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What Economists Should Know About International Goods Trade Data

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What Economists Should Know About International Goods Trade Data*

Peter Egger[†], Yvonne Wolfmayr[‡]

Abstract

The analysis of bilateral trade flows features prominently in empirical research in international economics. Various different international statistical sources are available for researchers and commonly used. Unfortunately, the data happen to differ quite substantially across the different sources. It is the task of this project to identify those differences, quantify them, and track their origin and to demonstrate the consequences of differences in the data for estimation of fundamental relationships such as the gravity equation. We find the largest discrepancies in a comparison of UN and OECD databases to the IMF and EUROSTAT trade data. In the most extreme cases the differences to reported trade flows in other data sources amounts to as much as US\$ 40 bn in measured export flows and to as much as US\$ 50 bn in bilateral “mirrored imports”. Most importantly we find that these differences carry over to econometric results in applications of the gravity model, one of the workhorses of empirical trade research. Parameters of key variables such as log bilateral distance, common borders, common language, or a colonial relationship dummy variable vary substantially and do not even have a stable sign when using one database versus the other. Hence, heterogeneous reporting standards across data sources and the inhomogeneous sample coverage have a nontrivial impact on the quantifications of trade costs in empirical research.

Keywords: bilateral trade flows, statistical discrepancies, data sources, gravity model

JEL: F14, C33

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1. Introduction

Aggregate and bilateral trade for a large set of countries are collected, compiled, and made available to policy makers, research centers, universities, and other governmental and non-governmental institutions by a number of international institutions. Among those, the following institutions feature prominently (in alphabetical order): European Union Statistical Office (Eurostat), International Monetary Fund (IMF), Organization for Economic Cooperation and Development (OECD), United Nations (UN). Table 1 provides a list not only of these data providers, but also on the label of their goods trade database as well as details about revisions of data regarding the classification of disaggregated units along with other issues.

Table 1: International trade databases providing trade data for unilateral and bilateral goods trade flows for numerous reporters

Institution	Acronym	Database	Acronym	Frequency	Deepest level of aggregation	Number of reporters	Number of partners	Currency	Time span covered
European Statistical Office	Eurostat	Statistics of the EU's external trade and of Member States' trade	COMEXT	Monthly Quarterly Annual	8-digit HS	28	262	Euro	1988 - 2008
International Monetary Fund	IMF	Direction of Trade	DOT	Monthly Quarterly Annual	Aggregate	206	207	USD	1948 - 2008
Organization for Economic Cooperation and Development	OECD	Monthly Statistics of International Trade	MSIT	Monthly Quarterly Annual	Aggregate	31	257	USD	1960 - 2008
United Nations Conference on Trade and Development	UNCTAD	United Nations Commodity Trade Statistics Database	COMTRADE	Annual	6-digit HS	213	263	USD	1962 - 2008
Statistics Austria	ST.AT	Foreign Trade Austria	FTA	Monthly Quarterly Annual	8-digit HS	1	260	Euro	1982 - 2008
Swiss Federal Customs Administration	EZV	Foreign Trade Switzerland		Monthly Quarterly Annual	8-digit HS	1	230	CHF	1988 - 2008
Statistisches Bundesamt Deutschland	DESTATIS	Gemeinsames Neues Statistisches Informations-System	GENESIS	Monthly Quarterly Annual	8-digit HS	1	254	Euro	1990 - 2008

All of the providers mentioned in Table 1 actually use data from the same sources, namely data collected by national statistical offices of the reporting countries covered. While users might think that the identical sources of data should lead to identical trade statistics provided

by supranational organizations, there are fundamental differences. It is the task of this paper to identify those differences, quantify them, and track their origin. Moreover, we will shed light on the consequences of differences in the data for estimation of fundamental relationships such as the gravity equation.

We find the largest discrepancies in a comparison of UN and OECD databases to the IMF and Eurostat trade data. The EU-COMEXT database stands out as the data source with the most divergent methodological principles in its INTRASTAT trade statistics which records trade between the EU Member Countries. In the most extreme cases the differences to reported trade flows in other data sources amounts to as much as bn 40 \$ in measured export flows and to as much as bn 50 \$ in bilateral "mirrored imports". However, deviations are even present within the same database, as is the case for bilateral trade flows recorded in the UN-COMTRADE that provides data according to different revisions of SITC product classifications. Most importantly we find that these differences carry over to econometric results in applications of the gravity model, one of the workhorses of empirical trade research. Parameters of key variables such as log bilateral distance, common borders, common language, or a colonial relationship dummy variable vary substantially and do not even have a stable sign when using one database versus the other. Hence, heterogeneous reporting standards across data sources and the inhomogeneous sample coverage have a nontrivial impact on the quantifications of trade costs in empirical research.

The remainder of the paper is structured as follows. First, we will describe the main supranational data sources and highlight the most important principles of data collection for each of them. This will give us a first comprehensive summary on the methodological discrepancies between the databases. We will then proceed by identifying and quantifying the most important differences across trade data sources. This will provide a thorough analysis of diversions in bilateral trade flows as well as the timing of the deviations. We will extend the analysis to mirror statistics and compare reported bilateral export flows with the partners' recorded imports both, within the same database as well as between the different data sources. We will compare volumes of trade (intensive margin) as well as the number of recorded bilateral trade relationships (extensive margin). Our knowledge about the main methodological differences should help to explain the most important reasons for the discrepancies. Finally, we will apply the different datasets to gravity model estimations and highlight the sensitivity of the most important gravity model parameters to the differences across the various data sources.

2. Description of the main supranational data sources and their principles of data collection

While the collection of trade data is largely harmonized and predominantly follows international standards and UN recommendations summarized in the "International Merchandise Trade Statistics: Concepts and Definitions" (UNSD-IMTS, 1998) important methodological discrepancies still exist, both, for data provided by national statistical offices and data published by international organizations.

The most important sources for discrepancies relate to the trade system (general or special trade system), concepts for geographical classifications (country of origin or country of consignment; definitions of statistical territory), the coverage of trade (esp. as relates to transit trade, repair trade), the valuation (definition of statistical value; currency conversions), system of data collection (customs declarations, declaration of firms) and commodity classifications. These differences in national practices carry over to the data published by international organizations, but as such are mainly a source of discrepancy in mirror statistics, that is, inconsistencies between exports to a partner and the partner's recorded imports. Discrepancies in data between the different international trade data sources on the other hand are related to different practices across international trade data providers to harmonize and adjust original data reported to them by the national statistical offices. As an example, the IMF Directions of Trade Statistic adopts an adjustment factor to harmonize the definition of the statistical value of the data and provides estimates of missing data. Others, such as the OECD do not adjust the original data passed on by statistical offices at all. On the other hand, trade data reported to Eurostat is harmonized along most important dimensions referred to above, but is based on different methodological concepts and definitions than national data published by EU Member States or the other international organizations.

Another possible source of discrepancy between international data sources are different methods of data conversion to a common currency (Euro or US-Dollar), the frequency of the originally reported data (monthly/quarterly/yearly) in conjunction with possibly different revision patterns for the different series (reflected in the yearly data) and finally, the level of industry aggregation and type and version of commodity classification reported to the international organization. The latter is especially relevant for databases in which the commodity totals are based on disaggregated data classified according to specific commodity classifications that have undergone several changes/revisions over the reporting years. To obtain consistent time series at the product level conversions to older versions of product classifications become necessary. Because conversion to older revisions has to be based on the most detailed product level (HS 6 digits) this poses a problem if countries suppress confidential data which is quite common at the detailed product level. In the process of aggregation of converted data, confidential information is lost. This is one of the reasons why data aggregated from different versions of product classifications may differ.

Table 2: Possible sources of inconsistencies in international trade data

Source of discrepancy		Explanation	Discrepancy in mirror statistics	Discrepancies between international trade data sources
Trade System	Special or General	The difference is related to customs procedures: - goods in free circulation - goods under inward processing procedures - goods entering/leaving customs warehouses - goods entering/leaving customs free zones - goods in transit zones The special trade system only includes exports and imports of goods that go into free circulation or are placed under inward processing customs procedures. The general trade system additionally includes all goods entering or leaving customs warehouses.	Time lags in the recording of trade flows from and to customs warehouses. Coverage of re-exports from customs warehouses (not included in special trade system)	Different treatment and adjustment of data by international organizations to national data. Different reporting to different supranational data providers.
Valuation	Statistical value CIF/FOB	The statistical value of the trade data is the value calculated at national borders. It is based on the customs value and most countries value exports FOB (free on board: excluding freight and insurance costs incurred outside the border of the exporting country) and imports CIF (including costs, insurance, freight outside the border of the importing country).	Inconsistencies with data sources that do not comply with these standard valuation procedures. Some countries value imports on a FOB basis. The US values exports FAS (free alongside ships) which is similar to FOB but reports the transaction value at the 'port of exportation'.	Different treatment and adjustment of data by international organizations to CIF/FOB reporting rules.
	Currency conversion	Trade values are usually reported in national currencies. This involves conversion of individual transaction values expressed in different currencies to the currency of the compiling country. Preferably these conversions should be done on a monthly basis, but some countries might only convert annual trade flows on the basis of an annual conversion factor. The same applies to the conversion of national data into a common currency (usually US-Dollar) in international trade data sources.	Conversion to national currency. Currency conversion based on monthly conversion factors produces different results than conversions based on annual conversion factors. Conversion to a common international currency (Euro/US-Dollar). Currency conversion based on monthly conversion factors produces different results than conversions based on annual basis. A specific problem relates to the introduction of the European Monetary System (EMU) in 1999 and the conversion of data into Euro in the years prior to 1999. Most national statistical offices and the OECD apply the fixed conversion rates between the national currency and the Euro established in 1999 (i.e. 'euro denomination of national currency') while Eurostat uses current exchange rates of national currencies to the ECU, for the years prior to the introduction of the euro ('true conversion').	Conversion to a common international currency (Euro/US-Dollar). Currency conversion based on monthly conversion factors produces different results than conversions based on annual basis. A specific problem relates to the introduction of the European Monetary System (EMU) in 1999 and the conversion of data into Euro in the years prior to 1999. Most national statistical offices and the OECD apply the fixed conversion rates between the national currency and the Euro established in 1999 (i.e. 'euro denomination of national currency') while Eurostat uses current exchange rates of national currencies to the ECU, for the years prior to the introduction of the euro ('true conversion').

Table 2/continuation

Source of discrepancy		Explanation	Discrepancy in mirror statistics	Discrepancies between international trade data sources
Geographical classifications	Definition of partner country	The most common definitions of partner country are the country of origin in the compilation of import data and the country of last known destination in the compilation of export data. In some countries, however, imports are assigned to the country of consignment of the goods.	Especially in the presence of transshipment points (e.g. trade via the Netherlands/Rotterdam, Hong Kong) recording of data other than country of origin for imports and country of destination for exports leads to problems in the reconciliation of trade flows between trading partners (mirror statistics). If country A sends goods to country C via country B, country A records exports to destination country C, while imports in country C, would be attributed to country B in the case of a country of consignment definition. As a consequence export and import flows would not match.	Diverging allocation to partner countries/destination countries due to an application of different concepts is a source of divergence of bilateral trade data in different statistical sources.
	Allocation to partner country			
Definition of statistical territory	Definition of statistical territory	The economic territory of a country consists of the geographic territory administered by a government within which persons, goods, and capital circulate freely (UNSD, 1998). International trade statistics usually record goods that enter or leave the statistical territory, which is the territory with respect to which data is being collected. The statistical territory may coincide with the economic territory of a country or with some part of it. In most cases the statistical territory of the reporting country and that of its partner countries is defined as the customs area of a country/partner, but for some countries and years there might be different definitions.	Different definitions of the statistical territory lead to discrepancies in bilateral trade statistics reported by one country and its trading partners.	The definition of the statistical territory for the reporting and partner countries might also diverge between the different international statistical sources. There are also important discontinuities in the definition of the statistical territory over time. For example, in most statistical sources, from January 1997, the statistical territory of France has been defined to include the French overseas departments (Guadeloupe, Guyana, Martinique and Reunion). One other prominent example is the recording of trade of Belgium, which prior to 1997 was recorded as trade of the Belgium-Luxembourg Economic Union (BLEU) and in some databases continues to be recorded in this way (e.g. COMTRADE).

