linking trade data with information from the business registers (see Chapter 11).

However, the identification of the intra-firm trade would allow a much further and detailed analysis of global trade and investment 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 to obtain 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) statistics might be sufficient. However, only detailed commodity-based data concerning trade between related parties will allow a detailed understanding of the trade.

C. Ways to obtain information on trade between related parties

21.8. *Customs declaration and accompanying documentation.* Information on whether a trade transaction takes place between related parties is usually not available in the customs declaration (see Chapter 8). Also, the examination of accompanying information might not provide a sufficient indication for trade between related parties. However, countries can require traders to provide such information on the declaration (see United States example in para. 20.13 below). In this case, the IT systems (such as Asycuda, Uni-Pass, Siscomex, Trim's etc.) used in different administrations worldwide would have to be adapted to allow regular compilation of this information. At this time, concerns about the response burden, the feasibility of obtaining reliable information, etc., appear to outweigh in most countries arguments for the need of this information. A common concern regarding obtaining this information is that the traders or brokers that complete the transactions do not know 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. Also statistical offices and customs might not see sufficiently strong reasons for obtaining this information on detailed level or do not view it as priority.

21.9. *Supplementary enterprise surveys and studies.* In many countries trade in specific economic sector is concentrated on a few large multinational enterprises. Given their role for domestic value added and employment, those enterprises should be well covered in the existing business statistics. These enterprises can be especially surveyed and requested to provide information on their trade with their foreign affiliates or parent enterprise(s), either on aggregate or the detailed level of the customs declaration. Such information can be collected on a regular basis (surveys) or for ad-hoc 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 UN Statistical Commission and published in the revised Manual on Statistics of International Trade in Services (see MSITS 2010, chapter IV). For example, the EU Member States plan to improve their FATS in the near future under the EU

level FATS Regulation. Regarding the identification of trade between related parties, it is a good practice to disaggregate exports and imports into a few broad categories where trade with related enterprises would be distinguished from trade with unrelated parties (MSITS 2010, para. 4.60), as such data would be very useful for the analysis of globalization issues. However, FATS does not include statistics on the parent enterprise and it appears difficult to obtain detailed information of the total and intra-group trade at the product level. The Italian experience, 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 declaration with a transnational enterprise registers.* Although currently this is mostly a theoretical possibility, linking customs declaration with a transnational enterprise registers may become feasible in the future. If countries adopted the model of a seamless integrated data pipeline, it would allow to link export declarations with their corresponding import declaration (see para. 8.6). 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. However, in order to learn about their relationship, countries would need to agree and establish functioning transnational enterprise register, such as the European Union's EuroGroup register.¹⁹²

21.12. *Conclusions.* The objectives of identifying trade between related parties are in general supported by countries.¹⁹³ However, there are significant difficulties in compilation that make it difficult or unrealistic for many countries to obtain this information in the near term. Requesting the indication of intra-firm trade on the customs declaration, if possible, can be considered as a best practice (see example of the United States below). Overall, the implementation of this encouragement to identify intra-firm trade might depend on the national needs and priorities of countries.

D. Good practices

21.13. *US experience – definition of related parties.* Related party, or intra-firm, data are defined as shipments between U.S. companies and their foreign subsidiaries as well as trade between U.S. subsidiaries of foreign companies and their affiliates abroad. For export transactions, firms are “related” if either party owns, directly or indirectly, 10 percent or more of the other party (see Section 30.7(v) of the Foreign Trade Statistics Regulations). This definition of related party corresponds exactly to that used by the Bureau of Economic Analysis in their annual surveys of multinational activity. For imports, firms are “related” if either owns, controls or holds voting power equivalent to 6 percent 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 U.S. Census Bureau.* Related Party data are

192 For more information see http://epp.eurostat.ec.europa.eu/portal/page/portal/european_business/special_sbs_topics/eurogroups_register.

193 See United Nations Statistics Division, Report on the results of the first round of worldwide consultation, October 2008, p. 9, available at: <http://unstats.un.org/unsd/trade/EG-IMTS/EG-IMTS%20web%20announcement.htm>.

compiled from administrative records from official U.S. import and export merchandise trade statistics. Related party shipments are identified by the indicators, “R” for related or “N” for nonrelated, that are required on all export transactions and most import transactions. Selling prices are used as a basis to determine the value of shipments, but in general, the goods sold between related parties are required to be valued as if the transactions were made between unrelated parties.¹⁹⁴

194 The Foreign Trade Division (FTD) of the U.S. Census Bureau releases aggregated related party data through an annually published press release. This press release can be found at this web address:http://www.census.gov/foreign-trade/Press-Release/related_party/index.html. Additional related party data that are not published in the annual press release can be obtained from the FTD Related Party Database application. This database is available on line at: <http://sasweb.ssd.census.gov/relatedparty>.

Chapter 22 Pipeline trade and trade via fixed power lines

22.1. *Introduction.* This chapter discusses the characteristics of transactions in which goods are delivered continuously across borders via pipelines (e.g., oil, gas and water) or via fixed power lines (electricity).¹⁹⁵ 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 these goods whether delivered via pipeline or not. The chapter discusses the challenges and good practices in measuring these transactions. This chapter is linked to chapter 3 and 4 on the use of non-customs sources as well as with chapter 7 which discusses the integration of data from different sources.

22.2. *Importance.* International transactions in gas, oil and water which are delivered via pipelines and electricity delivered via 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 to improve international comparability (see IMTS 2010, para. 1.24).

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. This can relate to the fact that these goods do not pass through the regular entry and exit points under the purview of customs. Another reason might be that in many countries the trade in gas and oil takes place via government authorities or special entities that are not obliged to submit customs declarations. Also, goods transmitted via 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 concerning goods delivered via pipeline or fixed lines for 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 that 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

¹⁹⁵ This chapter focuses exclusively on the transactions in goods and does not intend to discuss in any way the recording of the services that are entailed in 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 para. 21.6 and chapter 14 on valuation for further information).

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 it is the case for other goods. Hence, the association of quantities with specific transactions is only known by the trading partners and specified in the contract or invoice while the actually delivered quantities are only known from 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 inclusive 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 value and record these flows in a uniform way to improve international comparability (IMTS, para. 4.15(c)).

22.7. *Complexity of pipeline and electricity networks and frequent buying and selling transactions.* A special characteristic of goods delivered via pipelines or fixed power lines, particularly in the case of gas and electricity, is that multiple 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 only used to confirm and supplement, if necessary, the customs data. However, as indicated in para. 21.3 in many other countries there are no customs records at all or 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 they usually 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 be applicable to some future transactions rather than be an indication of the actual price agreed between the buyer and seller in respect of the goods which actually crossed borders in any given reference period.

22.10. *Information on quantities provided by grid operators as additional source.* Grid operators are responsible for the electric lines and the pipelines through which the goods are transported, and they have information on the quantities of electricity and gas that are crossing the border between the country and a neighboring country. Grid operators are often not parties to the trade transactions and can therefore be viewed only as supplementary data source. Nevertheless, in some countries the grid operators might be the only data source regarding the physical movement of the goods (when and where) of which the traders might have lost track.

22.11. *Combining information from customs declarations and other sources.* A possible approach for the compilation of trade via pipe lines 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 this information with the definition of the IMTS scope and the accuracy of measurements, is being 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 are often changing ownership (bought and sold) many times without being physically moved across borders. Normally, it is not possible for trade statistics compiler to track if and when the goods really cross the border physically. Therefore the information on the physical border-crossing 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. *China example.* Goods delivered continuously through pipelines across borders, such as electricity, water, and gas or oil, are required to be declared monthly, as normal goods, to Customs by the companies who sign the contracts of import/export of those goods. The volume and the value of the previous month are to be accumulated if the other statistical items such as partner country, 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 price, and customs officers may look at the meter measurement to check the quantity (in the case of 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 Hong Kong, the company is required to declare the accumulated quantity and value to customs by month and within ten days. If a company exports electricity to Hong Kong and Macau, the company is required to fill two separate declaration forms, one for each of these trade partners.

22.15. *United States example – trade in gas and electricity.* 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 due 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 US Census Bureau receives Canadian data on exports of natural gas to the United States and includes them as imports from Canada. Statistics Canada uses administrative data for monthly estimates due 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. *Germany example – scope and compilation.* Energy, electricity, gas and oil as well as water are often considered as specific goods in trade statistics due to their particular mode of transport (i.e., via electric lines or pipelines), the way they are traded and their fiscal treatment. In the EU, only electricity and gas that is transported via pipelines are considered as specific goods. Gas which is not transported via pipelines, whether it is in gaseous or in liquid state, is treated like all other goods. The specific rules for electricity and gas transported via pipelines are based on their very specific physical characteristics. In Germany information on trade with electricity is collected from the grid operators whose number is limited and which have turned out to be by far the most reliable data source 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 crosschecked by the mirror figures of the partner countries.

22.17. *The Italian experience in the production of external trade statistics on natural gas and electricity.* A new approach for the compilation of external trade statistics on electricity and natural gas in gaseous state was developed by ISTAT and implemented for the first time in the occurrence of the final revision of 2010 data and the first intermediate revision of January-August 2011 data. This was motivated by the increasing relevance of data quality problems in 2011 as well as by the need to guarantee consistent time series with a limited structural break. Please see Annex 22.A for further details.

Annex 22.A. Italian experience 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 increasing relevance of the European Electricity Market as the reference market for commercial and financial transactions, as well as the introduction of some relevant changes in the national fiscal regulation, have dramatically increased measurement problems in 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 Regulations and Compilation Manuals. These measurement issues have induced some relevant data quality problems in provisional figures already published by ISTAT on 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 represented by Terna S.p.A., the Italian national grid operator for transmission and dispatching of electricity, and by Snam Rete Gas S.p.a, the Italian natural gas operator.

22.A.2. *Methodology.* In the new data production system, figures on total exports and imports of natural gas in gaseous state and electricity measured as physical quantities are monthly collected 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 were designed, tested and implemented. Table 22.A.1 provides the list of new information sources. For the a description of the methodological approach see Box 22.A.1

22.A.3. *Conclusions.* The revision effects in traded values of natural gas and electricity due to the introduction of the new estimation methodology were quite considerable. In conclusion, 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 comparison;
- reduction of the statistical burden on the respondents from 2012.

Table 22.A.1

Data sources used for the compilation of external trade in electricity and natural gas in 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 (GWh)	No, only concerning 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 Italian Electricity Market and average monthly electricity prices on the main European Markets	Yes	P (E)

ENTSO European Network of transmission System operator 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 (GJ)	No, only concerning 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 22.A.1

Methodology for estimation of monthly trade in electricity and natural gas in Italy

(a) Quantity flows by partner country

In the case of Italy's external trade in electricity and natural gas in 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 Italian borders 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 q_i^t represents trade quantity in period t with partner country $i \in \{1, \dots, I\}$, while q_j^t represents trade quantity in period t through the entry or exit point $j \in \{1, \dots, J\}$. The weights w_{ij}^t 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, w_{ij}^t , considering national electricity surplus and deficit as constraints. This approach allows discriminating 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

Due to differences in the availability and reliability of data from the respective sources, the estimates of monthly prices associated with trading transactions on electricity and natural gas follow two different approaches. 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 between ISTAT source's unit values, average monthly national single price (PUN) on the Italian Electricity Market, and average monthly electricity prices picked up from the main European Markets has been carried out.¹⁹⁶ Electricity import prices from "statistical country" i have been defined as a weighted average between the average monthly single price (PUN) on the Italian Electricity Market and the average monthly electricity prices on the main European Markets follows:

$$P(E;t)_i^{imp} = \alpha \cdot PUN(t) + (1 - \alpha) \cdot P^{FOREIGN}(t)_i.$$

Instead, export prices have been defined as the average monthly electricity prices on the main European Markets

$$P(E;t)_i^{exp} = P^{FOREIGN}(t)_i.$$

¹⁹⁶ The comparison shows that unit values associated to custom declarations lay in an interval defined by the PUN as upper limit and by the partner country national price as lower one, with a progressive convergence to the partner country national price. Main traders confirmed this price behaviour.