Table 2/continuation

Source of discrepancy		Explanation	Discrepancy in mirror statistics	Discrepancies between international trade data sources
Coverage	Treatment of goods in transit	As a general rule, goods in transit are to be excluded from trade statistics. One major exception to this rule is found in the Eurostat/COMEXT trade statistics for goods in transit from one Member State to the other if the goods either originated or are destined from/to a Non-EU Member Country.	Inclusion of transit trade can lead to major discrepancies in bilateral trade data in conjunction with partner country attributions of the trade flow, with the consequence of massive under- or over-reporting of specific bilateral trade flows. A prominent example is Hong Kong/China trade which involves a lot of re-exporting.	The special treatment of goods in transit in the Eurostat/COMEXT trade statistics is one of the major reasons for discrepancies and the loss of comparability with national statistical sources as well as the other international trade data sources. The resulting impact on the values of exports and imports has been labeled as the "Rotterdam effect" (in reference to Rotterdam as one of the major European transshipment points).
	Goods to be included or excluded	According to UN guidelines all goods, which add to, or subtract from, the resources of a country should be included in the measurement of merchandise trade statistics. This definition implies that, for instance transit trade, temporary trade or monetary transactions (monetary gold) are excluded. But certain goods or trade transactions are defined differently in different countries and lead to the exclusion in some countries and inclusion in others. Military goods, goods on operational lease, electrical energy, goods for maintenance and repair, illegal trade, goods on consignment are the major areas where different approaches by countries are most common.	Can lead to important differences in mirror statistics.	Different definitions by international data providers of which goods or transaction types are to be included or excluded and if the data is adjusted accordingly could produce discrepancies.
Data collection system	Customs declarations/firms' declarations	Customs declarations are the most common source of bilateral trade statistics. Since the creation of the Single Market in 1993 and the removal of internal customs formalities, the EU Member Countries directly collect trade data from firms that trade above a country-specific threshold trade values for intra-EU trade flows, but still rely on custom records for Extra-EU trade flows.	The introduction of the Intrastat-System limits the comparability with pre-1993 figures in the trade statistics of Eurostat, but also the data published by the national offices of EU Member Countries. Due to exemption thresholds and non-responses in the process of data-collection from firm declarations, adjustments need to be made to the data to control for full coverage. The application of different exemption threshold values across the EU Member Countries as well as the different methodologies to adjust for trade below the exemption thresholds or for non-responses leads to discrepancies in mirror statistics.	The adjustments made for non-responses and thresholds are the same in the national trade statistics of the EU Member Countries as in the data passed to Eurostat or other international organizations. Different timetables for revisions in the national data and the Community data as well as different timetables for the transmission of revisions to international organizations could be a source for differences between the different statistical sources, at least in the more recent years of a time series.

Table 2/continuation

Source of discrepancy	Reporting practices	Explanation	Discrepancy in mirror statistics	Discrepancies between international trade data sources
	Commodity classifications and confidentiality Major revisions of product classifications SITC rev 1- SITC rev 4; Harmonized System: HS88, HS96, HS02, HS07	All statistical trade data sources that publish data at the disaggregated product level, collect and present the disaggregated data according to the Harmonized System (HS, 6-digits) or an even more detailed classification, the Combined Nomenclature (CN, 8-digits) which is converted to the Standard International Trade Classification (SITC, 5-digits). Conversion is possible as SITC adopts the structure of the HS. Product classifications are regularly revised to account for changes in the importance of goods traded, new products, etc.	Results in discrepancies only at the disaggregated level if partner countries report data in different versions of the product classifications.	Relevant as a source of discrepancy between statistical sources at the aggregate commodity level only, if the disaggregated data originally reported has been converted to other versions of HS or SITC and if the aggregate bilateral trade figures are presented as sums over HS or SITC product groups. The sums of converted data and the originally reported data will mainly differ because confidential data at the deeper levels of the product classifications is lost in the conversion process. With respect to the databases reviewed in this paper, this is practically relevant only with respect to UN COMTRADE bilateral trade statistics. The timetables for revisions may differ between the monthly series and the yearly series so that they are independently updated. There also might be different timetables for reporting and providing revised data to the different international organizations.
Reporting frequency and revision patterns	Depending on the international organizations, countries report their data on a monthly, a quarterly, or an annual basis. The yearly data provided in the different supranational data sources are therefore either the result of a cumulation of the monthly data or reported directly by national statistical authorities.	Divergences in mirror statistics may result from different national practices in revising data and different revision timetables in partner statistics.		

Table 2 summarizes the most important principles of trade data collection and highlights those aspects which might contribute most to the discrepancies between the different international trade data sources.

While the concepts and principles of data collection and presentation divert across different trade data sources, discontinuities of methodology and statistical reporting systems over time are another dimension of the problem of comparability of different data sources. Table 3 while not exhaustive, exemplarily summarizes some of the most important methodological changes over the last 20 years. They concern a major change in the statistical reporting systems of EU Member Countries with the adoption of the INTRASTAT collection system, alterations in the statistical territories of various economies, especially following the political upheavals in the Central and Eastern European region and the CIS in the early nineties, major revisions of product classifications and the coverage of products in trade statistics.

Table 3: Important discontinuities over time

Change to INTRASTAT data collection system	
1993	Introduction to EU 12
1995	Accession of Austria, Finland, Sweden
2004	Accession of 10 New Members: Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovak Republic, Slovenia
2007	Accession of Bulgaria, Romania
Major revisions of Harmonized System (HS)	
1988	HS88
1996	HS96
2002	HS2002
2007	HS2007
Major revisions of the Standard International Product Classification (SITC)	
1962	SITC rev 1
1976	SITC rev 2
1988	SITC rev 3
2008	SITC rev 4
Coverage	
2005	Repairs excluded from scope of INTRASTAT. EU Member Countries that continue to include repair trade in their national statistics: Belgium, Germany, Ireland, Poland, Greece
2006	Repairs excluded from scope of EXTRASTAT. EU Member Countries that continue to include repair trade in their national statistics after 2006: Belgium, Germany, Ireland, Luxembourg, Poland, Greece
Statistical territories	
1990	Reunification of Germany
1997	France : inclusion of Monaco and overseas departments (French Guiana, Guadeloupe, Martinique and Reunion); Spain : inclusion of Canary Islands
1997/1999	Belgium: trade data is recorded separately from Luxembourg
1992	Following the breakup of former Yugoslavia separate statistics for successor states
1992	Following the breakup of former USSR separate statistics for successor states
1993	Following the breakup of former Czechoslovakia separate statistics for successor states

We will now describe the main supranational data sources and summarize their main principles of data collection along these aspects and dimensions.

2.1 COMEXT (provided by Eurostat)

The EU's statistics of trade in goods database COMEXT is published by the Statistical Office of the European Communities (Eurostat). It provides users with harmonized time series of monthly, quarterly and annual bilateral trade flows of EU Member Countries as reporters and approximately 262 partner countries. Quarterly and yearly data are calculated by cumulating monthly figures. The time span covered is different for each Member Country and begins with the respective year of the country's accession to the EU. The longest series date back to 1988. With the Creation of the Single Market in 1993 and the removal of all EU internal customs formalities a completely new data collection system for trade flows between EU Member Countries (INTRASTAT) had to be introduced. It is based on declarations of firms of trade transactions above specific threshold values. The system of thresholds to exempt traders from statistical reporting or to limit the information to be reported is different in each of the Member States. The existence of thresholds also limits the coverage of trade. Another major problem is late-responses or non-responses. Each of the Member States applies different methods to adjust and correct for this loss of information (for an overview see Eurostat, 2010).

The INTRASTAT collection system is confined to bilateral trade flows between the EU Member Countries. Imports of one Member State from another are called "arrivals", exports are named "dispatches". Extra-EU trade statistics (EXTRASTAT) cover all goods exported and imported by the European Union and are still collected on the basis of customs declarations.

The data is reported to Eurostat by the national statistical authorities on a monthly basis and rests on largely harmonized concepts and methods governed by EU legislation. National statistics independently published in each of the EU Member States, however, may and do follow different concepts. Furthermore, besides the different collection systems, EXTRASTAT and INTRASTAT statistics differ in a number of other methodological aspects.

Extra-EU trade flows are compiled on a special trade basis. The system of trade is irrelevant to INTRASTAT trade statistics as there is no direct link to customs procedures. The statistical value of the data reported is based on the customs value for Extra-EU trade flows and on taxable value for Intra-EU transactions. In Intra-EU trade statistics arrivals (imports) are attributed to the country of consignment of the goods, dispatches (exports) are allocated to the country of final destination. Partner countries for Extra-EU trade flows (in EXTRASTAT) are defined as the country of origin for imports and the country of final destination for exports. The EU's two tier-system to allocate trade flows to partner countries – country of origin for Extra-EU imports, country of consignment for Intra-EU arrivals – is a major source of discrepancy to other statistical sources, especially in combination with the special treatment of goods in transit in EU statistics. In general, Eurostat trade figures exclude goods in transit from one Member Country to another. However, there is one exception: goods imported to the EU area from an Extra-EU trading partner and released into free circulation in the Member Country of entry, which are then transported to another Member State, are recorded in the COMEXT

database. They enter EXTRASTAT as an import from a Non-EU-Member (e.g. USA) in the Member Country of entry where the customs procedures are carried out (e.g. the Netherlands) and they are recorded in INTRASTAT as a dispatch from the Member Country of entry (Netherlands) to another member state (e.g. Germany) and vice versa, as an arrival in one Member State (Germany) from the Member Country of entry (Netherlands). The same is true on the export side. Goods that originate in one Member Country, but leave the EU area as an Extra-EU export from another Member where customs procedures are carried out, are included in the Eurostat statistics. The treatment of goods in transit and the allocation of trade flows to partner countries give rise to over- and underreporting of specific bilateral trade flows and with respect to COMEXT trade statistics has been labeled as the "Rotterdam Effect".

The data in COMEXT are expressed in Euro since the introduction of the European Monetary System in 1999 using the fixed conversion rates from national currencies to the Euro, while all trade data before 1999 has been converted using the bilateral national exchange rates to the ECU. All currency conversions – individual transactions expressed in different currencies to the national currency of the Member State, and conversion from the national currency to Euro – are done on a monthly basis using the monthly averages of the conversion rates.

The statistical territories of the EU Member States are generally defined as the customs territory of the countries, with the exception of Germany, whose statistical territory also includes Heligoland (Eurostat, 2005). This definition also has implications for countries such as France, which includes trade of the French overseas departments or Spain, which includes trade of the Canary Islands. For an exact list of Eurostat-COMEXT statistical territories including also EU Member's partner countries see Eurostat (2005).

2.2 COMTRADE (provided by UNCTAD)

The Commodity Trade Statistics Database (COMTRADE) published by the United Nations Conference on Trade and Development (UNCTAD) is one of the most comprehensive of all international trade data sources. It provides annual bilateral trade data for more than 200 reporters with almost 300 partner countries with time series information beginning in the year 1962.

All data is reported to UNCTAD by national statistical authorities, whose data principles are not harmonized in the same degree as data reported to Eurostat's COMEXT. In 2006 the OECD/UN joint trade data collection and processing system was introduced (OECD, 2006). As a result, starting with the year 2005 all OECD data are those processed by the OECD, and all non-OECD-data are processed by the United Nations Statistical Department (UNSD). Historical data is synchronized progressively between the OECD and UNCTAD trade databases. Additionally, a publication note for every newly released dataset is published in the COMTRADE metadata, indicating when the original data has been received as well as all revisions or re-processing of the data. In addition, some EU Member Countries usually report data published according to their national practice and principles rather than the EU

principles governing the COMEXT database. The database does not provide any estimation for missing data.

The data in COMTRADE is published in US-Dollar. While some countries already report their data in US-Dollar, most report the trade values in national currencies. When the data is delivered in national currency, the annual figures are converted into US-Dollar by applying trade weighted conversion factors. These factors are based on an average annual exchange rate which is calculated by weighting the monthly exchange rate (from the IMF International Financial Statistics) with the monthly volumes of exports or imports. This weighting procedure results in different conversion factors for imports and exports as well as different conversion factors for Euro Area Countries despite the use of the same currency. The procedure is preferable to currency conversion of annual trade flows on the basis of unweighted average annual exchange rates which would produce different results than conversions based on monthly data.

As indicated in Table 1, and as a special characteristic, United Nations' COMTRADE database is based on disaggregated data classified according to the Standard International Trade Classification (SITC). The latter has undergone three changes since its introduction in 1962 in the format of SITC Revision 1 (1,312 5-digit product codes), 1976 SITC Revision 2 (2,924 5-digit product codes), 1988 SITC Revision 3 (3,118 5-digit product codes) and 2007 SITC Revision 4 (2,970 5-digit product codes). Countries usually report bilateral trade data in the latest version of the Harmonized System at the 6-digit product level, but (also less detailed levels) in SITC in early years up to 1987. Commodity totals at the bilateral level are always aggregated from the detailed data at the product level. This process may result in an under-reporting of trade if confidential data is lost in the aggregation process. Confidential data often is suppressed at the detailed 6-digit level of HS but often also with respect to partner countries. Underreporting of trade values due to confidential data will also result if data extracted in the classification of HS or SITC in which it was originally reported by the National Statistical authorities is converted to other versions, as reclassifications are also always based on the 6-digit HS level. As indicated in Table 2 this may be one major source for diverting trade values in the COMTRADE and the figures published in the other international data sources. As a result of the new processing system introduced in 2006, the COMTRADE includes adjustment items (commodity codes 9999 and 999999) for unreported data so that the aggregated commodity totals of bilateral trade should include confidential data suppressed at the detailed product level, but they still would not include confidential data with respect to partner countries.

The definition of the statistical territories of the countries as reporters and partners in the COMTRADE database are adopted from the respective definitions of the countries themselves in their national data.

2.3 DOT (provided by IMF)

The Direction of Trade Statistics (DOT) is published by the International Monetary Fund (IMF) and contains bilateral, monthly, quarterly and annual data on merchandise export and import values for approximately 210 countries with some time series dating back to as early as 1948. Fund members and territories associated with Fund members are the reporting countries. All data is principally collected on a monthly basis and the annual totals are obtained by a summation of months.

However, only a fraction of countries delivers data on a regular and current basis and in monthly frequency, some do not report at all. It is a special feature of the DOT that any missing, less current or incomplete data is substituted by estimates performed by the IMF Statistical Department. The "Guide to Direction of Trade Statistics" (IMF, 1993) describes the main estimation procedures. To estimate bilateral trade data in monthly frequency it combines information for lower frequency data (quarterly or annual), total exports and imports not broken down by partner countries, collected independently and published in IMF's International Financial Statistics (IFS), as well as partner country statistics. DOT data is also sometimes supplemented by data reported to the UN Statistical Department. All estimates are revised on a weekly basis and replaced by data reported in countries' statistical records. It is not always clear, however, in as much revisions in monthly data are reflected in the quarterly or annual data, or vice versa, how revisions in annual trade figures are reflected in the lower frequency data in the DOT. While for newly uploaded data, annual figures for the majority of countries should be equal to the sum of monthly data, the same is not true for revised data. Revisions in the data always only affect the frequency being revised.

The data reported to the IMF - while in general guided by UN concepts and definitions (UNSD, 1998) - are based on alternative national practices and collection principles. Additionally, trade data of all the European Union Member Countries – beginning with their accession to the EU - are sourced from the Eurostat's COMEXT database which diverges in important ways from national statistics. Much like the OECD or the UN, reported data to the IMF/DOT is not harmonized along the main methodological aspects outlined in Table 2, with the exception for adjustments to different reporting of statistical values. As a result, all imports in DOT are valued CIF and all exports are valued FOB. In the case of divergent reporting of countries, an adjustment factor of 10 percent – a simplified estimate of costs of freight and insurance - is applied.

Most trade figures reported to the IMF are valued in national currency and are converted to US-Dollar at period average exchange rates for publication in the DOT. In general, the data are converted using the monthly figures and monthly exchange rates from the International Financial Statistics of IMF (IFS) and the resulting equivalents in US-Dollar are subsequently aggregated to quarterly and annual totals. If the data are not available in monthly frequency, dollar equivalents are obtained by converting data at lower frequency and estimates for the monthly data are then obtained from converted data. As an example, if

only annual data is reported by a country, the annual trade figures are converted to US-Dollar using the annual averages of exchange rates. The converted annual figures are then used to estimate the monthly and quarterly figures. At the same time, any revised data is always converted into US-Dollar at the period average exchange rates of the frequency being revised. For example, any revised annual data is converted into US-Dollar using the average annual exchange rates, even though the annual data first reported before the revision would have been the result of an aggregation of monthly converted data.

As to the definition of the statistical territory IMF basically goes in line with the UN convention and uses the definition given by the reporter/partner country itself.

2.4 Monthly Statistics of International Trade (provided by OECD)

OECD's Monthly Statistics of International Trade covers monthly bilateral trade figures as well as monthly averages for years and quarters, dating back to the year 1960. It includes OECD members as reporters and approximately 260 partner countries. For users, it is important to recognize, that the annual bilateral trade figures documented in the OECD Monthly Statistics reveal period averages and need to be multiplied by 12 to obtain annual values of trade. The data is sourced from national statistical offices and with the exception of conversion to US-Dollar is not further modified by the OECD. Instead, exceptions to the methodological guidelines outlined by the UN (UNSD, 1998) are referred to in the country notes.

Conversion of data reported in national currency to US-Dollar is based on monthly average conversion rates published by the IMF's International Financial Statistics (IFS).

The definition of statistical territories in the OECD statistics mostly follows the Eurostat Geonomenclature, but differs in its definitions with respect to Spain (includes Ceuta and Melilla) and the US (includes Virgin Islands; OECD, 2006). As no world total is provided in the monthly files delivered by the national statistical authorities this is calculated as the sum of available partner countries.

2.5 Possible sources of discrepancies between international trade data sources – Summary

Table 4 summarizes the most important principles of data collection for each of the international data sources on bilateral trade flows and highlights some of the most important differences between these databases from a qualitative standpoint. Table 5 gives more detail on the individual country level for EU Member Countries and Switzerland. All these sources of discrepancies in trade statistics are very often interlinked and difficult to isolate.

Table 4: Statistical concepts and reporting practices - a comparison

Database	Who reports	Data frequency	Adjustments made to original data	Statistical territory	System of trade	Valuation			Definition of partner countries		Coverage	
						Statistical value imports	Statistical value exports	Reported currency	Exports	Imports	Repair	Transit trade
COMEXT-INTRASTAT	national	mo/qu/ye	yes (non-reporting and thresholds)	Eurostat Geonomenclature	n.a.	CIF	FOB	Euro	final destination	consignment	excluded since 2005	excluded if purely Intra-EU transit; included if transit follows importation from Extra-EU country
COMEXT-EXTRASTAT	national	mo/qu/ye	yes (thresholds)	Eurostat Geonomenclature	special	CIF	FOB	Euro	final destination	origin	excluded since 2006	included (Rotterdam Effect)
DOT	national; Eurostat for EU	mo/qu/ye	yes (non-reporting)	National definitions	special / general	CIF	FOB	USD	final destination/consignment	origin/consignment	generally excluded; some exceptions	generally excluded; some exceptions
COMTRADE	national; OECD for OECD countries (since 2005)	annual	no	National definitions	special / general	CIF/FOB	FOB	USD	final destination/consignment	origin/consignment	generally excluded; some exceptions	generally excluded; some exceptions
OECD Monthly Statistics	national	mo/qu/ye averages	no	OECD Geonomenclature	special / general	CIF/FOB	FOB/FAS	USD	final destination/consignment	origin/consignment	generally excluded; some exceptions	generally excluded; some exceptions
Austria-FTA		mo/qu/ye	yes		special	CIF	FOB	Euro	final destination	origin	excluded since 2005	excluded
Germany-DESTATIS		mo/qu/ye	yes		special	CIF	FOB	Euro	final destination	origin	excluded since 2007	excluded
Switzerland-EZV		mo/qu/ye	no		special	CIF	FOB	CHF	final destination	origin	excluded	excluded

Most obvious are the different principles governing the collection of data of EU Member Countries in the COMEXT database. While the COMEXT is based on a harmonized collection system, some EU Member Countries follow different concepts and methods in their national publications of the data and consequently the trade figures reported to the other international databases. These principles differ most evidently with respect to the trade system (general system instead of special) and/or the partner country allocation of trade flows (country of origin or country of consignment), the treatment of "quasi transit" (special treatment of goods in transit that originate from/are headed to an Extra-EU country) and the time-schedules for the exclusion of repair trade from the statistics. As an additional difficulty, it is often unclear which kind of data is reported to the international data providers by EU Member Countries, data following the principles of Eurostat practices or data based on national principles. There are also chances of discontinuities of these reporting practices by EU Members over time as the very detailed methodological country notes in the UN COMTRADE indicate.

Table 5 helps to filter out some examples for discrepancies at the country level for EU Members. Thus, with respect to what is most likely to be the major source of discrepancy to other statistical trade databases, the special treatment of goods in transit in Eurostat statistics (inclusion of "quasi transit" in combination with the attribution of imports to the country of consignment) giving rise to the so-called "Rotterdam-effect", we find that 14 EU Member States (Austria, Belgium, Bulgaria, Cyprus, Denmark, Latvia, Luxembourg, Hungary, Malta, the Netherlands, Poland, Slovenia, Slovakia and the UK) do not include "quasi transit" in the trade figures reported to the databases other than the COMEXT and the DOT (which sources its data for EU Members from the COMEXT). In addition, Denmark, Ireland and the UK report data to Eurostat's COMEXT according to the special system while in all other international data sources the same trade flows are recorded according to the general system.

Another source of discrepancies is the different definition of statistical territories. The Eurostat-COMEXT and OECD-MSIT follow their own definitions (OECD and Eurostat Geonomenclatures), while the IMF-DOT and the UN-COMTRADE databases adopt the respective definitions given by the reporter/partner countries themselves. To a large part, the definitions of the statistical territories coincide with the customs area of the countries, but in some instances exceptions to this basic rule are introduced and may lead to inconsistencies across international databases. Some prominent examples are the definitions of Switzerland (excluding or including Liechtenstein), the US with respect to the treatment of Virgin Islands and Spain with respect to Melilla and Ceuta.

While differences between Eurostat trade data and the other supranational sources are to be expected, and are mainly due to methodological differences of the INTRASTAT system, inconsistencies between the rest of the statistical sources are less obvious and mostly related to the different treatment of the data received, different revision practices and currency

conversion practices related to revisions, and with respect to EU Member Countries, the use of different sources from which data is extracted (Eurostat or national statistical offices).

While the IMF's DOT sources data for EU Members from Eurostat, the UN-COMTRADE and OECD-MSIT rely on data received from the national statistical offices. On the import side the DOT generally differs with respect to the CIF conversion of imports that were originally reported FOB. On top of that, the DOT statistics include estimates for missing data.

From a methodological point of view, OECD-MSIT and UN-COMTRADE statistics should produce the least differences, since both receive data from the same source and both generally use the same definitions. Discrepancies are most likely to arise from the different frequencies of the basic data (monthly versus annual frequency), the different level of product disaggregation in the original data and finally, different revision patterns and practices. Diversions with respect to UN-COMTRADE data are most likely to be related to an under-reporting of trade flows when confidential data is lost in the aggregation process of disaggregated data classified according to specific commodity classifications that have undergone several revisions.

Furthermore there are numerous examples for discontinuities over time that might be implemented at different points in time in different databases. Some examples related to EU Members were already summarized in Table 3 others are revealed in Table 5. One example relates to the coverage of repairs. They were in general excluded from the Eurostat INTRASTAT trade statistics by 2005 and from EXTRASTAT figures by 2006. While some EU Members adopted the same time schedule for the exclusion of repair trade in their national figures, others implemented that change in later years or not at all.

Table 5: Statistical concepts and reporting practices - a comparison for EU countries and Switzerland^{1) 2)}

	General Trade System				FOB Valuation of Imports				Exports - country of consignment or sale				Definition of partner country				Inclusion of "quasi transit"		Coverage		
	Euro-stat	OECD	IMF	UNO	Nat. Stat.	Euro-stat	OECD	IMF ³⁾	UNO	Euro-stat	OECD	IMF	UNO	Euro-stat Intra-EU	Euro-stat Extra-EU	Nat. Stat.	Euro-stat DOT	Nat. Stat.	Euro-stat Intra-EU	Euro-stat Extra-EU	Nat. Stat.
OECD/EU																					
Austria														*			*		* (-04)	* (-05)	* (-04)
Belgium											*			*		*	*		* (-04)	* (-05)	* (-09)
Belgium-Luxembourg																					
Czech Republic									*					*		*	*		* (-04)	* (-05)	* (-04)
Denmark		*			*									*		*	*		* (-04)	* (-05)	* (-04)
Finland														*		*	*		* (-04)	* (-05)	
France														*		*	*		* (-04)	* (-05)	
Germany														*		*	*		* (-04)	* (-05)	* (-09)
Greece														*		*	*		* (-04)	* (-05)	*
Hungary														*		*	*		* (-04)	* (-05)	* (-04)
Ireland		*			*									*		*	*		* (-04)	* (-05)	*
Italy														*		*	*		* (-04)	* (-05)	?
Luxembourg														*		*	*		* (-04)	* (-05)	*
Netherlands														*		*	*		* (-04)	* (-05)	* (-04)
Poland														*		*	*		* (-04)	* (-05)	?
Portugal		*			*									*		*	*		* (-04)	* (-05)	* (-05)
Slovak Republic					*									*		*	*		* (-04)	* (-05)	* (-04)
Slovenia									*					*		*	*		* (-04)	* (-05)	
Spain					*									*		*	*		* (-04)	* (-05)	* (-04)
Sweden					*									*		*	*		* (-04)	* (-05)	* (-04)
UK		*			*									*		*	*		* (-04)	* (-05)	* (-09)
Non-OECD/EU																					
Bulgaria														*		*	*		* (-04)	* (-05)	* (-04)
Cyprus					*									*		*	*		* (-04)	* (-05)	* (-04)
Estonia					*									*		*	*		* (-04)	* (-05)	
Latvia														*		*	*		* (-04)	* (-05)	
Lithuania					*									*		*	*		* (-04)	* (-05)	
Malta														*		*	*		* (-04)	* (-05)	* (-09)
Romania														*		*	*		* (-04)	* (-05)	
Switzerland			*											*		*	*		* (-04)	* (-05)	

1) The information outlined in the table refer to the year 2010 for Eurostat, OECD, IMF and the national statistics. The UN-COMTRADE database contains the most detailed methodological notes and it was possible to indicate changes in the reporting practices of countries over time. -²⁾ Numbers in parenthesis indicate years. E.g. (-99) indicates that reporting practice was maintained until 1999; (99-) indicates that reporting practice was used from the year 1999. -³⁾ For imports originally reported on a FOB basis an adjustment factor of 10 percent is applied in the DOT. -⁴⁾ Inclusion of "quasi transit"; goods imported from an Extra-EU country into one EU Member country and are then transferred to another Member. Goods that were transferred from one EU Member to another for export to an Extra-EU country.