Chapter 23 Ships and aircraft

23.1. *Introduction.* This chapter explains the problem of identifying and recording trade in ships and aircraft¹⁹⁷ and provides an outline of how 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 indicates that there is a need to improve the statistical recording of ships and aircraft.¹⁹⁸ This chapter is linked with chapter 20 as the refitting of a ship or aircraft can be viewed as goods for processing. The compilation of trade in aircraft and ships requires frequently the use of non-customs sources. Therefore, this chapter is linked with chapters 3 and 4 on the use of non-customs sources of data and also chapter 7 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 border which is captured by customs records. Large parts of trade in ships and aircraft do not pass through customs, and customs often does not receive any declarations. The IMTS 2010 recommends in exceptional cases such as 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.¹⁹⁹ Change of ownership is defined in accordance with 2008 SNA²⁰⁰ and BPM6²⁰¹ as change of economic ownership. When the criteria of change of ownership is used for the recording of goods entering

197 Rigs for oil production might be included in this category of goods as well. For example, in the EU transactions in oil rigs are treated like transactions in vessels if these structures are floating as opposed to being fixed. For the treatment of fixed installations or installations in general please see chapter 6.

198 In 2009 countries reported collectively USD 141 billions of exports in ships (SITC section 793) but only USD 57 billions of imports. While trade increased dramatically this pattern has been present 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 factor 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. In 2009, countries reported over 41 billions of exports in ships (SITC section 793) to only the 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 section 793) show global exports as systematically exceeding imports by a wide margin but not as much as for ships. For detailed information see 2009 International Trade Statistics Yearbook – Volume I – Trade by Commodity, available at: <http://comtrade.un.org/pb/> (the figures in 2009 and 2010 for aircraft in terms of SITC are distorted in 2009 as full commodity detail were not reported for a large amount of trade).

199 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 residence of its original owner (para. 1.39).

200 *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>.

201 *Balance of Payments and International Investment Position Manual, Sixth Edition (BPM6)*, International Monetary Fund, 2008; available electronically at the website of the International Monetary Fund at <http://www.imf.org/external/pubs/ft/bop/2007/bopman6.htm>.

(leaving) an economic territory, an export/ import of a product should be recorded when the economic ownership changes from a resident unit to a non-resident unit.

Box 23.1

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. 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 (i.e. an aircraft) can be the same. 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. (2008 SNA, paras. 2.46-2.49 and 2.21-3.29);
- *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. (2008 SNA, paras. 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. (2008 SNA, paras. 4.10-4.15).
- *Clarification:* An 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

23.3. *Processing vs. repair/ services transactions (without change of ownership).* Ships and aircraft can enter a country for outfitting or refitting, sent by a foreign owner who retains ownership (otherwise para. 23.2 would apply). 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/processing country. However apart from the practical issue of how to capture these transactions, there is a need to decide whether the transactions are a repair or other service or a processing transaction (see chapter 20 for details) which would require the recording of an import of a good when entering the country and an export of a good when leaving 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 ship 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 their treatment.²⁰² Further, countries might consider cooperating with their trading partners regarding the recording of these transactions in order to achieve a uniform recording and to improve international comparability. This is of particular importance as the sending/ exporting country might not have any information about such transactions at all while the service providing/ processing country should be well aware of large outfitting/ refitting activities taken place in their country.

202 Compilers might wish to exclude the retrofitting/ outfitting on the basis that it is 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 compiler to decide whether the transaction constitutes processing or a service/ repair. However, to exclude in general processing activities involving ships and aircraft cannot be recommended. It should be considered that also other processing operations entail the recording of high values for imports and exports while the actual value added can be very 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 and exceed the value of the trade in ships and aircraft.

23.4. *Recording of partner country.* Used aircrafts and ships do not change the country of origin. This is the case for almost all other used goods (see chapter 16 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 might view that the country of consignment provides better information on the trade of ships and aircraft (and other used goods). However, in order to avoid confusion of users, this kind of partner information should be provided in addition and not as replacement and not be ‘mixed together’ with data that is otherwise following the country of origin concept.

Box 23.2

Recording of trade in an aircraft - example provided by Canada

A company in Country A buys a Canadian built aircraft which are treated as a Canadian domestic export. After several years of use the original aircraft are traded in for newer models. The original aircraft are returned to Canada for refurbishment and subsequent sale to Country B. The aircraft return is treated as a Canadian re-import with the subsequent sale treated as a domestic export.

B. Existing practices for recording and measuring trade in ships and aircraft

23.5. *Existing practices.* 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.²⁰³ Under such circumstances, many countries use national airline or shipping registers for evidence of a trade transaction using change of ownership as indicated in the register as the basis for compilation of trade statistics. However, not all countries have national airline 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,²⁰⁴ might not be sufficiently updated or the information might not be suitable or sufficient for use. In particular, such registers would usually contain information on the legal owner while information on the economic ownership is required. Therefore, in addition to registers, countries could use additional sources such as accounts of companies and the review of leasing contracts to establish economic ownership. However, the possibility to review leasing contracts or for example, agreements on vessel management to determine economic ownership appear not to be used currently.

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

203 A similar situation might exist in the case of trains which regularly cross borders. Also in this case the change of ownership and not the crossing of the border would need to be used as criteria for the recording of a trade transaction. Enterprises that own and/ or operate or produce and sell trains should be able to provide information about the acquisition and sale of trains.

204 For example in the EU fishing vessel are in general not registered in the national ship registers, as indicated by the results of EU questionnaire.

specifies the principles to be recognized by signatories.²⁰⁵ This Convention states²⁰⁶ that aircraft must be registered and shall hold the nationality of the country in which they are registered. It also states that aircraft may not be legally registered in more than one country, and that every aircraft used for international air transport must be marked with its nationality and registration number. 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 to enhance 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 Lloyd's Register - Fairplay).²⁰⁷ It aims at assigning 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 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.^{208, 209} 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 HIS Fairplay.²¹⁰

23.8. *Request of additional documentation.* The statistical authority should use available customs information and registers for 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 dealt with through enacting legislation specifying the obligation of each party (the registration authority, owners, leaseholders) to provide information.

205 See Protocol Relating to an Amendment to the Convention on International Civil Aviation [articles 48 (a), 49 (e) and 61], signed at Montreal on 12 December 1956; there are currently 187 Contracting States to the Convention.

206 Part I, Chapter III, article 17.

207 Implementation of resolution A.600(15) – IMO ship identification number scheme, International Maritime Organization, Circular letter No.1886/Rev.3, 11 December 2006.

208 Implementation of IMO Unique Company and Registered Owner Identification Number Scheme (resolution MSC.160(78)), International Maritime Organization, Circular letter No.2554/Rev.1, 7 February 2007.

209 Countries are invited to register ships engaged in domestic voyage as well.

210 However, fishing vessels might not be registered in this standard way.

C. Possibilities for improving the international measurement of trade in ships and aircraft

23.9. *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 registers (including their law of the flag etc.) and 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.²¹¹ Further, countries need to obtain the information that is needed for the statistical recording of the trade in ships and aircraft, in particular information on the change of economic ownership. Relevant information could be available from accounts of companies and from the review of leasing contracts. However, the possibility to review leasing contracts or for example, agreements on the management and operation of ships and aircraft to determine economic ownership appears not to be used by countries at this time.

23.10. *Need for reliable criteria to identify change of ownership.* Countries should establish reliable criteria for the identification of change of economic ownership of ships and aircraft and inform about them in their metadata. On national level such criteria should be established in cooperation with national accounts and balance of payment compilers. However, in order to achieve uniform treatment of transactions, international comparability of data, to allow data exchange and to minimize global asymmetries an international approach and agreement on such criteria is required. Reliable criteria can be established in the form of a list on different types of leasing contracts and agreements on the operations of the ships and aircraft which are to be analyzed in respect to whether those constitute 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 the management of the vessel are relevant.

23.11. *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 to improve 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 done by Eurostat can assist countries in this task.²¹²

211 In the case of ships the flag administrations (national registers) are recommended to establish a regular and standardized electronic data exchange procedure with LRF on a fleet basis which includes data 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).

212 Methodological questions from Member States relating to the trade in ships and aircraft, Eurostat, Internal document, 28 November 2011.

D. Leasing of ships and aircraft

23.13. *Financial and operating.* 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. Under a financial lease, the legal owner is shown as issuing a loan to the lessee, with which the lessee acquires the asset. 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. (2008 SNA, paras. 17.301-17.309).

23.14. *Financial leasing.* An indicator of a financial lease is the responsibility of the economic owner to provide any necessary repair and maintenance of the asset. 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. 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 (one year or more) or operating (less than one year).²¹³ However, the duration of the lease does not determine whether the lease is to be regarded as an operating or financial lease. 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. The allocation of risks and rewards associated with the use of an asset is the ultimate criteria for deciding whether a lease is to be considered financial (and the good to be included in trade statistics) or operational (2008 SNA, paras. 17.301-17.309).

23.15. *Examples of financial and operational leasing.* Only in the case of financial leasing 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 puts the aircraft on its own air operator’s certificate (AOC)²¹⁴ and provides the aircraft registration. Based on these characteristics a “dry” lease would usually be a financial lease, however, a “dry” lease can also be structured 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 go from one month to usually one to two years. Everything less than one month can be considered as ad-hoc charter.

23.16. *Sale and lease-back.* Another frequent leasing agreement for aircraft is sale and lease-back. Under this agreement an airline would sell an aircraft to a financial investor under the agreement to rent it back immediately. Most of times the sale and lease-back agreement would amount to an operating lease which means the initial sale would have to be recorded as trade transaction if taking place between a resident and non-resident. However, there might be also

213 IMTS 2010, para. 1.28.

214 Air operator's certificate (AOC) is the approval granted from a national aviation authority (NAA) to an aircraft operator to allow it to use 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 (Source: Wikipedia).

cases in which the leasing agreement that follows the sale has to be viewed as financial lease and hence no sale or goods transaction is to be recorded as the seller only gives up his legal but not his economic ownership (see BPM6, para. 5.57 which provides examples of situations that would normally lead to a lease being classified as a financial lease).

E. Country experiences in the compilation of the trade in ships and aircraft

23.17. *Compilation of aircraft – example provided by Morocco.* Information related to the importation of airplanes and their equipment is collected from the Moroccan customs services (the Office of Exchange) and from the main airline company in Morocco. The Office of Exchange collects customs declarations (Single Declaration of Goods (DUM)) for all the transactions related to the importation of planes. These statements include the following: the customs office, the customs regime, the year, the declaration number, the number of articles, the date of recording, the date of reception, the centre and the trade registry of the merchant, corporate name, the country of origin, the country of provenance, the currency and the value in currency, the total value, the total gross weight, the total net weight, HS code, the net weight of a unit, the value of a unit, supplementary unit, code of the supplementary unit. At the same time, these data are cross-checked with information contained in reports transmitted by the aforementioned Moroccan airline to the Department of Foreign Trade Statistics of the Office of Exchange for Balance of payments purposes. These reports specify the nature and the transaction (importation) financing modalities. In this respect, it should be added that aforementioned company sometimes uses leasing for its acquisitions of planes. Only planes subject to leasing contracts of one year and longer are considered as having changed ownership and recorded as trade transaction.