3. Comparison of supranational goods trade databases

Following the qualitative analysis this chapter sets out to identify and quantify the most important discrepancies in bilateral trade flows between the different trade data sources. We will do so not only by comparing the data from the various databases but also by contrasting bilateral export flows with mirror statistics, that is, inconsistencies between exports to a partner and the partner's recorded imports, both within the same database but also between the different international data sources. Differences in mirror statistics are quite common and Table 2 in chapter 2 explains in detail why. Bilateral imports must therefore always be interpreted as "mirrored imports" in this analysis. Furthermore, throughout the analysis we will make a distinction between the intensive and extensive margins of trade. While the first refers to the recorded volumes of bilateral trade, the second refers to the number of markets served and is based on a simple count on whether a market is served by exports of the reporting country in a specific year or not.

The data analyzed was downloaded in 2010 and covers the maximum possible time span from the start date of the data as indicated in Table 1 up to 2008. The time span of UN-COMTRADE statistics depends on the data format downloaded. Thus, the trade series in the format of UN Rev. 1 cover the longest period from 1962 to 2008, UN Rev. 2 covers the years from 1976 to 2008, UN Rev. 3 starts in 1988 and UN Rev. 4 in 2007. The Appendix gives a detailed list of all countries included in the supranational trade statistics either as reporters or as partners and provides information on the time span of the data covered for each of them.

With the exception of Eurostat's COMEXT, all trade flows from the supranational data sources are recorded in US-Dollar. All data reported in COMEXT are denominated in Euro. We converted the annual trade figures from the COMEXT into US-Dollar by applying trade weighted conversion factors published in the UN-COMTRADE statistics. These factors are based on an average annual exchange rate which is calculated by weighting the monthly exchange rate (taken from IMF's IFS) with the monthly volumes of exports or imports and thus equals conversions based on monthly figures. Since the UN conversion factors in the years prior to the introduction of the Euro and/or accession to the Euro zone are based on the respective exchange rates of national currencies we had to proceed in two steps. First, for these years and countries, we had to transform the Euro denominated data in the COMEXT to the respective national currencies by applying trade weighted conversion factors calculated from monthly Eurostat trade figures and exchange rates. In a second step, this data was converted to US-Dollar by employing the UN-COMTRADE conversion factors. Tables 6 to 10 summarize the most important results of the comparative analysis.

Table 6: Simple correlations between nominal bilateral trade data from different sources at all margins

(All data are converted into US-Dollar)

Source	Bilateral exports						
	UN Rev. 1	UN Rev. 2	UN Rev. 3	UN Rev. 4	OECD	IMF	Eurostat
UN Rev. 1	1						
UN Rev. 2	0.9997	1					
UN Rev. 3	0.9996	1	1				
UN Rev. 4	0.9996	1	1	1			
OECD	0.9995	0.9997	0.9998	0.9999	1		
IMF	0.9992	0.9994	0.9994	0.9994	0.9993	1	
Eurostat	0.9987	0.9988	0.9988	0.9989	0.9989	0.9996	1
Source	Bilateral "mirrored imports"						
	UN Rev. 1	UN Rev. 2	UN Rev. 3	UN Rev. 4	OECD	IMF	Eurostat
UN Rev. 1	1						
UN Rev. 2	0.9998	1					
UN Rev. 3	0.9998	1	1				
UN Rev. 4	0.9998	0.9999	1	1			
OECD	0.9993	0.9995	0.9995	0.9997	1		
IMF	0.9991	0.9992	0.9992	0.9992	0.9992	1	
Eurostat	0.9981	0.9982	0.9982	0.9981	0.9983	0.9992	1

Source: Own calculations.

As a first simple overall measure, Table 6 reveals correlations between nominal bilateral trade data from different sources at all trade margins. These are generally very high, still we can discern some tendencies. First, comparing data of the different data formats published in the UN-COMTRADE database we find discrepancies between these series only with respect to UN Rev. 1 which is relevant if one uses time series dating back to the years before 1978. There is a perfect concordance between UN Rev. 2 through UN Rev. 4. UN-COMTRADE data reveals the highest correlation with the OECD Monthly Statistics trade data. This correlation increases with changes in the data format reported in the COMTRADE over the years and is almost perfect with UN Rev. 4. This is an indication that the introduction of OECD/UN joint trade data collection and processing system in 2006 started to become effective.

The lowest correlations can be found between reported trade flows in the UN and OECD sources on the one side and Eurostat and IMF statistics on the other side. They are clearly lowest for Eurostat-COMEXT data as expected from discussion in chapter 2. IMF-DOT shows the highest correlation with Eurostat as data for EU Member Countries is sourced from EU-COMEXT statistics. However, the correlation is not perfect as the IMF-DOT starts to source from the COMEXT at the date of accession of individual EU Members so that for countries prior to accession reporting practices might differ from those of Eurostat. Applications of different exchange rates might be another source of discrepancy.

The lower panel of Table 6 summarizes the correlations between the data sources with respect to the mirror statistics. While correlations are generally a bit lower for mirrored imports,

the correlations are still very high across databases. Otherwise the same patterns as described for exports emerge.

Table 7 looks at the correlations between bilateral exports and the mirrored imports in terms of volumes (intensive margin). Within the same database (main diagonal in Table 7), the highest correlation between bilateral exports to a partner and the partner's recorded imports is found for Eurostat and OECD trade data. It is interesting, that for both these data sources, concordance of reported exports and the respective mirror imports is also generally higher with respect to other data sources than the "within" correlation in other data sources. The discrepancies are highest between the data referring to the different underlying product classifications in the UN-COMTRADE.

Table 7: Simple correlations between nominal bilateral exports and mirror statistics from different sources at intensive margin

(All data are converted into US-Dollar)

Source "mirrored imports"	Source exports						
	UN Rev. 1	UN Rev. 2	UN Rev. 3	UN Rev. 4	OECD	IMF	Eurostat
UN Rev. 1	0.9616	0.9611	0.9601	0.9541	0.9905	0.9635	0.9839
UN Rev. 2	0.9621	0.9619	0.9610	0.9549	0.9909	0.9644	0.9857
UN Rev. 3	0.9610	0.9607	0.9608	0.9547	0.9908	0.9632	0.9852
UN Rev. 4	0.9567	0.9562	0.9562	0.9556	0.9890	0.9579	0.9813
OECD	0.9809	0.9807	0.9803	0.9763	0.9922	0.9808	0.9856
IMF	0.9671	0.9672	0.9665	0.9625	0.9930	0.9684	0.9917
Eurostat	0.9873	0.9897	0.9897	0.9881	0.9936	0.9913	0.9961

Source: Own calculations.

Table 8 displays discrepancies in the mirror statistics ("mirrored imports") across databases by summarizing frequency counts on the match/mismatch of positive and non-positive exports with the respective flows in the mirror statistics. In general, the disparities are quite high, both within the same database as well as in a comparison between the different sources.

Looking at the data in more detail first reveals, that import flows are more extensively reported than export flows in all comparisons within the same databases and in comparison between the different versions of the UN-COMTRADE data. Thus, the number of reported import flows in the mirror statistics that have no corresponding match in the export statistics clearly outweigh the number of counts reporting export flows without a match in imports in the mirror statistics in the majority of cases.

Secondly, the number of covered trade flows between partners is more extensive in the UN-COMTRADE and the IMF-DOT than in the Eurostat-COMEXT or the OECD trade statistics. We see this as the number of reported export flows in the former two databases always outweigh the respective number of import flows recorded in the other data sources.

Table 8: Positive versus non-positive exports and mirror statistics from different sources

(Frequency counts)

Source "mirrored imports"	Source exports	$X_{ij} > 0 \text{ \& } M_{ji} > 0$	Only $X_{ij} > 0$	Only $M_{ji} > 0$	Neither > 0
UN Rev. 1	UN Rev. 1	398,035	34,715	95,039	129,257
UN Rev. 2	UN Rev. 1	300,270	25,492	71,938	92,218
UN Rev. 3	UN Rev. 1	228,545	19,203	55,339	64,780
UN Rev. 4	UN Rev. 1	17,994	629	3,166	2,131
OECD	UN Rev. 1	112,387	18,025	10,779	18,272
IMF	UN Rev. 1	404,683	96,278	56,005	227,899
Eurostat	UN Rev. 1	47,155	678	6,959	3,980
UN Rev. 1	UN Rev. 2	300,696	25,218	71,192	92,384
UN Rev. 2	UN Rev. 2	287,687	24,163	68,011	85,927
UN Rev. 3	UN Rev. 2	229,282	19,387	55,864	65,341
UN Rev. 4	UN Rev. 2	18,084	641	3,303	2,238
OECD	UN Rev. 2	81,335	10,148	8,475	10,292
IMF	UN Rev. 2	324,667	54,807	45,158	161,927
Eurostat	UN Rev. 2	47,253	694	7,074	4,145
UN Rev. 1	UN Rev. 3	229,512	19,373	53,596	64,426
UN Rev. 2	UN Rev. 3	230,566	19,738	53,957	65,144
UN Rev. 3	UN Rev. 3	220,810	18,703	52,526	61,611
UN Rev. 4	UN Rev. 3	18,084	641	3,303	2,238
OECD	UN Rev. 3	60,056	6,101	6,429	6,015
IMF	UN Rev. 3	247,481	35,023	33,782	108,088
Eurostat	UN Rev. 3	44,889	666	6,732	4,026
UN Rev. 1	UN Rev. 4	19,128	1,092	2,000	1,614
UN Rev. 2	UN Rev. 4	19,352	1,196	2,075	1,715
UN Rev. 3	UN Rev. 4	19,352	1,196	2,075	1,715
UN Rev. 4	UN Rev. 4	12,496	313	1,102	612
OECD	UN Rev. 4	4,493	366	94	100
IMF	UN Rev. 4	22,011	2,047	1,010	4,092
Eurostat	UN Rev. 4	4,198	45	169	120
UN Rev. 1	OECD	125,109	2,453	26,095	6,021
UN Rev. 2	OECD	90,731	2,229	14,100	3,390
UN Rev. 3	OECD	66,779	1,899	7,871	2,135
UN Rev. 4	OECD	4,626	10	430	19
OECD	OECD	29,822	4,358	4,556	2,082
IMF	OECD	147,857	15,983	21,890	20,959
Eurostat	OECD	11,262	10	262	261
UN Rev. 1	IMF	409,082	24,511	162,879	203,984
UN Rev. 2	IMF	326,257	19,496	98,057	144,319
UN Rev. 3	IMF	249,077	14,596	65,121	94,612
UN Rev. 4	IMF	21,519	443	3,785	3,750
OECD	IMF	135,079	18,234	24,859	33,614
IMF	IMF	499,725	68,363	104,883	456,663
Eurostat	IMF	57,302	556	6,193	5,892
UN Rev. 1	Eurostat	53,055	2,706	1,178	1,824
UN Rev. 2	Eurostat	53,287	2,850	1,204	1,935
UN Rev. 3	Eurostat	50,579	2,804	1,185	1,921
UN Rev. 4	Eurostat	4,433	48	58	27
OECD	Eurostat	11,297	225	58	215
IMF	Eurostat	62,912	3,244	537	3,250
Eurostat	Eurostat	8,516	0	2	287

Source: Own calculations.

Thirdly, the mismatch is especially high in databases and between databases covering less-developed countries as reporters with less advanced trade statistics. The least deviations in the mirror statistics are found for Eurostat trade statistic with only EU Members as reporters. Eurostat has made many efforts to increase the quality of trade statistics and to align mirror statistics. These efforts seem to carry over to the quality of data reported to supranational organizations from the subgroup of EU Member Countries.

For the other databases, the number of cases reporting positive exports without a match in the import flow of the respective mirror statistics is quite large. It amounts to about 8 percent of all covered trade flows with reported positive exports between partners in comparisons within the various data formats published in the UN-COMTRADE Rev. 1 to Rev. 4. It reaches almost 20 percent of all positive reported trade flows covered in UN Rev. 1 in a comparison to the IMF-DOT series and to about 15 percent in comparison to OECD data. Concerning all comparisons with the UN-COMTRADE data referring to different SITC revisions, all deviations are highest with respect to UN Rev. 1 and lowest with respect to UN Rev. 4.

Table 9 reports the biggest deviations of bilateral exports across the supranational data sources measured in million US-Dollar. The largest discrepancies can be found in a comparison of UN and OECD databases to the IMF and Eurostat trade data and in bilateral exports from the Netherlands to Germany and Belgium. A major part of the deviations can be attributed to the "Rotterdam effect" (in reference to Rotterdam as one of the major European transshipment points) due to the special treatment of goods in transit in the Eurostat-COMEXT trade statistics (and the IMF-DOT). While goods in transit are excluded as a general rule in trade statistics, data sourced from the COMEXT includes goods in transit in trade flows between Member States if the goods originated from a Non-EU Member Country.

Deviations between different data classification formats within the UN-COMTRADE database (UN Rev. 1 – UN Rev. 4) and also between OECD and the UN-COMTRADE statistics in general, mostly reflect problems of re-classifications from the originally reported goods classification format to other formats in the presence of confidential items at the disaggregated product level for which no partner country information is available, or the existence of specific items such as "bunkers" that are not attributed to specific partner countries (see chapter 2.2 for more details). Confidentiality and unspecified categories seem to have been extremely large in reported trade statistics of the Netherlands and Germany and partly also Norway and Russia. Missing trade due to confidential trade data at the disaggregated level is an issue in re-groupings of product level data to UN Rev. 1 and UN Rev. 2, while no problems can be found in reclassifications between UN Rev. 3 and UN Rev. 4. Confidential data quite often refers to deliveries of mineral fuels.

Table 9: Biggest deviations of bilateral exports across sources
(All data are converted into US-Dollar)

		Rank				
		1	2	3	4	5
Source exports 1	Source exports 2	From → to Year $X_{i1}-X_{i2}$ (mn \$)	From → to Year $X_{i1}-X_{i2}$ (mn \$)	From → to Year $X_{i1}-X_{i2}$ (mn \$)	From → to Year $X_{i1}-X_{i2}$ (mn \$)	From → to Year $X_{i1}-X_{i2}$ (mn \$)
UN Rev. 1	UN Rev. 2	NLD→DEU 2001 -14,823	NLD→DEU 2002 -14,431	RUS→DEU 2008 -13,564	NLD→DEU 2008 -12,619	NLD→DEU 2003 -12,436
UN Rev. 1	UN Rev. 3	DEU→UNS 2008 -35,367	NLD→DEU 2001 -14,823	NLD→DEU 2002 -14,431	RUS→DEU 2008 -13,564	NLD→DEU 2008 -12,619
UN Rev. 1	UN Rev. 4	DEU→UNS 2008 -35,367	RUS→DEU 2008 -13,564	NLD→DEU 2008 -12,619	RUS→TUR 2008 -10,823	RUS→ITA 2008 -9,843
UN Rev. 1	OECD	MEX→USA 1991 -15,224	NLD→DEU 2001 -14,841	NLD→DEU 2002 -14,413	NLD→DEU 1998 -12,935	NLD→DEU 2008 -12,528
UN Rev. 1	IMF	NLD→DEU 2008 -41,731	NLD→BEL 2008 -31,909	NLD→DEU 2007 -31,412	NLD→DEU 2006 -28,705	NLD→DEU 2005 -26,807
UN Rev. 1	Eurostat	NLD→DEU 2008 -42,100	NLD→BEL 2008 -31,677	NLD→DEU 2007 -31,484	NLD→DEU 2006 -28,740	NLD→DEU 2005 -26,885
UN Rev. 2	UN Rev. 3	DEU→UNS 2008 -35,367	RUS→SPE 1996 -9,503	NOR→GBR 2008 -2,626	NOR→DEU 2008 -1,254	NOR→NLD 2008 -1,008
UN Rev. 2	UN Rev. 4	DEU→UNS 2008 -35,367	NOR→GBR 2008 -2,626	NOR→DEU 2008 -1,254	NOR→NLD 2008 -1,008	NOR→FRA 2008 -920
UN Rev. 2	OECD	NLD→UNS 2008 -19,329	NLD→UNS 2007 -16,345	MEX→USA 1991 -15,215	NLD→UNS 2006 -14,308	NLD→DEU 1998 -12,871
UN Rev. 2	IMF	NLD→DEU 2008 -29,112	NLD→BEL 2008 -24,588	NLD→DEU 2007 -22,214	NLD→DEU 2006 -18,944	NLD→BEL 2007 -18,089
UN Rev. 2	Eurostat	NLD→DEU 2008 -29,481	NLD→BEL 2008 -24,357	NLD→DEU 2007 -22,286	NLD→DEU 1998 -19,189	NLD→DEU 2006 -18,980
UN Rev. 3	UN Rev. 4	- - 0	- - 0	- - 0	- - 0	- - 0
UN Rev. 3	OECD	NLD→UNS 2008 -19,329	NLD→UNS 2007 -16,345	MEX→USA 1991 -15,215	NLD→UNS 2006 -14,308	NLD→DEU 1998 -12,871
UN Rev. 3	IMF	NLD→DEU 2008 -29,112	NLD→BEL 2008 -24,588	NLD→DEU 2007 -22,214	NLD→DEU 2006 -18,944	NLD→BEL 2007 -18,089
UN Rev. 3	Eurostat	NLD→DEU 2008 -29,481	NLD→BEL 2008 -24,357	NLD→DEU 2007 -22,286	NLD→DEU 1998 -19,189	NLD→DEU 2006 -18,980

Table 9/continuation

		Rank				
		1	2	3	4	5
Source exports 1	Source exports 2	From → to Year $X_{i1}-X_{i2}$ (mn \$)	From → to Year $X_{i1}-X_{i2}$ (mn \$)	From → to Year $X_{i1}-X_{i2}$ (mn \$)	From → to Year $X_{i1}-X_{i2}$ (mn \$)	From → to Year $X_{i1}-X_{i2}$ (mn \$)
UN Rev. 4	OECD	NLD→UNS 2008 -19,329	NLD→UNS 2007 -16,345	ESP→UNS 2008 -6,115	DEU→NLD 2008 -5,512	BEL→UNS 2008 -5,280
UN Rev. 4	IMF	NLD→DEU 2008 -29,112	NLD→BEL 2008 -24,588	NLD→DEU 2007 -22,214	NLD→BEL 2007 -18,089	SAU→KOR 2007 -17,615
UN Rev. 4	Eurostat	NLD→DEU 2008 -29,481	NLD→BEL 2008 -24,357	NLD→DEU 2007 -22,286	NLD→BEL 2007 -18,007	NLD→FRA 2008 -9,277
OECD	IMF	NLD→DEU 2008 -29,204	NLD→BEL 2008 -24,524	NLD→DEU 2007 -22,254	NLD→DEU 2006 -19,178	NLD→DEU 2005 -18,593
OECD	Eurostat	NLD→DEU 2008 -29571.94	NLD→BEL 2008 -24293.22	NLD→DEU 2007 -22326.06	NLD→DEU 2006 -19212.91	NLD→DEU 2005 -18671.77
IMF	Eurostat	NLD→DEU 1998 -15,314	NLD→DEU 1997 -12,581	NLD→DEU 1996 -11,042	GBR→FRA 2006 -9,223	FRA→DEU 1991 -7,470

Source: Own calculations.

Despite the fact that IMF-DOT statistics for EU Members are sourced from Eurostat-COMEXT, Table 9 also reports instances of large discrepancies in measured exports between the two data sources. The reason for the large deviations in the data in the export flows from the Netherlands to Germany is that from 1993 to 1998 reported exports in the IMF-DOT exclude estimations of underreporting as a result of the introduction of completely new data collection system between EU Members (INTRASTAT) following the establishment of the Single Market. Aside from that, deviations may result from different practices in currency conversion and different revision patterns and practices.

Finally, Table 10 displays deviations of bilateral "mirrored" imports. Overall, the table produces the same picture as drawn for export flows. An interesting detail of the mirror statistics concerns the much higher discrepancies between reported imports sourced from Eurostat (COMEXT and IMF-DOT) and the other data sources. While the "Rotterdam effect" again highly inflates Germany's and Belgian reported imports from the Netherlands, an additional bias is introduced as Intra-EU import flows are attributed to the country of consignment in the INTRASTAT system which diverts from the country of origin definition of partner countries for imports in most national and supranational trade statistics.

Table 10: Biggest deviations of bilateral "mirrored imports" across sources
(All data are converted into US-Dollar)

		Rank				
		1	2	3	4	5
Source imports 1	Source imports 2	From → to Year $M_{j1}-M_{j2}$ (mn \$)	From → to Year $M_{j1}-M_{j2}$ (mn \$)	From → to Year $M_{j1}-M_{j2}$ (mn \$)	From → to Year $M_{j1}-M_{j2}$ (mn \$)	From → to Year $M_{j1}-M_{j2}$ (mn \$)
UN Rev. 1	UN Rev. 2	NOR → DEU 2008 -15,823	RUS → DEU 2008 -15,775	DEU → NLD 2008 -14,875	NOR → DEU 2006 -11,742	RUS → DEU 2006 -11,290
UN Rev. 1	UN Rev. 3	UNS → DEU 2008 -54,771	DEU → NLD 2008 -14,875	NOR → DEU 2006 -11,742	RUS → DEU 2006 -11,290	RUS → DEU 2007 -11,226
UN Rev. 1	UN Rev. 4	UNS → DEU 2008 -54,771	DEU → NLD 2008 -14,875	RUS → DEU 2007 -11,226	DEU → NLD 2007 -10,842	NOR → DEU 2007 -10,841
UN Rev. 1	OECD	NOR → DEU 2008 -15,849	RUS → DEU 2008 -15,808	DEU → NLD 2008 -14,892	USA → MEX 1991 -12,216	NOR → DEU 2006 -11,741
UN Rev. 1	IMF	NLD → DEU 2008 -50,817	NLD → DEU 2007 -45,214	NLD → DEU 2006 -39,291	BEL → DEU 2008 -28,200	BEL → DEU 2007 -27,368
UN Rev. 1	Eurostat	NLD → DEU 2008 -51,207	NLD → DEU 2007 -45,123	NLD → DEU 2006 -39,333	NLD → DEU 2005 -35,466	BEL → DEU 2008 -28,057
UN Rev. 2	UN Rev. 3	UNS → DEU 2008 -54,771	USA → GBR 1998 -6,327	SWE → NOR 2008 -785	DEU → NOR 2008 -735	FRA → GBR 1998 -693
UN Rev. 2	UN Rev. 4	UNS → DEU 2008 -54,771	SWE → NOR 2008 -785	DEU → NOR 2008 -735	DNK → NOR 2008 -379	CHN → NOR 2008 -355
UN Rev. 2	OECD	UNS → NLD 2008 -17,030	UNS → NLD 2007 -12,469	USA → MEX 1991 -12,215	DZA → ITA 2008 -11,024	UNS → NLD 2006 -10,760
UN Rev. 2	IMF	NLD → DEU 2008 -40,979	NLD → DEU 2007 -38,052	NLD → DEU 2006 -31,879	BEL → DEU 2008 -27,100	BEL → DEU 2007 -26,088
UN Rev. 2	Eurostat	NLD → DEU 2008 -41,369	NLD → DEU 2007 -37,960	NLD → DEU 2006 -31,920	NLD → DEU 2005 -30,026	BEL → DEU 2008 -26,957
UN Rev. 3	UN Rev. 4	- - 0	- - 0	- - 0	- - 0	- - 0
UN Rev. 3	OECD	UNS → NLD 2008 -17,030	NOR → DEU 2008 -15,839	RUS → DEU 2008 -15,808	UNS → NLD 2007 -12,469	USA → MEX 1991 -12,215
UN Rev. 3	IMF	NLD → DEU 2008 -50,758	NLD → DEU 2007 -38,052	NLD → DEU 2006 -31,879	BEL → DEU 2008 -28,194	BEL → DEU 2007 -26,088
UN Rev. 3	Eurostat	NLD → DEU 2008 -51,149	NLD → DEU 2007 -37,960	NLD → DEU 2006 -31,920	NLD → DEU 2005 -30,026	BEL → DEU 2008 -28,050

Table 10/continuation

		Rank				
		1	2	3	4	5
Source imports 1	Source imports 2	From → to Year $M_{ji}-M_{j2}$ (mn \$)	From → to Year $M_{ji}-M_{j2}$ (mn \$)	From → to Year $M_{ji}-M_{j2}$ (mn \$)	From → to Year $M_{ji}-M_{j2}$ (mn \$)	From → to Year $M_{ji}-M_{j2}$ (mn \$)
UN Rev. 4	OECD	UNS → NLD 2008 -17,030	NOR → DEU 2008 -15,839	RUS → DEU 2008 -15,808	UNS → NLD 2007 -12,469	DZA → ITA 2008 -11,024
UN Rev. 4	IMF	NLD → DEU 2008 -50,758	NLD → DEU 2007 -38,052	BEL → DEU 2008 -28,194	BEL → DEU 2007 -26,088	BEL → FRA 2008 -23,628
UN Rev. 4	Eurostat	NLD → DEU 2008 -51,149	NLD → DEU 2007 -37,960	BEL → DEU 2008 -28,050	BEL → DEU 2007 -26,115	BEL → FRA 2008 -23,794
OECD	IMF	NLD → DEU 2007 -41,296	NLD → DEU 2008 -40,904	NLD → DEU 2006 -31,871	BEL → DEU 2007 -29,589	BEL → DEU 2008 -27,058
OECD	Eurostat	NLD → DEU 2008 -41,294	NLD → DEU 2007 -41,205	NLD → DEU 2006 -31,912	BEL → DEU 2007 -29,616	NLD → DEU 2005 -28,046
IMF	Eurostat	NLD → DEU 2005 -28,088	NLD → DEU 2004 -23,456	BEL → DEU 2005 -18,755	BEL → DEU 2004 -18,544	NLD → DEU 2003 -17,549

Source: Own calculations.