23.18. *The Italian and the Norwegian experiences in the compilation of external trade in ships and aircraft.* The Italian experience in the compilation of external trade in ships and aircrafts is presented in Annex 23.A. The background, methodology and data sources are explained and conclusions as well as two illustrative examples are provided. Annex 23. B. provides the Norwegian experience in the compilation of information on the trade in ships.

Annex 23.A. Experience of Italy in the compilation of external trade in ships and aircrafts

23.A.1. *Background.* In 2010, European legislation took on board UN directives, concerning the use of “economic ownership” as the key concept to define external trade of vessels and aircrafts. In order to fulfill the new legal framework, Italy put in place an *ad-hoc* procedure to determine the best classification and measure of the external trade for this kind of goods.

23.A.2. *Methodology.* The first assumption made by Italy to implement this new definition concerns the adoption of the economic concept of *Operator* as a reasonably good proxy to identify 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, this company may also be responsible for purchasing decisions on bunkers and port services”.
- Air operator means a natural person residing in a Member State or a legal unit established in a Member State using one or more aircraft in accordance with the regulations applicable in that Member State, or a Community air carrier as defined in Community legislation (Council Regulation (EEC) No 3922/91).

23.A.3. *Partner country identification.* The partner country is the place where the operator is established. This approach may present some flaws, but for most of the cases it proved to be the best proxy available. The assumption of the operator as a good proxy for the new concept of economic ownership 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 in 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 (i.e., different managements of vessels/aircraft registers, completeness of data source). Consequently, a set of different data sources was indentified: standard Customs data, the Fairplay World Register²¹⁵ of ships and, where possible, multilateral cooperation and exchange of information between partner countries. Finally, a case-study approach is used, in order to optimally exploit the integration of all the available information.

23.A.5. *Conclusions.* The result is twofold: only statically relevant transactions are recorded and problems of over and under estimation, 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 the economic ownership; vice versa, there may be an underestimation when a transaction according to the concept of economic ownership occur without the obligation of 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 mostly useful. It has to be noticed that the above procedure is very remunerative in terms of quality but highly time consuming. Hence, for

215 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. Internet, newspapers).

smaller transactions (in terms of value), only Customs data, Fairplay World Register of ships and possibly direct contacts with the respondents are integrated, while a total case-study is carried out for larger transactions.

23.A.6. *Two illustrative cases.* In the first case, an Italian ship building company sold a super luxury cruise ship to a company established in an *off-shore* 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 Italian foreign trade data, because the seller and the new economic owner were established in the same country. In the second case, an Italian ship building company sold a super luxury cruise ship to a multinational corporation established in the United States. However, the operator of the asset was a company belonging to the same corporation established in the United Kingdom. Hence a transaction between Italy and the United Kingdom was recorded. In both this examples, all the above mentioned sources were crucial in order to make a decision.

Annex 23.B. Experience of Norway in the compilation of external trade in ships and aircraft

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 the Customs. Concerning ships estimates based on change of ownership are used as an alternative. Statistics Norway regularly receives information from the Norwegian shipping registers (NIS and NOR) about new registrations, cancelations and other changes in the registers. Based on this information a letter and a form are sent to whom the registered owner, asking for additional information. For exports (sale of ships) it is asked for identification of the former owner, name of the new owner, home country and new flag state, date of change of ownership, the type of ship, gross tons and the actual price. For imports (purchase of ships) it is asked for the name of the previous owner, home country, previous flag state, date of change of ownership, the type of ship, gross tons and lastly, the actual price. 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 get information on when a leasing agreement is 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 judgment 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 (1 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 not registered as trade in goods but as trade in services.

Box 23.B.1

Differentiating between operating and financial leasing

Operating and financial leasing represents two different forms of ownership. When a lessor owns the equipment and pays for all necessary investments, this is called an operating lease. 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% of its value. In operating leases therefore, the value of the equipment is held 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 to 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 the overall financial implications. Operating leasing also provides external invoice control. The lessor, who owns the equipment, pays all accounts and checks that it is in accordance with the agreements signed. The lessee simply receives periodic invoices for the lease.

23.B.3. *Data Compilation.* The trade of ship data, including transport and procedure codes are manually registered in Statistics Norway's general trade data base. 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 Norwegian ships 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. *Norwegian ships under foreign flag.* Regarding the issue of Norwegian ships under foreign flag, Statistics Norway used to depend on information from Lloyds (LR Fairplay – electronic data). However, this has been discontinued considering the costs and benefits of subscribing to the monthly updates. This means that new effective sources are sought-after. Equasis (<http://www.equasis.org/EquasisWeb/public/HomePage>) is a free source that might be used. Statistics Norway is also considering establishing a small annual survey of large shipping companies in order to get an alternative estimate of the magnitude of this activity. This work is not yet concluded.

Chapter 24 Other special categories of goods and compilation for national accounts and balance of payment purposes

24.1. *Introduction.* This chapter is intended to briefly describe the characteristics and ways how to measure 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 and balance of payment compilers. Further, it discusses how IMTS and BOP compilers could work together in capturing the trade in these goods. The different recording in IMTS and balance of payments of certain categories of goods or transactions are described.²¹⁶ This chapter is complementary to chapter 19 which focuses on the scope of IMTS in general terms and to chapters 20 to 23, which cover specific categories of goods. It adds a new dimension as it systematically discusses the relationship between the compilation for merchandise trade and national accounts/balance of payment purposes. However, where applicable, this relationship is also discussed in the other chapters of Part IV of the Manual (see in particular chapter 20 on goods for processing).

A. Goods to be recorded similarly in IMTS and BPM6/NA

24.2. *Goods and services.* The identification and compilation of trade in certain categories of goods poses similar or related challenges for compilers of merchandise trade and balance of payments / national accounts statistics. This 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., the distinction of financial and operating leasing) and the use of additional data sources. Often transaction not included under goods trade need to be included under services trade, meaning BPM6 compilers would be interested in 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.

Box 24.1

Definition of goods for the purpose of IMTS 2010 (IMTS 2010, para. 1.5)

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 physically²¹⁷ (see IMTS 2010, annex A, paras. A.2-A.4)

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 and BPM6 (IMTS 2010, paras. 1.16 and 1.49), while goods below the threshold have to be recorded as part of travel

²¹⁶ For a detailed description of the conceptual differences between the recommendations for IMTS (IMTS 2010) and the and 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.

²¹⁷ See 2008 SNA, paras. 6.15 and 6.22.

services (Manual on Statistics of International Trade in Services (MSITS) 2010);

24.4. *Media, whether or not recorded.* Media whether or not recorded is recommended to be included in IMTS, 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 (see IMTS 2010, para. 1.18). 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 3.1). 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 license for perpetual use (BPM6, paras. 10.17(c) and 10.143-10.144) (see IMTS 2010, Annex F, para. F.5).

24.5. *Goods under financial and operating leasing.* 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 from an economic point of view can be considered as the de facto owner.²¹⁸ Goods under financial lease should be included in international merchandise trade statistics. An operating lease is any lease which does not have the above characteristics. Goods under operating lease should be excluded from international merchandise trade statistics (see IMTS 2010, para.1.51). In practice, it may be difficult to differentiate between these two types of leases.²¹⁹ Therefore, in some cases, the duration of the lease can be used as an indication of whether the lease is financial (one year or more) or operating (less than one year). The issue of differentiating goods under financial leases and operating leases is described in chapter 23 for ships and aircraft as leasing transactions for these categories of goods, in particular for aircraft, are very common.

24.6. *Fish catch, minerals from the seabed and salvage.* 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; 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 payment always included these goods and BOP compilers might have appropriate compilation and estimation methods in place.

Box 24.2

Example – Compilation of data on fish caught by Norwegian vessels outside the Norwegian custom territory and landed in national ports of other countries

Fish caught by Norwegian vessels outside the Norwegian custom territory and landed in ports of other countries is not declared at the Norwegian Customs. However, the Ministry of Fisheries and Coastal Affairs administers a

218 See IMTS 2010, annex A, para. A.11.

219 See also BPM6, para, 5.57.

system of fish export taxes which requires registration of all catches, even those caught outside the Norwegian custom territory;

The Directorate of Fisheries is responsible for controlling the fish exports and making sure that the fishing vessels comply with the rules. Fishing vessels have to report to the Fishermen's Sales Organisation Council, which again report to the Directorate of Fisheries.

The Customs is responsible for collecting the tax but do not have all information necessary to produce trade statistics. Thus, Statistics Norway has made an agreement with the Directorate of Fisheries to receive a monthly report covering all export of fish caught outside Norwegian territory and landed abroad. The data include information about the date of landing, landing port and country, the type of fish, weight and value. The data are received two months after the month of landing. A minor control of data quality is executed by Statistics Norway.

24.7. *Waste and scrap.* 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 (see also IMTS 2010, paras. 1.38 and 1.58). It is recognized that data collection under this item may be challenging since, for example, the value may not be easily available when entering/ 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 environmental transactions (MSITS 2010, paras. 3.245 and 3.298).

24.8. *Goods for repair or maintenance* are excluded from trade in goods and to be recorded separately (IMTS 2010, para. 1.57) 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 to differentiate these goods from goods for processing (see chapter 19 and 20 for details);

24.9. *Additional categories of particular relevance of merchandise trade and balance of payment/national accounts compilers.* Balance of payments compilers have a strong interest in making sure 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, 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 the balance of payment statistics.

24.10. *Goods bundled with services.* 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 an valuation question. 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, except for the services that are included according to the FOB- and CIF-type valuation of goods. However, in practice this might be difficult for certain goods such a media (see IMTS 2010, para. 1.18). In practice, goods bundled with services might be identified

through the use of unit values.

B. Goods to be recorded differently in IMTS and BPM6/NA

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.* 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 (see IMTS 2010, Annex F, para. F.4 for details). Chapters 20 and 21 discuss the possible identification of goods for processing and the trade between related parties in IMTS.

24.13. *Returned goods.* If exported goods are subsequently returned, they should be included in imports and identified as re-imports when they are returned. Similarly, goods imported and subsequently returned should be included in exports and identified as re-exports when they are returned.²²⁰ (IMTS 2010, para. 1.23) 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 to allow them to void the initial transactions in their recording as required by BPM6.

24.14. *Migrants' effects.* Migrants' effects are to be included in IMTS if they are of a significant scale, while they should be excluded from trade on BPM6 basis as no change of ownership takes place. The exclusion of this transaction in BPM6 would be greatly facilitated if those 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.* These transactions (which may include legal as well as illegal goods)²²¹ are recommended to be excluded from IMTS but to be separately recorded (see IMTS 2010, para. 1.59). 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 with BOP compilers should work together to assess the amount of smuggled goods, e.g., BOP compilers might have indication from their surveys that travelers 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* are recommended to be excluded from IMTS of the importing country but to be separately recorded (see IMTS 2010, para. 1.60). IMTS compilers should provide information on this transactions to BOP compilers to support the proper recording of this transaction in the balance of payments.

24.17. *Goods imported for construction projects by non-resident enterprises,* where these

220 There are different cases of returned goods, such as goods returned due to poor quality or goods on consignment (see para. 1.17 above) that are not sold and returned.

221 The illegal entry or exit from the economic territory may refer to both to legal and illegal goods; i.e., it is not necessarily the goods themselves, but they way they enter or leave the economic territory, which is illegal.

operations are not sufficiently substantial to constitute a branch of the enterprise, are not recorded as trade in goods in BPM6 (BPM6, para. 10.22(d)) but in IMTS are recorded as exports and imports (see IMTS 2010, Annex F, para. F.10). It would be useful for BPM6 compilers if those goods would be specifically identified in the statistical recording of the customs transactions.

24.18. *Goods transferred from or to a buffer stock organization* are recommended to be included in IMTS (see IMTS 2010, para. 1.27). 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)) (see IMTS 2010, Annex F, para. F.11).

C. Common metadata to be provided by IMTS and BOP 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 payment basis (see IMTS 2010, Annex F, table F as possible example). It is advised that this table be accompanied by information on the recording of the relevant transactions.

24.20. *Development of a reconciliation table - Cooperation between Balance of Payments Statistics and Foreign Trade Statistics in the EU.*²²² On an initiative of Eurostat a task force “Balance of Payments/Foreign Trade Statistics (TF BoP/FTS)” was set up consisting of representatives of EU Member States, each with representatives from BoP Statistics and FTS. The reason for the establishment of the task force was the fact that foreign trade statistics delivers data to balance of payment statistics, which need to be conceptually adjusted. In light of this, one goal was the formulation of so called reconciliation tables which should enable all EU member states to make the necessary adjustments to the foreign trade data to fit the system of balance of payments statistics using EU consistent methods and practices.

Box 24.3

Development of the reconciliation table in the EU

The methodological and conceptual differences of the two systems in the area of cross-border trade in goods were identified. In particular:

- comparison of the fundamental methodological approaches to foreign trade statistics (to record all goods which add or subtract from the stock of material resources of a country by entering or leaving its economic territory) and balance of payments statistics (to record the change of ownership between residents and non-residents);
- any differences between the EU concept and national concept;
- different evaluation methods (cif/fob or fob/fob; calculation of conversion factors for switching between both concepts)
- compilation of processing trade, repairs and maintenance;
- treatment of specific goods and movements (e.g. change of economic ownership for vessels and aircrafts).

Furthermore, specific compilation problems (e.g. impacts of changes in customs law) were discussed. A model of the reconciliation table developed by the task force. It is not provided in this Manual since it is very complex and aligned with the specific situation in the EU

222 Description provided by Germany.

Part V: Metadata and dissemination

Chapter 25 Metadata

25.1. *Introduction.* This chapter is based on IMTS 2010, chapter 9, on data quality and metadata. It describes all the information about the trade data which 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, namely at the overall level indicating what the coverage of the trade statistics is, and how data are collected and processed; at the next levels information can be given about the main data variables, such as commodity classification, country nomenclature and country coverage, or valuation, and on specific trade flows. This chapter provides advice and examples on how best to present and disseminate the metadata.

A. Basic concepts

25.2. *Definition and role of metadata.* Metadata are “data about data” that 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), 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, par. 9.20). Metadata are not only important for users, but 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 datasets.²²³ They can be thought of as the ‘labels’ that need to be associated to each data item in order for it to have a 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 includes 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”.²²⁴ 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 for sampling framework in case of survey-based data, description of data validation and editing techniques, etc.), and (c) information describing the various quality dimensions of the resulting international

223 See BIS, ECB, EUROSTAT, IMF, OECD, UN, and the World Bank (2009), *SDMX content-oriented guidelines*, Annex 4: Metadata common vocabulary

224 *Ibid.*, p.6

merchandise trade statistics (e.g., relevance, accuracy, timeliness, methodological soundness, coherence, and accessibility).²²⁵

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 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 which 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 a good practice for compilers to closely cooperate with the specific units responsible for ensuring within the national statistical system that metadata is produced, that it adheres to a standard format, and that it is properly maintained and updated.

B. Presentation and dissemination of metadata

25.7. *Layered presentation of metadata.* Compilers of international merchandise trade statistics must make sufficient metadata available to enable the least and the most sophisticated users to readily assess data and their quality (see IMTS 2010, para. 9.22). It is a good practice to structure metadata in layers of incremental detail while providing clear links between high-level and specific metadata concepts. Such layered presentation allows meeting the needs of diverse groups of users who may have different levels of statistical expertise.²²⁶

25.8. *Presentation of structural and reference metadata.* IMTS 2010, para. 9.22, recommends that structural metadata be presented as an integral part of the international merchandise trade statistics database in a way that it can be extracted together with any data item and published as part of statistical tables; on the other hand, reference metadata can be presented as 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.

25.9. *Use of standardized metadata concepts.* It is recommended that the dissemination of metadata related to international merchandise trade statistics be done 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 a good practice that compilers of international merchandise trade statistics structure and present their metadata using standardized concepts that are relevant across statistical domains (e.g., by adopting cross-domain concepts from the SDMX framework or OECD Glossary of Statistical Terms). The aim should be to promote harmonization of statistical information and their 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.

225 *Ibid.*, Annex 4: Metadata common vocabulary

226 See OECD, *Data and metadata reporting and presentation handbook*, 2007, p. 22.

25.10. *Linking data and metadata.* As metadata are generated and processed during every step of the compilation process, there is a strong requirement 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,²²⁷ by implementing metadata-driven systems and management systems for metadata along the various stages of the statistical production process. There are several information model specifications that can contribute to achieve this goal (most notably SDMX and DDI²²⁸), which are designed to perform different functions but can be used together in the same system, or complement each other in the compilation and exchange of data and metadata.²²⁹

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 dataset. The Euro-SDMX registry is an example of a metadata registry (which implements the SDMX registry specifications)²³⁰. It is a good practice that compilers of international merchandise trade statistics put special emphasis on the development, maintenance and dissemination of metadata registries at the national and international level in order to improve the harmonization, standardization, use, re-use and interchange of their metadata.²³¹

25.12. *Access to metadata.* Compilers 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.²³²

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 which reported the given data set.
- (b) *Reference period:* Identification of the specific month, quarter, year, etc.

227 *Ibid.*

228 The Data Documentation Initiative (DDI) is an effort to create an international standard for describing data from the social, behavioral, and economic sciences.

229 See, e.g., A. Gregory, P. Heus and J. Ryssevik (2009), "Metadata", Working Paper No. 57, German Council for Social and Economic Data (RatSWD).

230 See par. 9.29 on the Euro SDMX Metadata Structure (ESMs). Eurostat's Metadata Server is available at http://ec.europa.eu/eurostat/ramon/index.cfm?TargetUrl=DSP_PUB_WELC.

231 The ISO/IEC 11179-1 International Standard provides a more general discussion of metadata registries.

232 See OECD, *Data and metadata reporting and presentation handbook*, 2007, p. 22.

- (c) *Trade flow*: Whether the data refers 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.²³³
- (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., 2- or 3-alpha ISO country codes; UN Standard Country or Area Codes for Statistical Use²³⁴, etc.), including information on the country-composition of geographical regions.
- (i) *Currency unit*: Identification of the currency unit (e.g., national currency, US dollars, etc.) in which trade values are expressed
- (j) *Mode of transport*
- (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*: Whether trade values are expressed in FOB or CIF terms.
- (n) *Custom 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)

233 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 (e.g., such titles as “others”) or allude to other headings and sub-headings as well as to sections, chapters or headings notes. While not as precise as the legal text, stand-alone descriptors provide an easily accessible and concise indication of the scope of the HS codes.

234 See <http://unstats.un.org/unsd/methods/m49/m49alpha.htm>

(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 of United States.* Metadata on the international merchandise trade statistics of the United States is made available on-line at the United States Bureau of the Census website in a “Guide to Foreign Trade Statistics.”²³⁵ This resource provides a detailed description of the United States Foreign Trade Statistical Programme, 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 programme.

25.16. *Italy.* At ISTAT, the main foreign trade statistics dissemination tool is the web-based system Coeweb, which allows free of charge downloads, a wide range of standardised and customised statistical tables and a special section for metadata. In particular great efforts are made to enlarge accessibility of metadata, enriching the sections devoted to users’ support in issues like commodity and geographic classifications (including correlation tables which are updated yearly), methodologies related to specific issues (such as electricity and gas), documentation on regulations and national law. An English version is available for a lot of issues. Methodological warnings are presented as footnotes of downloadable tables by dynamic notes (about 5.000 notes) warning users of possible caveats in the interpretation of data and inviting them to access more in-depth information at the specific metadata section

25.17. *Brazil.* Metadata pertaining to Brazil’s international merchandise trade statistics are available in Portuguese, English and Spanish through the on-line AliceWeb2 system (<http://aliceweb2.mdic.gov.br/>). The concepts and definitions of the main variables are as follows:

(a) *Exports* - corresponds to goods shipped to the outside without return;

(b) *Imports* - corresponds to the entry of goods originating from outside, without return

235 See www.census.gov/foreign-trade/guide/sec2.html

(c) *Commodity* - for the purpose of the classification of goods, Brazil has used since 1996, the common classification of Mercosur (NCM), also used by other countries of the block (Argentina, Paraguay and Uruguay), based on the Harmonized System commodity description and coding.

(d) *Country of destination (for exports)* - For the purpose of dissemination of export statistics, 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.

(e) *Country of origin (for imports)* - For the purpose of disseminating statistics on imports, is the country where they were grown agricultural products, minerals extracted or produced the goods manufactured in whole or in part. In the latter case, the country of origin is that when it was completed the last phase of processing the product adopts its final form (as a concept defined by the Convention of Kyoto).

(f) *Economic bloc* - the countries are grouped by economic blocks following the formation of geo-economics 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, 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 latter case, the state is the one that has completed the last stage of manufacturing process in which the product takes its final form (the concept of origin). In the case of imports, state is defined as the state where is 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 where 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 takes the following forms 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 is effective, or the last place where the good leaves the country. In the case of imports, it is the port or airport where the goods are unloaded or the first enable place where the goods enter the country.

Box 25.1

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. This is particularly interesting to Mexico, which is a federal country, because 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 Mexican National Institute of Statistics and Geography (INEGI) has started developing the infrastructure required to make data and structural metadata available through web services. In accomplishing this task, tools developed by Eurostat as well as the support of OECD have been very helpful.

The data (and related metadata) for a given statistical domain are structured in SDMX according to a "Data Structure Definition" (DSD). The DSD 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 of 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 to receive feedback from OECD. The DSD for this data flow will include dimensions such as frequency, reference country, trade flow (exports, imports, etc.), commodity code (from HS2007 classification), valuation (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. INEGI's policy is to use both standards as linchpins for the metadata of the national statistical projects, thus strengthening the National System of Statistical and Geographic Information.

Chapter 26 Dissemination

26.1. *Introduction.* This chapter is based on IMTS 2010, chapter 10, on dissemination. It describes the factors to take into consideration when establishing the dissemination policy for international merchandise trade statistics at the responsible national agency. These factors include: timeliness-accuracy tradeoff; statistical confidentiality; revision policies; cooperation with government entities, compilers of balance of payments and national accounts, users, and mass media; clarification of types of data issued, and the use of information technology to improve the data dissemination. The last section of this chapter also covers issues related to a combined dissemination of statistics on international trade in goods and services.

A. Role of data and metadata dissemination

26.2. *Importance of dissemination.* 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 the 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 *UN Fundamental Principles of Official Statistics* which, inter alia, state that:²³⁶

- (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 honor 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”; and
- (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 datasets;
- (d) Statistical confidentiality;
- (e) Revision policy;

²³⁶ The Principles are available at <http://unstats.un.org/unsd/methods/statorg/FP-English.htm>

- (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 re-imports), detailed by 6-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 applicable statistical value and quantity units and by mode of transport. Table 26.1 lists a suggested set of data and metadata items to be disseminated, as well as their possible values.

Table 26.1
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 “Re-Imports”
Commodity or commodity aggregate	6-digit HS commodity code, 4-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”, “US Dollar”, 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)*	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

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

26.6. *Dissemination of new items recommended or encouraged by IMTS 2010.* It is a good practice to disseminate newly recommended and encouraged data items (e.g., imports valued FOB, in addition to imports valued CIF) in a way that is not confusing to users. The two tables provided below illustrate dissemination requirements for (a) aggregate trade flows by partner

country and mode of transport (Table 26.2), and (b) detailed trade data in accordance with the IMTS 2010 recommendations (R) and encouragements (E) (Table 26.3).