4. Consequences for empirical research – some applications

Numerous research articles in the international trade literature are based on bilateral trade flows published by the international organizations and reviewed in this paper. Bilateral trade data have been most extensively used in research related to the gravity model of trade spanning over a wide range of topics in international trade from the estimation of trade potentials (e.g. Hamilton and Winters, 1992, Baldwin, 1994, or Baldwin, Francois and Portes, 1997, Egger 2002), the size of home-market effects (Davis and Weinstein, 2003), GATT/WTO membership and regional trade agreements (e.g. Frankel, 1997, Rose 2004, Egger and Larch, 2010, Egger, Larch, Staub and Winkelmann, 2011) to currency unions (e.g., Rose, 2000, Egger, 2008).

In its traditional form as introduced by Tinbergen (1962) the gravity model traces bilateral trade linkages between countries in terms of their country size (national GDP or population) and both trade resistance (distance related cost of transportation, tariff barriers) and trade enhancing factors (common border, common language, colonial ties etc.). Eaton and Kortum (2002) and Anderson and van Wincoop (2003) were important contributions both , in terms of theoretical underpinning and in terms of improvement in estimation techniques by including multilateral resistance variables. Intuitively, they capture the fact that the strength of trade relationships between any two countries not only depends on the distance between the two, but also on how far apart each of them is with respect to other countries. Most recently, Helpman, Melitz and Rubinstein (2008) took an important step of theoretical as well as empirical relevance, by introducing the possibility of zero trade flows between countries. They showed that ignoring countries that do not trade with each other not only gives up important information contained in the data but also leads to biased estimates. Much in the same vein, estimating the gravity equation only for countries that have positive trade flows between them – ignoring all trade flows in only one direction – biases estimates. Their contribution also underlined the importance to analyze the intensive and extensive margins of trade (see also Felbermayr and Kohler, 2006, Egger, Larch, Staub and Winkelmann, 2011).

Obviously the most important data issue is to decide whether missing observations in bilateral trade statistics are to be interpreted as non-reportings or as genuinely zero trade flows. Most data sources do not provide such information. Clearly, however, any such analysis incorporating the intensive and extensive margins should involve extensive scrutiny and include thorough comparisons of recorded trade flows between different data sources as well as a close inspection of mirror statistics. The analysis of the last chapters has highlighted some severe deviations in reporting not only with respect to the intensive margin (examined in the standard gravity literature) but also the extensive margin.

Table 11: Sensitivity of gravity model coefficients to the choice of alternative data
(All data used are for the year 2008)

Intensive margin model: regressing log bilateral trade on $\ln(\text{distance}_{ij})$, border_{ij} , language_{ij} , colony_{ij} , and exporter and importer fixed effects								
	Bilateral exports in US-Dollar				Bilateral "mirrored imports" in US-Dollar			
Coefficient moments	$\ln(\text{distance}_{ij})$	border_{ij}	language_{ij}	colony_{ij}	$\ln(\text{distance}_{ij})$	border_{ij}	language_{ij}	colony_{ij}
5 th percentile	-1.76	-0.10	0.48	0.90	-1.72	-0.38	0.47	0.85
25 th percentile	-1.69	-0.03	0.70	0.93	-1.63	-0.27	0.72	0.88
Median	-1.64	0.38	0.80	0.97	-1.57	0.35	0.90	0.92
75 th percentile	-1.47	0.57	0.93	1.00	-1.46	0.70	1.01	1.02
95 th percentile	-1.40	0.58	0.96	1.08	-1.13	0.74	1.02	1.13
Mean	-1.62	0.24	0.77	0.98	-1.49	0.25	0.82	0.95
Standard deviation	0.12	0.30	0.18	0.05	0.19	0.43	0.22	0.08
Extensive margin model: regressing bilateral trade dummy on $\ln(\text{distance}_{ij})$, border_{ij} , language_{ij} , colony_{ij} and exporter and importer fixed effects								
	Bilateral exports in US-Dollar				Bilateral "mirrored imports" in US-Dollar			
Coefficient moments	$\ln(\text{distance}_{ij})$	border_{ij}	language_{ij}	colony_{ij}	$\ln(\text{distance}_{ij})$	border_{ij}	language_{ij}	colony_{ij}
5 th percentile	-0.11	-0.16	-0.01	-0.01	-0.09	-0.12	0.04	-0.01
25 th percentile	-0.10	-0.11	0.03	0.01	-0.07	-0.08	0.04	0.00
Median	-0.07	-0.08	0.10	0.02	-0.05	-0.06	0.08	0.00
75 th percentile	0.00	-0.02	0.10	0.05	-0.02	-0.05	0.08	0.05
95 th percentile	0.02	0.01	0.11	0.06	0.00	-0.03	0.12	0.07
Mean	-0.05	-0.07	0.06	0.03	-0.04	-0.07	0.07	0.02
Standard deviation	0.05	0.06	0.04	0.02	0.03	0.03	0.03	0.03

Source: Own calculations.

Table 11 summarizes the sensitivity of the parameters on the most widely used gravity model variables to the choice of alternative data sources and covered country samples when using data for the year 2008 only. The general form of the regressions estimated is

$$\ln X_{ij} \text{ or } D_{ij} = b_a \ln(\text{distance}_{ij}) + b_b \text{border}_{ij} + b_c \text{language}_{ij} + b_d \text{colony}_{ij} + m_i + l_j + u_{ij},$$

where X_{ij} are nominal aggregate bilateral goods exports from country i to j (or corresponding mirror statistics imports of j from i), D_{ij} is a binary variable which is unity if X_{ij} in a given database is greater than zero and nonmissing, distance_{ij} is the bilateral distance between country i and j , border_{ij} is a binary variable which is unity if i and j share a common land border, language_{ij} is an indicator variable which is unity if two countries share a common official language, and colony_{ij} is unity if j was a colony of i or vice versa in the past. These covariates are available from the Centre d'Études Prospectives et d'Informations Internationales' geographical database. m_i and l_j are country-specific fixed effects which are always included but not reported, and u_{ij} is a remainder error term.

We run the above linear gravity model on the intensive ($\ln X_{ij}$) and extensive (D_{ij}) margin of bilateral exports in a large number of subsamples, where the sample size and composition is determined by the content of the respective databases. For instance, denote the four revisions of UN statistics for bilateral exports as UX1 - UX4 and the corresponding mirror statistics data by UM1 - UM4. Moreover, denote the corresponding data from OECD, IMF, and

Eurostat by OX, OM, IX, IM, EX, and EM. Then, we run regressions on all data for UX1 wherever UX1 and UX1 (i.e., UX1 only), UX1 and UX2, UX1 and UX3, etc., and UX1 and EX1 are nonmissing, and similarly for all other combinations; and similarly for mirror statistics imports. With 14 databases on exports and mirror statistics imports, this gives $6*7/2=3*7=21$ regressions for both the intensive and the extensive margin and exports and mirror statistics imports each. In Table 11, we summarize seven moments of the distribution of each of the parameters b_d , b_b , b_l , and b_c . Those moments are the 5th, 25th, 50th (median), 75th, and 95th percentile values together with the mean and the standard deviation of the respective parameter in the sample of 21 estimated parameters. Hence, Table 11 indicates the qualitative and quantitative sensitivity of core gravity model parameter estimates which accrues only to the sample composition and reporting content of alternative bilateral trade datasets as collected and published by supranational institutions.

The content of Table 11 suggests the following conclusions. First, there is a significant variability of the parameters which appears to be even bigger at the extensive margin of trade. For instance, the inter-decile range around the log distance coefficient (b_d) at the intensive margin of bilateral exports amounts to approximately $\pm 1.96*0.1207$ or about 29% of the corresponding average value, -1.6167. For mirror imports, the inter-decile range amounts to more than 51% of the mean, -1.4890. The corresponding inter-decile ranges for the parameters of common language (b_l) and, especially, common border (b_b) span 100% and several-100% of the corresponding averages at the intensive margin at the top of Table 11. Every one of the parameters on the considered variables bears an inter-decile range of more than 100% of the corresponding average coefficient at the extensive trade margin at the bottom of Table 11. Some coefficients such as b_b at both intensive margin and the extensive bilateral exports margin but even b_d at the extensive bilateral export margin or b_c at the extensive mirror statistics import margin do not even have a stable sign in the distribution. This indicates that reporting standards and the sample composition of aggregate bilateral trade data are of key importance to the researcher who is interested in obtaining quantitatively meaningful parameter estimates on key trade cost factors and eventually other covariates.

5. Conclusions

The analysis identified numerous sources of discrepancies that may be grouped into the following broad categories: the trade system (general or special trade system), concepts for geographical classifications (country of origin or country of consignment, definitions of statistical territory), the coverage of trade (esp. as relates to transit trade, repair trade), the valuation (definition of statistical value, currency conversions), the system of data collection (customs declarations, declaration of firms) and different versions of commodity classifications. Different national statistical practices with respect to these are mainly a source of discrepancy in mirror statistics. Possible source of discrepancy between international data sources are different methods of data conversion to a common currency (Euro or US-Dollar), the frequency of the originally reported data (monthly/quarterly/yearly) in conjunction with possibly different revision patterns for the different series (reflected in the yearly data) and finally, the level of industry aggregation and type and version of commodity classification reported to the international organization. Discontinuities of methodology and statistical reporting systems over time are another dimension of the problem of comparability of different data sources.

While these sources of deviations are often interlinked and difficult to isolate, the widely different principles and concepts governing the collection of trade statistics in EU Member Countries in the EU-COMEXT INTRASTAT system since 1993 were found to give rise to some of the largest discrepancies. The most prominent example is the different recording of trade flows between the Netherlands and Germany, where we found COMEXT recorded exports to deviate from other data sources by as much as bn 30 \$ to bn 40 \$ in 2008, and in "mirrored imports" by bn 40 \$ to bn 50 \$. The "Rotterdam effect", that is the inclusion of goods in transit in INTRASTAT bilateral trade flows is the major reason for the deviations, especially in comparison to UN-COMTRADE and OECD-MSIT data. In addition, different practices of currency conversions or applications of different exchange rates, as well as different revision patterns and practices produce deviations also with respect to the IMF-DOT trade statistics.

In a comparison between bilateral exports and the mirrored imports we find EU-COMEXT data and OECD-MSIT data to perform best. The discrepancies at the intensive margin (trade volumes) are highest between the different data versions published in the UN-COMTRADE. At the extensive margin, the alignment between the number of reported export relationships by the exporting countries and the number of import linkages reported by the trading partners is highest for the EU-COMEXT, it is much lower for all other and they are again lowest with respect to the UN-COMTRADE data.

The variability of trade data at the extensive and intensive margin does not only show up in descriptive features of the databases, but it impacts parameter estimates in gravity models. In one section of this paper, we utilized the data from various sources to run identical log-linear models at the intensive margin of bilateral trade and linear probability models at the

extensive margin. We found that many parameters of key variables such as log bilateral distance, common borders, common language, or a colonial relationship dummy variable varied dramatically and even did not have a stable sign in the distribution of estimates. We conclude from this that the heterogeneous reporting standards across data sources and the inhomogeneous sample coverage display a dramatic impact on the magnitudes and even the signs of key trade cost factors.