Table 26.2

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
Re-imports	R		R	R	R	E	R	R

Table 26.3

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	ValueCIF	Currency	Quantity (net weight)	Supplementary quantity	Supplementary quantity unit	Customs procedure code
Exports	R	R	R		E	R	R		R	R	R	R	E
Re-exports	R	R	R		E	R	R		R	R	R	R	E
Imports	R	R		R	R	R	E	R	R	R	R	R	E
Re-imports	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 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 further recommends that (a) countries announce in advance the precise dates at which those statistics will be released and revised and (b) 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 a good practice to make clear the dates on which the provisional estimates and the final data (no more subject to regular revision)

will become available. Also, it is a good practice to inform users about availability of such calendar using all appropriate means of communication.

26.9. *Dealing with the timeliness versus reliability and accuracy trade-off.* 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 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, the extent and timing of data revisions of the major data source, and modes of data dissemination. It is a good practice to explicitly discuss this trade-off with major user groups, to reach an understanding 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 is a 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. Such estimates, by their nature, would be based on relatively limited data content and are to be replaced by more accurate, but less timely figures at a later date. However, compilers and users must be aware of the tradeoff between quality (size of revisions) and timeliness - e.g., it is generally not a good practice to publish frequently large revisions; and quality aspects need to be taken into account when deciding on the frequency of publication.

3. Coherence between disseminated datasets

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 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 eleven months) in order to provide undistorted data for all months and quarters. It is a good practice to provide in reference metadata an appropriate explanation in this respect to assist users in the correct interpretation and use of the data. It is also a 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 vs. user needs.* Statistical confidentiality refers to the protection of information of individual statistical units and has to be differentiated from other forms of confidentiality under which information is not disseminated due to other considerations, for example due to national security concerns. It is a good practice by compilers of international merchandise trade statistics to always strive for a full coverage of all trade transactions which are in scope of IMTS while applying appropriate methods to keep certain information confidential. IMTS 2010 recognizes the necessity of both statistical confidentiality and of balancing it against the need 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 amount of goods subject to confidentiality.

26.13. *Development and implementation of confidentiality rules.* IMTS 2010 recommends to apply passive confidentiality, *i.e.*, to treat data as confidential only when the trader requests so and the statistical authority finds the request justified based on the confidentiality rules, as much as possible, 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 recommendations on statistical confidentiality 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. Examples of good practices in development and implementation of confidentiality rules are provided in Box 26.1.

Box 26.1

Treatment of confidentiality in Germany

Passive confidentiality in Foreign Trade statistics is regulated by European law*. Importers and exporters submitting Intrastat/customs declarations in Germany can make an application for confidentiality, upon which the Federal Statistical Office examines whether the confidentiality is justified or not. Two criteria are relevant for establishing confidentiality: the maximum number of parties responsible for providing the information (PSI, which are the traders, importers or exporters) and the so-called "p% rule". The first criterion is applicable if there are three or more PSIs involved. The second criterion, or p% rule, involves calculating the difference between total value and 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 National Statistical Office.

The request for confidentiality is granted if the above criteria are met in a majority of the 12 preceding reporting months. In case of doubt, the decision is always made in favour of confidentiality.

"Primary confidentiality" is implemented both by partner countries (with the results of specific or all countries being suppressed, flagged as confidential and summed up under position "confidential countries") and by commodity codes (with the results of specific codes being 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 by results on higher commodity levels or by results on other classifications (e.g. SITC). The aim of finding a suitable counterpart is to protect data but with a minimum loss of information. It's desirable to find a close-by counterpart to a confidential commodity code. The next step is to check, if the counterpart commodity code is fitting for all other classifications used in foreign trade statistics (e.g. SITC, CPA) as suitable "secondary confidentiality".

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.

* Regulation (EC) No 471/2009 Article 10, Regulation (EC) No 638/2004 Article 11.

26.14. *Informing about confidentiality rules.* It is a good practice that all countries develop and publish an overview of their confidentiality rules with respect to international merchandise trade data so that data reporters are assured that their right to confidentiality is guaranteed while data users are informed about certain data limitations, enabling them to use the data more appropriately. It is also a good practice to provide users details on what data areas are affected most by the application of confidentiality rules and 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 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:

- (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, explaining the reasons for the revision and providing 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 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 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 implementation of good revision policy are described in Box 26.2.

Box 26.2 **Revision policy of the Philippines**

The previous month figures are revised to include documents that were submitted late and were not included before the cut -off date, i.e., for export 10 days after the reference month and for imports 25 days after the reference month. The revised month figures are reflected in the next month's Press Release.

Processing, cleaning, and updating of data files to produce final tabulations is done 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.

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, business community, 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 recommends that all users are treated equally and data are disseminated without preference to any national or international user group. To ensure that such treatment is upheld it is a good practice to make all kinds of trade data available to all users at the same predetermined time.

26.19. *Monitoring of data dissemination needs of users.* It is a good practice to systematically monitor changing user needs in order to ensure higher relevance of the compiled data. Such monitoring, as well as subsequent actions taken, should be part of interagency cooperation efforts within the established institutional arrangements. It is a good practice to establish close and long-term relationships with representatives of major user groups in order to identify the most effective ways of data and metadata dissemination. This might be done via standing advisory committees as well as via ad hoc promotional events. National and world statistics days can be used in this connection.

26.20. *Surveys of user satisfaction regarding data dissemination.* In order to ensure the most effective dissemination it is a good practice to conduct user satisfaction surveys. Such surveys might identify user groups which might be given more attention as they might lack certain technical means of accessing data or might need more detailed explanations with respect of how to use data properly. A well designed user satisfaction survey regarding data dissemination would normally 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 continuation of traditional paper publications
- (d) Ways to improve data and metadata presentation;

26.21. *Outreach activities.* It is a good practice to conduct regular outreach activities aiming to help users to better understand data and put them to the most effective use. These include efforts to improve the statistical literacy of users and to prevent misinterpretation within the context of a broad public relations strategy to deepen the general public's understanding of the importance of statistics. As examples, the following outreach activities can be encouraged: conducting seminars focused on specific user groups; offering tutorials and user guides explaining how to find data on the dissemination website; organizing press conferences and including contact information in press releases to assist users in the correct interpretation of the statistics;

participating in annual conferences of user groups, book fairs and other suitable events; launching awareness campaigns, such as a “National Statistics Day/Week/Month”.

26.22. *User support to ensure correct interpretation of data.* While statistics can be acceptably used and interpreted in many different ways, it is important to maintain trust in, and the credibility of, official trade statistics. Hence, a good practice by the responsible statistical agency is to prevent obviously erroneous interpretation of the data, and undertake the necessary corrective actions if such faulty interpretations are detected (for instance, conducting press conferences and press releases, and writing letters to the editors publications where misinterpretations have been detected). A good practice to avoid misinterpretation of data is to place 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 major impact on public policy and public opinion.

7. Formats and means of dissemination

26.23. Both data and metadata can be disseminated in various formats and by various means. IMTS 2010 recommends that countries choose the dissemination format and means of dissemination that best suits their users’ needs. In view of diversity of user groups it is a 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 via on-line databases, with hard copy publications used as reference materials.

26.24. *Redesigning paper publications.* It is a good practice to periodically redesign paper publications in order to make use of the innovative ways of data and metadata presentation and better reflect the 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 particular commodity groups and partners. A better practice is to focus such publications on the main features of a country’s external trade, presenting 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. *Centrality of electronic databases.* IMTS 2010 recommends that the official country trade statistics are made available to users through the electronic databases maintained by the responsible agency. It is a 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) Allows to make queries easily and with a user-friendly interface on the entire database, and to download query results in the commonly used electronic data formats (such as comma-delimited text files) thus reducing the need for personalized handling of most data requests and greatly enhancing efficiency of data dissemination;

Box 26.3

Centrality of electronic databases for data dissemination – The case of Brazil

The System of Analysis of Foreign Trade Statistics, AliceWeb2 (<http://aliceweb2.mdic.gov.br>), is the most important way to disseminate Brazil's foreign trade statistics. It was released in 2001 with the aim to modernize the means of access and the systematic dissemination of statistical data of Brazilian exports and imports. In August 2011, the MDIC / SECEX updated the system, combining the evolution of information technology and experience gained in 10 years since its launch, with the inclusion of new variables and adding periods. Access is free after registration. There are currently over 200,000 registered users from 144 countries. The system is available in Portuguese, English and Spanish.

AliceWeb2 disseminates detailed Brazilian international merchandise trade information up to the eight-digit level of the NCM, by the partner country and economic bloc, and also by state and municipality, port of loading and unloading, and mode of transport. It provides the trade balance by any of the variables of consultation, on a monthly basis, and according to the desired period. The system also enables the generation of files for download in Excel and ASCII formats (txt structured) automatically sent to the e-mail account. The system data are updated monthly, as the released of the trade balance, and is based on data obtained from the Integrated Foreign Trade System (SISCOMEX), system that manages the Brazilian foreign trade. Are available for consultation monthly data and accumulated data since January 1989 (they are about three terabytes of data).

Trade information is expressed in U.S. dollars, on condition of sale FOB (Free on Board), and net kilogram. When the search includes a variable commodity, besides the above information, the amount will appear in the units of the commodity trading unit (statistical unit) and their average prices. The following information is available, both for exports and for imports:

- Goods at all levels of the Harmonized System (2, 4, 6 or 8 digits of the NCM)
- Countries of destination or origin
- Economic blocks of destination or origin
- Member States producers and importers
- Municipalities exporters and importers
- Ports of loading and unloading
- Mode of transport

Others system features are:

- Self filling in the search for commodity codes
- Up to six concurrent periods monthly and / or accumulated
- Basket Products: consultations with several NCM simultaneous
- General Total: monthly series of one or more variables combined
- Trade Balance: the monthly export and import trade, trade flows and general balance or by variables in the same consultation
- Auxiliary tables: all codes / names of the variables used in the system

For further information, contact: aliceweb@mdic.gov.br

26.26. It is also a good practice to use tools of social media as additional tools to reach trade statistics users and in particular journalists.

26.27. Regular data dissemination should satisfy most if not all user needs. However, some users might have special needs which would require quite complex data extraction, which the users 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. The provision of adequate metadata and quality reports on the international merchandise trade statistics are as important as the provision of the statistical data itself. IMTS 2010 takes into account a broad spectrum of metadata requirements and recognizes that different levels of detail of metadata can be considered by countries for the dissemination. In this context IMTS 2010 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 detailed description of the scope, coverage and quality of a data and can be presented separately from data, while structural metadata items are an integral part of statistics database and should be extractable together with any data item (see chapter 25).

26.29. It is a good practice to make reference metadata available to users in a separate document placed on the website of the responsible agency with a link to the data query window, so that users are immediately informed about existence and importance of such metadata. Reference metadata can be made available in separate paper publication as well and used in various outreach activities. It is important that reference metadata are compiled following the recommendations contained in IMTS 2010, para. 9.23. With respect to structural metadata it is a good practice that data query options include all relevant metadata variables and they are extracted by default unless explicitly “unclicked” by the user (e.g., , value data should be extractable with FOB or CIF identification).

26.30. It is often noticed that users often do not use or read the available metadata and that additional efforts are required to raise their awareness. It is a good practice to include explanation of the importance of metadata for correct data interpretation and effective use in all relevant outreach activities. Even if detailed metadata goes unused, the very fact that it is compiled and made available is reassuring for those who wish to see high standards of credibility upheld.

26.31. *Dissemination of trade data to regional, supranational and international organizations.* IMTS 2010 encourages countries to cooperate with these organizations to identify and apply the most efficient ways of dissemination of their trade statistics and related metadata. It is a good practice to review the Statistical Data and Metadata Exchange (SDMX)²³⁷ format for possible use in the exchange and sharing of their data.²³⁸

237 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/>.

238 See recommendation by the United Nations Statistical Commission: Economic and Social Council Official Records 2008 Supplement No. 4 (E/CN.3/2008/34), para. 39/112: Common open standards for the exchange and sharing of data and metadata.

C. Combined presentation of statistics on external trade in goods and services

26.32. *The need for combined presentation of trade data.* Users expect that trade statistics covers trade in both goods and services and are presented to them as a coherent data set. Such presentation of trade data is essential for enabling users to answer such questions as what kinds of goods and services are traded between country A and B, or what sectors of the economy are leading exporters of specific categories of goods or services or which ones are their importers.

26.33. *Need for appropriate metadata and guidance for interpreting combined trade data.* To meet this user expectation it is a good practice that IMTS compilers, in addition to making the IMTS data available in their own right, closely cooperate with compilers of SITS in order to develop a policy of presenting (some) data on merchandise trade and trade in services alongside each other accompanied with appropriate explanation of their scope including conceptual overlaps and numerical assessments of such overlaps. It is good practice to provide guidance, including examples, on how data can (and cannot) be used.

26.34. *Trade data and BOP data.* Trade data on BOP basis is important for the presentation of an overall picture of trade flows on the same conceptual basis. However, such data does 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. Furthermore BOP data are not intended for showing trade by characteristics of traders.

Chapter 27 Other international classifications relevant to trade statistics

27.1. *Introduction.* This chapter describes the Standard International Trade Classification (SITC),²³⁹ the Central Product Classification (CPC)²⁴⁰, the Classification by Broad Economic Categories (BEC)²⁴¹ and the International Standard Industrial Classification of All Economic Activities (ISIC).²⁴² It is based on IMTS 2010, chapter 3, on classifications. In contrast to the Harmonized System (see chapter 13), SITC, CPC and BEC provide alternative groupings of goods which are important for various analytical purposes and are used in trade data dissemination (see chapter 26). ISIC classifies the productive economic activities and is increasingly used in trade data compilation (see chapter 4) and dissemination (see chapter 11 and chapter 26).

A. Standard International Trade Classification, Revision 4

27.2. *Use of SITC for dissemination and analysis.* The history of the SITC is described in IMTS 2010 and is not reproduced here. It should be recalled, however, that in 1999 the Commission confirmed the recognition of SITC as an analytical tool²⁴³ and IMTS 2010 recommended that, “in addition to the HS, countries can 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.* The fourth revision of SITC (SITC, Rev.4) is based on the HS07 classification, but retains the classification scheme of SITC, Rev.3 and classifies goods based on the following considerations:

- (a) the nature of the merchandise and the materials used in its production,
- (b) the processing stage,
- (c) market practices and the uses of the product,
- (d) the importance of the commodity in terms of world trade, as well as
- (e) technological changes.

27.4. SITC, Rev. 4, was prepared by the United Nations in cooperation with a number of interested international organizations and issued in 2006.²⁴⁴ 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

239 The fourth revision of SITC was issued in 2006 and contains a description of its origin and development. See United Nations publication, Sales No. E.06.XVII.10.

240 The latest version of CPC is available at <http://unstats.un.org/unsd/cr/registry/cpc-2.asp>.

241 The fourth revision of BEC was issued in 2003. See United Nations publication, Sales No. E.03.XVII.8.

242 The fourth revision of ISIC was issued in 2008. See United Nations publication, Sales No. E.08.XVII.25.

243 See Official Records of the Economic and Social Council, 1999, Supplement No. 4 (E/1999/24), Chapter II, para. 24 (c).

244 United Nations publication, Sales No.E.06.XVII.10.

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, which 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 sections, divisions and groups. The changes made 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 different 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 the UNSD in 2006, SITC remains an important analytical and dissemination tool for most countries, especially for developed ones (82% of developed and 56% 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, 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 as it can be done electronically using appropriate conversion tables. Currently, the UN Statistics Division 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 high 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 1960s, 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.

Box 27.1

UNCTAD product groups based on SITC Rev.3

In macro-economy 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 economic development of a country which normally starts by exporting mainly primary commodities, then moving up into commodities with higher value-added (manufactured goods). However, for some countries with high percentage of fuels exports in their total trade, it is necessary exclude fuels in the analysis, in order to better monitor real economic development. In addition of those two broad groups, more detailed groups are created due to special analytical interest, such as Iron and Steel (indication of construction activities) or Agricultural raw materials (normally used as intermediate inputs in various industries) or Textile fibres, yarn, fabrics and clothing (important manufactured goods exported by developing economies). Other groups that do not fit with 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. The 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 first release of CPC called The Provisional Central Product Classification, was approved by the Statistical Commission at its twenty-fifth session in 1989²⁴⁵ and published by

245 See Official Records of the Economic and Social Council, 1989, Supplement No. 3 (E/1989/21), paras. 95(b) and (f).

the United Nations in 1991.²⁴⁶ Since that time several revisions of CPC were created and in 2008 CPC, Version 2.0 was completed and approved by the UN Statistical Commission. 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 HS07,²⁴⁷ and aggregate the HS codes into product categories suitable for various types of economic analysis within the national accounts framework. This part 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% of developed and 8% of developing). However, more countries are able to make such data available electronically. As in the case of SITC, the conversion of trade data to CPC does not require significant resources and can be done using appropriate conversion tables. It is advised that country agencies 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 use of CPC*. The analytical value of CPC is being more and more recognized by the 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. The CPA is a product classification whose elements are related to activities as defined by NACE Rev. 2. Each product - be a transportable or a 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 only be established 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. 2²⁴⁸

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)²⁴⁹ 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 System of National Accounts (SNA)²⁵⁰ framework, namely, capital goods, intermediate goods and

246 Provisional Central Product Classification, Statistical Papers Series M, No. 77 (United Nations publication, Sales No. E.91.XVII.7).

247 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>.

248 Detailed description of the CPA are available at the following website: http://epp.eurostat.ec.europa.eu/portal/page/portal/cpa_2008/documents/CPA2008introductoryguidelinesEN.pdf

249 United Nations publication, Sales No.E.71.XVII.12.

250 See Official Records of the Economic and Social Council, Forty-fourth Session, Supplement No. 10 (E/4471), paras. 116 and 118.

consumption goods.²⁵¹ 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, 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

These sections are broken down, as applicable, by other criteria such as primary and processed goods, durable, semi-durable, and non-durable goods, etc.

27.15. The Statistical Commission expected the BEC to serve as a guideline for the development of national classifications of imports according to broad economic categories.²⁵² 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 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.²⁵³

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.²⁵⁴ Over the years several correlation tables between BEC and various revised versions of SITC and the HS were prepared by UN Statistics Division and made publicly available.²⁵⁵ However, BEC's original structure has remained unchanged.

27.17. *National practices in use of BEC.* The UN survey of country practices confirmed that BEC is recognized as an important analytical tool and many countries (41% of developed and 46% of developing) publish trade data in terms of BEC. Many more can make such data available electronically on request. This is a good practice and should be encouraged. A number of countries use BEC for compilation of their national accounts and 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 each country should prepare its customized conversion table between the HS and BEC as the main use of certain products may differ from country to country.

251 See United Nations, A System of National Accounts (United Nations publication, Sales No. E.69.XVII.3), para. 1.50.

252 See Official Records of the Economic and Social Council, Forty-fourth Session, Supplement No. 10 (E/4471), para. 123.

253 See Official Records of the Economic and Social Council, Fiftieth Session, Supplement No. 2 (E/4938), para. 95.

254 Statistical Papers, Series M, No. 34, 1961 (United Nations publication, Sales No. 61.XVII.6).

255 See the UNSD website at <http://unstats.un.org/unsd/cr/registry/regot.asp>

27.18. International practices in use of BEC. The usefulness of BEC is recognized by the UNSD which converts trade data reported by countries in terms of the HS to BEC categories and makes such data available via UN Comtrade. Eurostat also disseminates data according to BEC, and other international organizations make use of BEC as well in their analytical publications.

D. International Standard Industrial Classification of all Economic Activities

27.19. Purpose of ISIC. Unlike the 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. Since the adoption of the original version of ISIC in 1948,²⁵⁶ 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, such as for statistics on national accounts, demography of enterprises, employment and others.

27.21. The original ISIC was revised four times. The third and fourth revisions of ISIC put increased emphasis on harmonization with other activity classifications and product classifications, adding considerable complexity and constraints that did not apply 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 both the economic structure, the statistical practice and needs of the different countries 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 industry”, which would refer to all units classified in ISIC division 31 (Manufacture of furniture), or the “construction industry”, which would refer to all units classified in ISIC section F (Construction). This standardized categorization makes ISIC an important tool for socio-economic statistics that 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 cases²⁵⁷.

²⁵⁶ *Statistical Papers*, No. 4, Lake Success, New York, 31 October 1949.

²⁵⁷ 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

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 structure of the current fourth revision of ISIC was considered and approved by the Statistical Commission at its thirty-seventh session, in March 2006,²⁵⁸ as the internationally accepted standard. 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 the previous version, responding 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 for areas which, for conceptual reasons, do not lend themselves to aggregation within the existing ISIC structure.

levels of the classification. For details, see Department of Economic and Social Affairs, Statistics Division, 2008, Statistical papers (ST/ESA/STAT/SER.M/4/Rev.4), International Standard Industrial Classification of All Economic Activities, Revision 4.

²⁵⁸ See Official Records of the Economic and Social Council, 2006, Supplement No.4 (E/2006/24), chapter I, para. 3, item 37/105 (a).

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.²⁵⁹ Countries may find this correspondence useful when rearranging the trade data compiled in terms of the HS by activity categories.

27.28. The results of the UN survey of country practices show that a significant proportion of countries publish trade data in terms of ISIC (15% developed and 24% developing). Usually such data are obtained by the transformation of HS data into ISIC using a conversion table. While such 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, allocation of trade flows which are 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 gives preference to the approach, in which countries obtain additional information to identify the main economic activity of traders (for instance, with the help of enterprise surveys or by linking customs records to other sources of information via business registers) and perform the appropriate aggregations on the original data at the micro-level. For details on the use of ISIC in trade data collection via the enterprise surveys see chapter 4.

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 enable a continuous time series to be maintained when various versions of a given classification are used or data to be expressed in terms of another classification. However, if the scope of a heading of one classification is split between 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 a split correspondence by an approximate, but one-to-one correspondence. When this

²⁵⁹ 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>.

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 done using the correspondence table. Examples of such a straightforward conversion are the conversion of HS88 data into SITC, Rev.3 data and HS07 data into SITC, Rev.4 data. On the contrary, 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 the 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 that no meaningful one-to-one correspondence is possible at that level. In such a case, a correspondence can only be established between basic headings of one version and the higher level headings of the other. The agency responsible should study what approach should be adopted to find a reasonable balance between the requirement of data series continuity and data comparability.

27.32. *Uses of the correlations and conversions.* 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); and

(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. *Metadata on accuracy and comparability of trade data across classifications.* To make users aware of the methodology adopted for data conversion it is a good practice 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 which might diminish data comparability, so that the users will make their own assessment of whether such data is suitable for their purposes.

27.34. *Policy regarding preparation and dissemination of correlation and conversion tables.* The WCO produced the first version of the HS in 1988 (HS88). At the same time it issued a publication entitled *Correlation Tables between the Harmonized System and the 1978 version of the CCCN*, to link the HS with the Customs Co-operation Council Nomenclature (CCCN).²⁶⁰ This was a two-way correlation, that is, from HS to CCCN, and from CCCN to HS. When the HS is revised, the WCO issues new correlations between the new and preceding versions of the HS and makes them publicly available.²⁶¹

27.35. *Correlation and conversion tables available from UNSD.* The UNSD has created correlation and conversion tables between various versions of the HS, SITC and BEC, so that it

260 This text was initially known as the “Brussels (Tariff) Nomenclature” (BTN), but in 1974 it was renamed the “Customs Co-operation Council Nomenclature” (CCCN), to avoid any confusion as to the international organization responsible.