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Appendix

Table A1: List of all countries in the world economy and their coverage in supranational trade statistics

		COMTRADE UN Rev. 1		COMTRADE UN Rev. 2		COMTRADE UN Rev. 3		COMTRADE UN Rev. 4		OECD Monthly Statistics		Eurostat-COMEXT		IMF-DOT	
3-digit iso-code	2-digit iso-code	Country	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as partner from to
ABW	AW	Aruba	1988 2005	1988 2008	1988 2008	1988 2008	2000 2008	1988 2008	2007 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
AFG	AF	Afghanistan	1962 2008	1962 2008	2008 2008	2008 2008	2008 2008	1988 2008	2007 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
AGO	AO	Angola	1962 1991	1962 2008	1976 2008	1976 2008	1990 1991	1988 2008	2007 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
AIA		Anguilla	2000 2008	1981 2008	2000 2008	1981 2008	2000 2008	1988 2008	2007 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
ALB	AL	Albania	1996 2008	1962 2008	1996 2008	1976 2008	1996 2008	1988 2008	2007 2008	1960 2008	1988 2008	1988 2008	1988 2008	1981 2008	1948 2008
AMOC		American Oceania										1988 2000			
AND		Andorra	1995 2006	1962 2008	1995 2006	1976 2008	1995 2006	1988 2008	2007 2008	1960 2008	1988 2008	1988 2008	1988 2008		
ANT	AN	Netherlands Antilles	1962 2008	1962 2008	1998 2008	1976 2008	2003 2008	1988 2008	2007 2008	1960 2008	1988 2008	1988 2008	1988 2008	1948 2008	1948 2008
ARE	AE	United Arab Emirates	1978 2008	1962 2008	1984 2008	1976 2008	1991 2008	1988 2008	2008 2008	1960 2008	1988 2008	1988 2008	1988 2008	1976 2008	1948 2008
ARG	AR	Argentina	1962 2008	1962 2008	1980 2008	1976 2008	1992 2008	1988 2008	2007 2008	1960 2008	1988 2008	1988 2008	1988 2008	1948 2008	1948 2008
ARM	AM	Armenia	1997 2008	1992 2008	1997 2008	1992 2008	1997 2008	1988 2008	2007 2008	1992 2008	1988 2008	1988 2008	1988 2008	1992 2008	1992 2008
ASM	AS	American Samoa		2000 2008		2000 2008		2000 2008	2007 2008	1960 2008	2001 2008	2001 2008	2001 2008	1958 1979	
ATA		Antarctica		2000 2008		2000 2008		2000 2008	2007 2008	1982 2008					
ATF	FQ	French Southern Terr.		1976 2008		1981 2008		1988 2008	2007 2008	1996 2008					
ATG	AG	Antigua and Barbuda	1973 2007	1965 2008	1977 2007	1976 2008	1999 2007	1988 2008	2007 2008	1960 2008	1988 2008	1988 2008	1988 2008	1969 1979	
AUOC		Australian Oceania										1988 2000			
AUS	AU	Australia	1963 2008	1962 2008	1979 2008	1976 2008	1988 2008	1988 2008	2007 2008	1960 2008	1988 2008	1988 2008	1988 2008	1948 2008	1948 2008
AUT	AT	Austria	1963 2008	1962 2008	1978 2008	1976 2008	1988 2008	1988 2008	2007 2008	1960 2008	1995 2008	1988 2008	1988 2008	1948 2008	1948 2008
AZE	AZ	Azerbaijan	1996 2008	1992 2008	1996 2008	1992 2008	1996 2008	1992 2008	2007 2008	1992 2008				1992 2008	1992 2008
BAI		British Antarctic Terr.		1970 2004		1977 2004		1990 2004							
BDI	BI	Burundi	1965 2008	1962 2008	1976 2008	1976 2008	1993 2008	1988 2008	2007 2008	1960 2008	1988 2008	1988 2008	1988 2008	1969 2008	1960 2008
BEL	BE	Belgium	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008	2007 2008	1960 2008	1999 2008	1999 2008	1999 2008	1997 2008	1997 2008
BELU		Belgium-Luxembourg	1962 1998	1962 1998	1978 1998	1976 1998	1988 1998	1988 1998		1960 1998	1988 1998	1988 1998	1988 1998	1948 1996	1948 1996
BEN	BJ	Benin	1962 2006	1962 2008	1992 2006	1976 2008	1998 2006	1988 2008	2007 2008	1960 2008				1960 2008	1959 2008
BFA	BF	Burkina Faso	1962 2005	1962 2008	1976 2005	1976 2008	1995 2005	1988 2008	2007 2008	1960 2008				1960 2008	1959 2008
BGD	BD	Bangladesh	1977 2007	1972 2008	1977 2007	1976 2008	1989 2007	1988 2008	2007 2008	1972 2008				1972 2008	1962 2008
BGR	BG	Bulgaria	1996 2008	1962 2008	1996 2008	1976 2008	1996 2008	1988 2008	2007 2008	1960 2008	1999 2008	1988 2008	1988 2008	1948 2008	1948 2008
BHR	BH	Bahrain	1970 2007	1962 2008	1994 2007	1976 2008	1994 2007	1988 2008	2007 2008	1960 2008				1958 2008	1948 2008

Table A/continuation

3-digit iso-code	2-digit iso-code	Country	COMTRADE UN Rev. 1		COMTRADE UN Rev. 2		COMTRADE UN Rev. 3		COMTRADE UN Rev. 4		OECD Monthly Statistics		Eurostat-COMEXT		IMF-DOT	
			as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to
BHS	BS	Bahamas	1974 2008	1962 2008	1974 2008	1976 2008	1997 2008	1988 2008		2007 2008		1960 2008		1988 2008	1958 2008	1948 2008
BIH	BA	Bosnia-Herzegovina	2003 2008	1992 2008	2003 2008	1992 2008	2003 2008	1992 2008	2008 2008	2007 2008		1992 2008		1992 2008	1993 2008	1993 2008
BLR	BY	Belarus	1998 2008	1992 2008	1998 2008	1992 2008	1998 2008	1992 2008	2008 2008	2007 2008		1990 2008		1992 2008	1992 2008	1992 2008
BLZ	BZ	Belize	1975 2008	1962 2008	1992 2008	1976 2008	1992 2008	1988 2008		2007 2008		1960 2008		1988 2008	1963 2008	1948 2008
BMU	BM	Bermuda	1971 1995	1962 2008	1994 1995	1976 2008	1994 1995	1988 2008		2007 2008		1960 2008		1988 2008	1958 2008	1948 2008
BOL	BO	Bolivia	1962 2008	1962 2008	1977 2008	1976 2008	1992 2008	1988 2008	2007 2008	2007 2008		1960 2008		1988 2008	1948 2008	1948 2008
BRA	BR	Brazil	1962 2008	1962 2008	1983 2008	1976 2008	1989 2008	1988 2008	2008 2008	2007 2008		1960 2008		1988 2008	1948 2008	1948 2008
BRB	BB	Barbados	1967 2008	1962 2008	1980 2008	1976 2008	1992 2008	1988 2008		2007 2008		1960 2008		1988 2008	1958 2008	1948 2008
BRN	BN	Brunei	1962 2006	1962 2008	1986 2006	1976 2008	1992 2006	1988 2008		2007 2008		1960 2008		1988 2008	1960 2008	1960 2008
BTN	BT	Bhutan	1991 2008	1962 2008	1991 2008	1976 2008	1993 2008	1988 2008	2008 2008	2007 2008		1960 2008		1988 2008		
BUN		Bunkers		1962 2008		1976 2008		1988 2008		2007 2008		1960 2008				
BVT		Bouvet Island		2000 2008		2000 2008		2000 2008		2007 2008		1960 2008		2001 2008		
BWA	BW	Botswana	2000 2008	2000 2008	2000 2008	2000 2008	2000 2008	2000 2008		2007 2008		1960 2008		1988 2008		
CAF	CF	Central African Rep.	1962 2005	1962 2008	1976 2005	1976 2008	1993 2005	1988 2008		2007 2008		1960 2008		1988 2008	1960 2008	1960 2008
CAN	CA	Canada	1962 2008	1962 2008	1978 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008		1988 2008	1948 2008	1948 2008
CANL		Canary Islands												1988 2008		
CCK		Cocos (Keeling) Isl.		1967 2008		1976 2008		1988 2008		2007 2008		1962 2008		2001 2008		
CEME		Ceuta and Melilla												1988 1998		
CHE	CH	Switzerland	1962 2008	1962 2008	1976 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008		1988 2008	1948 2008	1948 2008
CHEU		Switzerland unsp.										1960 2008				
CHL	CL	Chile	1962 2008	1962 2008	1983 2008	1976 2008	1990 2008	1988 2008	2007 2008	2007 2008		1960 2008		1988 2008	1948 2008	1948 2008
CHN	CN	China	1984 2008	1962 2008	1984 2008	1976 2008	1992 2008	1988 2008	2007 2008	2007 2008		1960 2008		1988 2008	1960 2008	1948 2008
CICM		Canary I., Ceuta, Melilla														
CIV	CI	Côte d'Ivoire	1962 2008	1962 2008	1976 2008	1976 2008	1995 2008	1988 2008	2008 2008	2007 2008		1960 2008		1988 2008	1960 2008	1959 2008
CMR	CM	Cameroon	1962 2006	1962 2008	1976 2006	1976 2008	1990 2006	1988 2008		2007 2008		1960 2008		1988 2008	1948 2008	1948 2008
COG	CG	Congo	1962 1995	1962 2008	1977 1995	1976 2008	1993 1995	1988 2008		2007 2008		1960 2008		1988 2008	1960 2008	1959 2008
COK		Cook Islands	2005 2008	1962 2008	2000 2008	1976 2008	2000 2008	1988 2008	2008 2008	2007 2008		1962 2008		2001 2008		
COL	CO	Colombia	1962 2008	1962 2008	1978 2008	1976 2008	1991 2008	1988 2008	2007 2008	2007 2008		1960 2008		1988 2008	1948 2008	1948 2008
COM	KM	Comoros	1962 2007	1962 2008	1995 2007	1976 2008	1995 2007	1988 2008		2007 2008		1960 2008		1988 2008	1969 2008	1959 2008
CONF		Confid. info., differences										1960 2008				

Table A/continuation

3-digit iso-code	2-digit iso-code	Country	COMTRADE UN Rev. 1		COMTRADE UN Rev. 2		COMTRADE UN Rev. 3		COMTRADE UN Rev. 4		OECD Monthly Statistics		Eurostat-COMEXT		IMF-DOT	
			as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to
CPV	CV	Cape Verde	1978 2007	1962 2008	1978 2007	1976 2008	1997 2007	1988 2008							1970 2008	1948 2008
CRI	CR	Costa Rica	1965 2008	1962 2008	1986 2008	1976 2008	1994 2008	1988 2008	2007 2008	2007 2008					1948 2008	1948 2008
CSK	CS	Form. Czechoslovakia	1968 1990	1962 1992	1982 1990	1976 1992	1989 1990	1988 1992							1948 1992	1948 1992
CUB	CU	Cuba	1975 2006	1962 2008	1999 2006	1976 2008	1999 2006	1988 2008							1948 2008	1948 2008
CXR		Christmas Islands		1969 2008		1977 2008		1988 2008								
CYM	KY	Cayman Islands	1980 1980	1967 2008	1980 1980	1976 2008		1988 2008								
CYP	CY	Cyprus	1970 2008	1962 2008	1976 2008	1976 2008	1989 2008	1988 2008	2007 2008	2007 2008						
CZE	CZ	Czech Republic	1993 2008	1993 2008	1993 2008	1993 2008	1993 2008	1993 2008	2007 2008	2007 2008	1960 2008	1960 2008	1999 2008	1993 2008	1993 2008	1993 2008
DEU	DE	Germany	1962 2008	1962 2008	1978 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
DEUO		German Dem. Rep.	1985 1990	1962 1990	1985 1990	1976 1990		1988 1990							1948 1990	1948 1990
DIVZ		Divided Zone														
DJI	DJ	Djibouti	1962 1991	1962 2008	1986 1992	1976 2008		1988 2008							1981 2008	1948 2008
DMA	DM	Dominica	1977 2008	1962 2008	1981 2008	1976 2008	1993 2008	1988 2008							1976 2008	1969 2008
DNK	DK	Denmark	1962 2008	1962 2008	1976 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
DOM	DO	Dominican Republic	1971 2008	1962 2008	1992 2008	1976 2008	1996 2008	1988 2008	2007 2008	2007 2008					1948 2008	1948 2008
DZA	DZ	Algeria	1966 2007	1962 2008	1976 2007	1976 2008	1992 2007	1988 2008	2007 2007	2007 2008					1948 2008	1948 2008
ECU	EC	Ecuador	1962 2008	1962 2008	1978 2008	1976 2008	1990 2008	1988 2008	2008 2008	2007 2008					1948 2008	1948 2008
EGY	EG	Egypt	1965 2008	1962 2008	1981 2008	1976 2008	1994 2008	1988 2008	2008 2008	2007 2008					1948 2008	1948 2008
ERI	ER	Eritrea	2000 2003	1993 2008	2000 2003	1993 2008	2000 2003	1993 2008								
ESH		Western Sahara		1963 2008		1976 2008		1988 2008								
ESP	ES	Spain	1962 2008	1962 2008	1978 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
EST	EE	Estonia	1995 2008	1992 2008	1995 2008	1992 2008	1995 2008	1992 2008	2007 2008	2007 2008					1992 2008	1992 2008
ETI		Ethiopia (incl. Eritrea)	1962 1992	1962 1992	1976 1992	1976 1992		1988 1992								
ETH	ET	Ethiopia	1993 2008	1993 2008	1993 2008	1993 2008	1995 2008	1993 2008	2008 2008	2007 2008					1948 2008	1948 2008
FBUR		Former Burma														
FIN	FI	Finland	1963 2008	1962 2008	1976 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1995 2008	1988 2008	1948 2008	1948 2008
FJI	FJ	Fiji	1967 2007	1962 2008	1977 2007	1976 2008	1989 2007	1988 2008							1958 2008	1948 2008
FLK		Falkland Islands		1970 2008		1976 2008		1988 2008								1948 1979
FRA	FR	France	1962 2008	1962 2008	1978 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
FRAU		France unspecified														