261 See WCO website at www.wcoomd.org/home_hsoverviewboxes.htm.

could maintain its time-series data on trade.²⁶² UNSD also maintains correlations and conversions between HS, CPC and ISIC.²⁶³ If compilers need to convert their data from one classification to another it is a good practise 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 quite detailed, with criteria similar to the ones applied in the HS), compilers are advised to develop a correspondence table between the non-HS classification and the HS, and to make it available to the interested users.

262 UNSD converts data based on the most detailed level of the applicable classifications.

263 See UNSD website at <http://unstats.un.org/unsd/cr/registry/regot.asp>

**Part VI: External trade indices and seasonally
adjusted data**

Chapter 28 External trade indices

28.1. *Introduction.* This chapter aims to provide guidance on the compilation of unit value and price indices of external trade, which are briefly discussed in IMTS 2010, chapter 11. It provides information for assessing the main advantages and disadvantages of the various approaches for their compilation, as well as their potential complementarities, both from the statistical point of view as well as 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, and require information on prices and volumes as well. The information on the development of prices and volumes is generally presented in the form of indices. In IMTS 2010, 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 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. Also, business analysts and economists use international trade indices for analysis and research about such questions as the causes and 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 purposes for which they are used, and national statistical offices need to strike a balance between the various demands from different types of users. For some uses, no detailed information on the price changes of individual commodities is required; for other purposes, the usefulness of the price statistics depends entirely on the commodity breakdown that can be made available. For instance, tariff-policy decision making and the analysis of the effects of trade on employment and productivity by industry often need highly disaggregated prices. On the other hand, macroeconomic studies focused on a country's terms of trade and its balance of payments need 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 SUTs in constant prices. Also, exports and imports in constant prices are a

necessary input into general macro-economic forecasting and model-building, as well for analyses of balance of payments.

28.6. *Microeconomic uses.* Disaggregated measures of price change are especially relevant for uses which have to do with 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 a point 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 competition against quality-based competition. The need for detailed answers to questions like these cannot be satisfied through traditional price and value indices at the macroeconomic level.

28.7. *Divergent objectives of users of imports and exports 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.²⁶⁴ s. Although price indices are generally preferred on methodological grounds, 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, or using 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

264 For detailed information on external trade price indices and unit values, see Export and Import Price Index Manual: Theory and Practice, International Monetary Fund, 2009, available electronically on the IMF website <http://www.imf.org/external/np/sta/xipim/pdf/xipim.pdf>.

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 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 to control ex-ante for potential biases and variability due to non-price factors, including changes in the mix of products in the market basket or changes to the quality of the items being priced. Also, by directly surveying exporting and importing firms, the risk of erroneous data (e.g., due to misclassification) can be mitigated, granted there are appropriate communication channels to provide 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 to carry 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 to firms aimed at controlling for important price determining characteristics in each individual transaction are normally not feasible (e.g., terms of sale, timing of contract, and specific model attributes). This implies that an increase/decrease in unit values based on averaging values and quantities from customs records, may be due to unidentifiable non-price effects that impair the measurement of pure price changes. This is especially the case for complex products like electronic appliances (computers, cell phones, 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 often are due to errors in filling 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 for very fine levels of detail (say, 8 HS digit level).²⁶⁵

265 Note that large variance of unit values can suggest erroneous declarations as well as heterogeneity in the commodity composition of individual HS codes.

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.

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, survey frames based on the statistical business registries normally identify only businesses that engage in regular export and import operations, which is 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 and burden constraints. 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 which is a difficult task in itself.

28.16. *Tradeoff between availability and comparability in specifications of price surveys.* Although in principle it is possible to define in a very detailed way the characteristics of the products to be priced through surveys, in practice there is a tradeoff 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. This 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 in order to compute price relatives for consecutive periods of time.

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 produce price indices at higher levels of aggregation. In the case of unit value indices based on customs records, elementary price indices are simply unit value ratios in which both the numerator and the denominator are 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 of 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.²⁶⁶ 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 of constant revenue shares, which is equivalent to assuming that quantities fall as relative prices increase.²⁶⁷

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, 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

$$P_{L_o} \equiv \sum_{i=1}^n (p_i^t / p_i^0) s_i^{0b}, \text{ where}$$

(p_i^t, q_i^t) represents a price-quantity pair for commodity $i = 1, \dots, n$ in period t , and $s_i^{0b} \equiv \frac{p_i^0 q_i^b}{\sum_{j=1}^n p_j^0 q_j^b}$

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 $b = 0$, and the latter by choosing $b = t$. These type of indices are easy to explain to users, and are compiled by many statistical offices in practice.

(b) Another the type of index formulas constitutes the class of *superlative* indices. These are indices that treat symmetrically the prices and quantities of the periods being compared, and in general they are preferable on theoretical grounds. Two specific superlative index formulas are:

- (i) The *Fisher* index, defined as the *geometric* average of the *Laspeyres* and *Paasche* indices:

$$P_F \equiv (P_L \times P_P)^{1/2}$$

²⁶⁶ 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 such probabilistic sample designs are not frequently implemented in the compilation of foreign trade price indices. See International Monetary Fund (2009): *Export and import price index manual: theory and practice* for a more detailed discussion.

²⁶⁷ See *ibid.* for a though discussion of the advantages and disadvantages of alternative formulas for the calculation of elementary price indices.

- (ii) The *Törnqvist* index, defined as 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:

$$P_T \equiv \prod_{i=1}^n (p_i^T/p_i^0)^{\bar{s}_i}$$

where $\bar{s}_i \equiv \frac{s_i^T + s_i^0}{2}$.

28.20. *Chain indices.* If a fixed base index is used, it is a 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 made at the sub-annual level, as the seasonal fluctuations in the prices and quantities would cause serious distortions in the chained time series due 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 this in mind, the methodology used in compiling unit value indices for imports and exports should provide for handling seemingly erratic behavior in customs data, so as to extract as much information as possible from the data available in custom records and other administrative sources. These may entail, among other things, the use of appropriate stratification variables to disentangle 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.²⁶⁸ 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 use 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 started over again from the current period.²⁶⁹ The use

268 Statistical analyses may include estimation of univariate densities and cluster analysis to help assess whether a certain strata or commodity classifications may be composed by various sub-categories of products with heterogeneous price trajectories.

269 This is, for instance, a practice currently followed by the United States Bureau of Labor Statistics.

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 currently followed by some countries.

E. Other issues

28.24. *Integration of the statistical production process in the compilation of level and index data.* 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 a good practice to allow for the compilation process of trade indices to feedback 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. And yet, these indexes 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 that allow to link customs declarations data and 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.

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.

28.28. *Use of foreign price indices.* Foreign price indexes could also be used as a 'second best' measure in some special circumstances. For example, if a country's economy is very interrelated to that of another country, there may be specific commodity groups for which they can be considered to be one 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 difficult to accomplish.

F. Country experiences

1. Norwegian practices

28.29. *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 Norwegian data sources, and only if this is also not adequate, data from international sources (such as the US Bureau of Labor Statistics) are collected.

28.30. *Use of foreign trade indices in National Accounts compilation.* Detailed data on exports and imports at the HS-8 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, intermediate consumption, gross fixed capital formation, and final consumption).

28.31. *Future developments.* It is expected that large importers and exporters will in the future 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 (due to the consolidation of single transactions into monthly totals) and thus error detection procedures may be further complicated. Also, the general trend towards removal of tariffs and duties, and the inherent customs' interest in simplifying and facilitating trade procedures, will mean that additional efforts have to be made in order to preserve the quality and coverage of data from administrative customs records. Currently, Statistics Norway's goal is to replace unit value indices with survey-based price indices for both exports and imports.

2. Canadian practices

28.32. *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 to accurately reflect the realities of the price movement a fixed basket of goods is chosen which are representative 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 indexes are constructed on the basis of unit values derived from detailed custom base data and survey price indexes 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 indexes.²⁷⁰ As the Canadian economy is very interrelated to that of the United States, the U.S. Bureau of Labour Statistics producer price index is used as a proxy for the price of some Canadian imports from the U.S.

3. Czech practices

28.33. *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 2050 exported and 2100 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 Czech National Bank. While the price indices reflect thus changes in foreign exchange rates, the breakdown of 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 converted to suit the breakdown by SITC Rev. 4 main groups. The Czech Classification of Product by Activities (CZ-CPA 2008) for the needs of national accounts and Eurostat. The first estimates are definitive – it means, ordinary revisions (revisions for the purpose of more precise previous estimates without methodical changes or modification of computation concept) are not accomplished.

4. German practices

28.34. *Current practices.* The external trade prices indices are an important module within the overall German system of price statistics, which intends to measure the development of prices across all main stages of the economy in a methodologically consistent way. In Germany (Laspeyres) volume indices and (Paasche) unit value indices (UVI's) 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, UVI's are calculated as well since they can be derived easily from foreign trade figures already existing 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 UVI's the nominal figures of foreign trade statistics can be split up into a quantity and a value component. Another advantage of UVI's 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).

270 Statistics Canada's Industrial Product Price Indexes (IPPI) and Automotive Price Index by Model, as well as data on exports of crude petroleum and natural gas (by pipeline) from its Manufacturing Construction and Energy Division. Price indicators from other organizations include the Bank of Japan's Export Price Index, price data on electricity from Canada's National Energy Board, Computer Price Index by Component from the Bureau of Economic Analysis (BEA).

28.35. To analyze price changes in foreign trade, apart from UVI's also "real" price indices are 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 other sources (e.g. stock market valuation, market reports) are appropriate to provide actual trade prices. The generation of the survey sample follows a multi-stage procedure.

First of all a basket of presentable commodities is defined, which can be derived from foreign trade statistics. In a second step, the reporting enterprises are selected with regard to their share in the total value of the relevant commodities.²⁷¹ Finally, the enterprises decide on specific "price representatives" (single cases of sale/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 are already described above (see paras. 27.11, 27.15 and 27.15 above). The main methodological issue is to keep the parameters underlying the calculation (selection of goods and enterprises, sample of price representatives, weighting

scheme) as constant as possible (according to the Laspeyres-Concept).

5. Italian practices

28.36. *Current practices.* External trade UVIs in Italy are chained Fisher-type indexes, with each monthly link calculated as the squared root of a Laspeyres-type and a Paasche-type index both based on the previous year. Each Laspeyres and Paasche link is a weighted average of elementary unit value indexes belonging to "product-country of origin/destination-flow" strata, the products being classified according to the Combined Nomenclature at 8-digit level. The total number of elementary strata is around 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, mainly due to errors on reported quantities. No imputation method is applied to replace the deleted observation in order not to introduce imputation bias in the resulting distributions. Deleted unit values are taken into account by means of maintaining their original weights in the calculation of the aggregated indexes.

271 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 as representative since they are leading in the relevant market segment

Annex 28.A. The Norwegian experience

1. Unit values from customs records

28.A.1. *Frequency and volume of data from customs records processed.* Statistics Norway receives administrative data from TAD, the Norwegian customs administration authority, every day. The number of customs data records used by Statistics Norway in the creation of exports statistics has increased 23% since 2000, and for imports this increase has been more than 80%. In 2010, Statistics Norway used about 1.4 million data records of exports and almost 11 million records of imports (representing 44.3% and 99% of Norway's total value of exports and imports, respectively).

28.A.2. *Two-step process for unit value calculation.* The main body of data in the Norwegian external trade statistics is administrative data from customs declarations (Single Administrative Document, SAD). As the SAD document does not contain a price variable, unit values are derived from the variables value and quantity. This is done based on the total commodity value and quantity, after a two-step validation stage that involves stratification to identify commodity codes where the data may be utilized for price statistics.

28.A.3. *Stratification below 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 strata within the code and, simultaneously, to reduce the overall variation observed on the code level. There are three stratification variables: Enterprise (VAT number), partner country (ISO code) and quantity groups (based on weight or supplementary unit). The choice of the best stratification variable for a commodity code in the reference year is done by means of automated analyses run on the data of the previous year (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 HB (Hidrioglou-Berthelot)-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 < 6)
- (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 between arithmetic average and the quantity-weighted average of the monthly unit values, at the transaction level, is used as a background variable to evaluate the stratification of the data, and choose which method to use for each HS code. Taken together, these indicators give information

on stability, magnitude/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 is not 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 the external trade statistics. In Statistics Norway, the survey which yields produce price indices (PPI) covers both the domestic market, export market, and import market. An important characteristic of the Norwegian system of price statistics is the fact that external trade considerations guide and influence the PPI production, particularly in determining which commodity codes are included in the sample.

28.A.7. *Survey implementation.* Data collection is mainly made via questionnaire, whereby respondents also receive guidance in the form of an information brochure as well as semiannual 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 for selected, well-defined products over time, 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 has to provide price data for a product model that best suits this commodity description, and 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 CPA index, and from the CPA level, indices are aggregated to CPA 4 digit, 3 digit, etc. This is done 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, whereby 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 London Stock Exchange and London Metal Exchange.

28.A.11. *Use of foreign indicators of price trends.* For other products (especially export and import of capital goods), international price indicators are in some cases considered to be

representative also for the price development of the same product group in the Norwegian trade. For instance, data from the US Bureau of Labor Statistics (BLS) 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.

(a) Tests were introduced in 2011 which are applied directly on data as they are entered by declarants of exports or imports. These tests aim to identify obvious errors/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 Statistics Norway's database, some data editing is conducted. Only the transactions involving commodities above 1000 NOK and less than 1 year old are selected, and incomplete declarations are rejected. After loading, automatic corrections are carried out, and 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, whereby experience of staff members specialized in checking the 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 is insufficient, Statistics Norway would 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 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 one was the case of salmon exports to the European Union that were subject to a punitive duty. As firms filling the declarations were not able to report separately the duty, Statistics Norway had to put in a lot of work in order to correct the statistical value. Another example was the situation created by some companies using computer software to speed up the filling up 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 the Norwegian Customs Administration.

There is a good working relationship between Statistics Norway and the Norwegian Customs Administration Authority (TAD) in terms of providing data for statistical purposes, as required by the Statistics Act of 1989. Cooperation between TAD and Statistics Norway is regulated by a formal agreement, which establishes responsibility for contacts between both parties, stipulates that changes made to the existing administrative data systems should be communicated to Statistics Norway, regulates data transmission between TAD and Statistics Norway, gives Statistics Norway the responsibility of compiling a list of all statistical surveys being conducted, and requires a yearly report on the 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.

Annex 28.B. The Canadian experience

28.B.1. Estimation formulas. Fixed (Laspeyres) and current (Paasche) weighted price indexes are calculated monthly, quarterly and annually on a Customs as well as on a Balance of Payments basis both for all countries and for United States. International Trade Division also calculates Constant dollars on a Balance of Payments basis with the use of the Chain Fisher formula with a base reference year. They are available from 1981 to present on a monthly and quarterly basis.

28.B.2. Error detection and imputation. Once the Laspeyres indexes and Paasche Indexes are calculated, a module uses a method described by Hidioglou and Berthelot (1986) to identify outlying observations. Historical Trend Method is also adapted and used to identify transactions within an aggregation that are “abnormal” for a given period. The error detection process is only done at the first stage of aggregation in the construction of the International Merchandise Trade Price Index. If during the error detection process a unit value has been identified as an outlier, and if the price analyst with the help of the subject matter specialist also considers this unit value as an outlier, then the unit value will be manually imputed.

28.B.3. Quality evaluation. The quality of this index is maintained through the expertise of the few trained analysts assigned to it. They develop a thorough knowledge of the domain. Much time and effort is devoted to detecting and following up unusual fluctuations over time in the pricing patterns of goods. Prior to dissemination, the price indexes are analyzed and historic trends reviewed.

28.B.4. Disclosure control. Statistics Canada is prohibited by law from releasing any data which 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 to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure of identifiable data.

28.B.5. *Revisions and seasonal adjustment.* 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 January and February reference months as well as on a quarterly basis. The previous two years of customs based data are revised annually and are released in February with 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 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.

Chapter 29 Seasonal Adjustment

29.1. *Introduction.* This 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 country practices in the application of seasonal adjustments to international merchandise trade data. It is based on IMTS 2010, chapter 11, which encourages countries to compile and publish seasonally adjusted international merchandise trade data on a regular basis. It relates to chapter 26 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, modeling and forecasting. However, they are often characterized by seasonal fluctuations and other calendar or trading-day effects, which mask other characteristics of the data that 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 behavior. Countries are encouraged to compile and publish, where appropriate, seasonally adjusted monthly and quarterly international merchandise trade data on a regular basis.

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 is published, it is recommended that information on the adjustment methods, data quality, and so forth, be provided by countries in their metadata

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 understanding the non-seasonal behaviour that 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 U.S.

Census Bureau).²⁷² As the seasonal component 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 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, as well as more sophisticated graphs, including spectrum or autocorrelograms.

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 re-introduced to 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 timings shift 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 to avoid misspecification of the model or compromising 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 seasonal variation's size increases and decreases with the level of the series.

²⁷² X-12-ARIMA is based on moving averages and includes a time series modeling component, the ability to produce multiplicative as well as additive seasonal adjustment, and systematic removal of calendar effects. X-13-ARIMA-SEATS is scheduled for release by the Census Bureau in 2012.

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 the use of structural time series models, provided 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 is 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 done 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 preferred when the corresponding series have similar seasonal patterns and summing the series may reduce the amount of unexplained variation.²⁷³

D. Revision policies

29.15. *Reasons for revisions to seasonally adjusted data.* Revisions of seasonally-adjusted data take place for two main reasons. First, seasonally-adjusted data may be revised due to a revision of the unadjusted data, which may be the result of an improved information set. Secondly, revisions of seasonally-adjusted data can also take place because of a better estimate of the seasonal pattern due to new information provided by new unadjusted data and due to the characteristics of the filters and procedures removing seasonal and calendar components. The challenge is to find a balance between the precision of seasonally-adjusted data and their stability over time. Revisions of seasonally-adjusted data ought to take place in accordance with a

273 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”, *Monetary & Financial Statistics Articles*, February 2003; also available online from <http://www.bankofengland.co.uk/statistics/ms/articles.htm>).

coherent, transparent and officially-published revision policy, and these revisions should not be more frequent than the revisions to the raw data. In this regard, it is a good practice to maintain 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.* The way in which seasonal adjustment is carried out has implications for the revision policies. At one extreme, so-called current adjustment minimises the frequency of revisions and concentrates the revisions mainly within a pre-defined review period. At the other extreme, so-called concurrent adjustment maximises the accuracy of the adjusted data at any given point, but will lead to more revisions, often from the beginning of a series, with many small and in opposing directions. In practice, other alternatives are followed, based on a combination of these two extremes.

29.17. The extent to which a changed time series should be published in its entirety is influenced by several factors. On the one hand, there is a methodological incentive to treat all values identically to keep calculations easy to understand and replicate. However, it is nevertheless questionable whether a newly added figure actually contains relevant information for significant revisions to the estimation of the usual seasonal fluctuations in previous decades. As a way of balancing the information gain and the revision horizon, the revision period for the seasonally adjusted data is often limited to between three and four years longer than the revision period for the unadjusted data.²⁷⁴

E. Quality of seasonal adjustment

29.18. *Absence of residual seasonality.* The most fundamental requirement of seasonal adjustment is that there is no estimable seasonal effect, known as residual seasonality, still present in the seasonally adjusted series. To detect residual seasonality and trading-day effects, validation should be performed using spectral diagnostics as well as other tools included in the seasonal adjustment packages, perhaps complemented with 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 a 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 should be 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 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 accurately seasonally adjusted with either TRAMO-SEATS or X-12-ARIMA. For these series, it is possible to adjust them using alternative, less standard, procedures. For series that are long enough to run

²⁷⁴ See also para. 26.15.

X-12-ARIMA or TRAMO-SEATS but remain quite short (3-7 years), some instability problems can appear. Several empirical comparisons have been done to investigate the relative performance of X-12-ARIMA and TRAMO-SEATS on short time series.

29.21. *Seasonal adjustment of shorter series.* It is a 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 pre-treatment 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 characterised by very specific features which preclude the application of standard seasonal adjustment methods. Such features include high non-linearity²⁷⁵, absence of a clear signal due to a dominant irregular component, unstable seasonality, a high number of outliers, or heteroskedasticity.²⁷⁶ In such cases, ad hoc treatment should be carried out.

G. Data presentation

29.23. Data can typically be presented either in raw, seasonally adjusted, calendar-adjusted only or trend-cycle form. The raw data contain all 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 of phase-shift²⁷⁷ 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 a 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 adhere to the principles of ensuring transparency and assisting users in making informed decisions.

H. Country examples

29.25. *Germany.* In Germany, the seasonal adjustment of foreign trade data as well as of other important economic indicators is done in close collaboration between the National Central Bank and the National Statistical Institute (NSI). The original data collected by the NSI are seasonally and calendar-adjusted by both institutions using the same X12-ARIMA procedure (which is an evolution of the well-known X-11 model developed by the US Bureau of the Census). As a second step, both institutions examine the results and have to decide commonly if any of the processing parameters which are crucial for the quality of the results have to be adjusted or not. In case of changing the parameters the calculation of seasonal adjusted figures is repeated by

275 Non-linearity refers to a model whose variables are not written as a linear difference equation.

276 Heteroskedasticity occurs in a linear model with error terms that do not have constant variance.

277 A phase shift is the amount of horizontal change of a wave pattern from an original state.

both. In this way the two institutions verify the calculation of each other. The common approach brings about a common result to be published, which avoids confusing users of trade statistics.

29.26. *Italy*. In Italy, monthly trade time series are seasonally adjusted by means of TRAMO SEATS (Windows version). In particular, intra-EU and extra-EU series (at import and at export) are adjusted directly and separately, while the series referred to Total trade (intra-EU + extra-EU) at import or at export are obtained indirectly as sums of the corresponding seasonally-adjusted series due to the well-known aggregation problem. The models selected by TRAMOSEATS are revised at the beginning of any new year, but the estimated SA coefficients are monthly revised as soon as a new observation is added to the series. This obviously implies some revisions for the nearest time lags but gives more consistent overall year information when compared to raw data. The selected models are available to researcher or users on request.

29.27. *United States*. 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-12-ARIMA program is used to analyze data series and generate the seasonal adjustment factors. Data are aggregated into 269 total import and export 5-digit end-use commodity groupings that are examined for trading day variation and seasonality. The end-use commodity classification system combines data into broad categories based on principal uses of the commodities, and using it 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 at the most detailed end-use categories. These detailed adjusted data are then summed to the 1-digit end-use level for release with the monthly merchandise trade totals.

29.28. *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 2-digit level of SITC. A few monthly data series at the 3-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. The External Trade Division is assisted when needed by one or two experts who support all fields dealing with seasonal adjustments in Statistics Norway. These experts also assist from time to time in a more profound evaluation of the methods used.