Table A/continuation

			COMTRADE UN Rev. 1	COMTRADE UN Rev. 2	COMTRADE UN Rev. 3	COMTRADE UN Rev. 4	OECD Monthly Statistics	Eurostat-COMEXT	IMF-DOT
3-digit iso-code	2-digit iso-code	Country	as reporter from to	as reporter from to	as reporter from to	as reporter from to	as reporter from to	as reporter from to	as reporter from to
FRE		Free Zones	1962 2008	1976 2008	1988 2008	2007 2008			
FRO	FO	Faeroe Islands	1976 2006	1976 2008	1988 2006	2007 2008	1960 2008	1988 2008	1962 2008
FSM	FM	Micronesia	1992 2008	1992 2008	1992 2008	2007 2008	1987 2008	1992 2008	
GAB	GA	Gabon	1962 2006	1976 2006	1993 2006	2007 2008	1960 2008	1988 2008	1960 2008
GBR	GB	United Kingdom	1962 2008	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	1960 2008
GEO	GE	Georgia	1996 2008	1992 2008	1996 2008	2007 2008	1992 2008	1992 2008	1992 2008
GHA	GH	Ghana	1962 2008	1976 2008	1992 2008	2007 2008	1960 2008	1988 2008	1948 2008
GIB		Gibraltar	1962 2008	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	1948 1979
GIN	GN	Guinea	1995 2008	1976 2008	1995 2008	2007 2008	1960 2008	1988 2008	1959 2008
GLP		Guadeloupe	1962 1995	1976 1995	1988 1995	2007 2008	1960 2008	1988 1996	1959 1996
GMB	GM	Gambia	1964 2008	1976 2008	1995 2008	2007 2008	1960 2008	1988 2008	1963 2008
GNB	GW	Guinea-Bissau	1970 2005	1976 2008	2003 2005	2007 2008	1960 2008	1988 2008	1968 2008
GNQ	GQ	Equatorial Guinea	1962 2008	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	1981 2008
GRC	GR	Greece	1962 2008	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	1948 2008
GRD	GD	Grenada	1977 2008	1984 2008	1993 2008	2007 2008	1973 2008	1988 2008	1973 2008
GRL	GL	Greenland	1976 2007	1976 2008	1988 2007	2007 2008	1960 2008	1988 2008	1962 2008
GTM	GT	Guatemala	1965 2008	1986 2008	1993 2008	2007 2008	1960 2008	1988 2008	1948 2008
GUF		French Guiana	1962 1995	1976 1995	1988 1995	2007 2008	1960 2008	1988 1996	1963 1996
GUM	GU	Guam	2000 2008	2000 2008	2000 2008	2007 2008	1960 2008	2001 2008	1948 1979
GUY	GY	Guyana	1970 2008	1981 2008	1997 2008	2007 2008	1960 2008	1988 2008	1948 2008
HKG	HK	Hong Kong	1962 2008	1978 2008	1992 2008	2007 2008	1960 2008	1988 2008	1948 2008
HMD		Heard Isl., McDonald Isl.	2000 2008	2000 2008	2000 2008	2007 2008	1973 2008	2001 2008	
HND	HN	Honduras	1963 2007	1986 2007	1993 2007	2007 2008	1960 2008	1988 2008	1948 2008
HRV	HR	Croatia	1992 2008	1992 2008	1992 2008	2007 2008	1992 2008	1992 2008	1993 2008
HTI	HT	Haiti	1970 1997	1979 1997	1988 1997	2007 2008	1960 2008	1988 2008	1948 2008
HUN	HU	Hungary	1964 2008	1976 2008	1992 2008	2007 2008	1960 2008	1988 2008	1948 2008
IDN	ID	Indonesia	1962 2008	1979 2008	1989 2008	2007 2008	1960 2008	1988 2008	1948 2008
IND	IN	India	1962 2008	1978 2008	1988 2008	2007 2008	1960 2008	1988 2008	1948 2008
IOI		British Ind. Ocean Terr.	1971 2008	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	
IRL	IE	Ireland	1963 2008	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	1948 2008

Table A/continuation

3-digit iso-code	2-digit iso-code	Country	COMTRADE UN Rev. 1			COMTRADE UN Rev. 2			COMTRADE UN Rev. 3			COMTRADE UN Rev. 4			OECD Monthly Statistics			Eurostat-COMEXT			IMF-DOT		
			as reporter	from	to	as reporter	from	to	as reporter	from	to	as reporter	from	to	as reporter	from	to	as reporter	from	to	as reporter	from	to
IRN	IR	Iran, Islamic Republic of	1963 2006	1962 2008	1962 2008	1963 2006	1962 2008	1962 2008	1963 2006	1962 2008	1962 2008	1963 2006	1962 2008	1962 2008	1963 2006	1962 2008	1962 2008	1963 2006	1962 2008	1962 2008	1963 2006	1962 2008	1962 2008
IRQ	IQ	Iraq	1963 2008	1962 2008	1962 2008	1963 2008	1962 2008	1962 2008	1963 2008	1962 2008	1962 2008	1963 2008	1962 2008	1962 2008	1963 2008	1962 2008	1962 2008	1963 2008	1962 2008	1962 2008	1963 2008	1962 2008	1962 2008
ISL	IS	Iceland	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008
ISR	IL	Israel	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008
ITA	IT	Italy	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008
ITAU		Italy unspecified																					
JAM	JM	Jamaica	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008
JOR	JO	Jordan	1964 2008	1962 2008	1962 2008	1964 2008	1962 2008	1962 2008	1964 2008	1962 2008	1962 2008	1964 2008	1962 2008	1962 2008	1964 2008	1962 2008	1962 2008	1964 2008	1962 2008	1962 2008	1964 2008	1962 2008	1962 2008
JPN	JP	Japan	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008	1962 2008
KAZ	KZ	Kazakhstan	1995 2008	1992 2008	1992 2008	1995 2008	1992 2008	1992 2008	1995 2008	1992 2008	1992 2008	1995 2008	1992 2008	1992 2008	1995 2008	1992 2008	1992 2008	1995 2008	1992 2008	1992 2008	1995 2008	1992 2008	1992 2008
KEN	KE	Kenya	1976 2008	1962 2008	1962 2008	1976 2008	1962 2008	1962 2008	1976 2008	1962 2008	1962 2008	1976 2008	1962 2008	1962 2008	1976 2008	1962 2008	1962 2008	1976 2008	1962 2008	1962 2008	1976 2008	1962 2008	1962 2008
KGZ	KG	Kyrgyzstan	1995 2007	1992 2008	1992 2008	1995 2007	1992 2008	1992 2008	1995 2007	1992 2008	1992 2008	1995 2007	1992 2008	1992 2008	1995 2007	1992 2008	1992 2008	1995 2007	1992 2008	1992 2008	1995 2007	1992 2008	1992 2008
KHM	KH	Cambodia	1962 2004	1962 2008	2000 2004	1962 2008	2000 2004	2000 2004	1962 2008	2000 2004	2000 2004	1962 2008	2000 2004	2000 2004	1962 2008	2000 2004	2000 2004	1962 2008	2000 2004	2000 2004	1962 2008	2000 2004	2000 2004
KIR	KI	Kiribati	1973 2005	1970 2008	1983 2005	1973 2005	1976 2008	1976 2008	1983 2005	1976 2008	1976 2008	1983 2005	1976 2008	1976 2008	1983 2005	1976 2008	1976 2008	1983 2005	1976 2008	1976 2008	1983 2005	1976 2008	1976 2008
KNI		Saint Kitts and Nevis, Anguilla, Aruba	1979 1979	1968 1980				1976 1980															
KNA	KN	Saint Kitts and Nevis	1981 2007	1981 2008	1986 2007	1981 2008	1986 2007	1981 2008	1986 2007	1981 2008	1986 2007	1981 2008	1986 2007	1981 2008	1986 2007	1981 2008	1986 2007	1981 2008	1986 2007	1981 2008	1986 2007	1981 2008	1986 2007
KOR	KR	Korea	1962 2008	1962 2008	1976 2008	1976 2008	1976 2008	1976 2008	1988 2008	1988 2008	1988 2008	2007 2008	2007 2008	2007 2008	1960 2008	1960 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
KOSO		Kosovo													2004 2008	2004 2008	2004 2008	2005 2008	2005 2008	2005 2008	2005 2008	2005 2008	2005 2008
KWT	KW	Kuwait	1970 2007	1962 2008	1987 2007	1976 2008	1976 2008	1976 2008	1988 2007	1988 2007	1988 2007	2007 2008	2007 2008	2007 2008	1960 2008	1960 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
LAO	LA	Lao PDR	1962 1974	1962 2008	1976 2008	1976 2008	1976 2008	1976 2008	1988 2008	1988 2008	1988 2008	2007 2008	2007 2008	2007 2008	1960 2008	1960 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
LBN	LB	Lebanon	1967 2008	1962 2008	1977 2008	1977 2008	1976 2008	1976 2008	1997 2008	1997 2008	1997 2008	2007 2008	2007 2008	2007 2008	1960 2008	1960 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
LBR	LR	Liberia	1963 1984	1962 2008	1978 1984	1976 2008	1976 2008	1976 2008	1988 2008	1988 2008	1988 2008	2007 2008	2007 2008	2007 2008	1960 2008	1960 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
LBY	LY	Libya	1962 1998	1962 2008	1983 1998	1976 2008	1976 2008	1976 2008	1988 2008	1988 2008	1988 2008	2007 2008	2007 2008	2007 2008	1960 2008	1960 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
LCA	LC	Saint Lucia	1973 2008	1965 2008	1981 2008	1976 2008	1976 2008	1976 2008	1991 2008	1991 2008	1991 2008	2007 2008	2007 2008	2007 2008	1973 2008	1973 2008	1973 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
LIE	LI	Liechtenstein													1960 2008	1960 2008	1960 2008	1995 2008	1995 2008	1995 2008	1995 2008	1995 2008	1995 2008
LKA	LK	Sri Lanka	1962 2008	1962 2008	1979 2008	1976 2008	1976 2008	1976 2008	1990 2008	1990 2008	1990 2008	2008 2008	2008 2008	2008 2008	1960 2008	1960 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
LSO	LS	Lesotho	2000 2004	2000 2008	2000 2004	2000 2008	2000 2004	2000 2008	2000 2004	2000 2004	2000 2008	2007 2008	2007 2008	2007 2008	1960 2008	1960 2008	1960 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008	1988 2008
LTU	LT	Lithuania	1992 2008	1992 2008	1992 2008	1992 2008	1992 2008	1992 2008	1992 2008	1992 2008	1992 2008	2007 2008	2007 2008	2007 2008	1992 2008	1992 2008	1992 2008	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008
LUX	LU	Luxembourg	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008	2007 2008	2007 2008	2007 2008	1960 2008	1960 2008	1960 2008	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008	1999 2008

Table A/continuation

3-digit iso-code	2-digit iso-code	Country	COMTRADE UN Rev. 1		COMTRADE UN Rev. 2		COMTRADE UN Rev. 3		COMTRADE UN Rev. 4		OECD Monthly Statistics		Eurostat-COMEXT		IMF-DOT	
			as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to
LVA	LV	Latvia	1994 2008	1992 2008	1994 2008	1992 2008	1994 2008	1992 2008	2007 2008	2007 2008	1992 2008	1992 2008	1999 2008	1992 2008	1992 2008	1992 2008
MAC	MO	Macao	1973 2008	1962 2008	1976 2008	1976 2008	1989 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1963 2008	1948 2008
MAR	MA	Morocco	1962 2008	1962 2008	1976 2008	1976 2008	1993 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
MCO	MC	Monaco	1970 2004	1970 2004	1977 2004	1977 2004	1990 2004	1990 2004	2007 2008	2007 2008	1962 2008	1962 2008				
MDA	MD	Moldova, Republic of	1994 2008	1992 2008	1994 2008	1992 2008	1994 2008	1992 2008	2007 2008	2007 2008	1992 2008	1992 2008		1992 2008	1992 2008	1992 2008
MDG	MG	Madagascar	1962 2008	1962 2008	1976 2008	1976 2008	1990 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
MDV	MV	Maldives	1995 2008	1962 2008	1995 2008	1976 2008	1995 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008		1988 2008	1981 2008	1960 2008
MELI		Mellila														
MEX	MX	Mexico	1962 2008	1962 2008	1986 2008	1976 2008	1989 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008		1988 2008	1948 2008	1948 2008
MHL	MH	Marshall Islands	1992 2008	1992 2008	1992 2008	1992 2008		1992 2008	2007 2008	2007 2008	1987 2008	1987 2008	1992 2008	1992 2008		
MKD	MK	Macedonia, FYR	1994 2007	1993 2008	1994 2007	1993 2008	1994 2007	1993 2008	2007 2007	2007 2008	1992 2008	1992 2008		1993 2008	1993 2008	1993 2008
MLI	ML	Mali	1962 2008	1962 2008	1977 2008	1976 2008	1996 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008		1988 2008	1961 2008	1959 2008
MLT	MT	Malta	1965 2008	1962 2008	1990 2008	1976 2008	1990 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1999 2008	1988 2008	1948 2008	1948 2008
MMR	MM	Myanmar	1962 1992	1962 2008	1992 1992	1976 2008	1992 1992	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008		1988 2008	1948 2008	1948 2008
MNG	MN	Mongolia	1996 2007	1962 2008	1996 2007	1976 2008	1996 2007	1988 2008	2007 2007	2007 2008	1960 2008	1960 2008		1988 2008	1981 2008	1980 2008
MNP	MP	Northern Mariana Isl.	1992 2008	1992 2008	1992 2008	1992 2008		1992 2008	2007 2008	2007 2008	1990 2008	1990 2008		1994 2008		
MNT		Maykulan		2006 2008		2006 2008		2006 2008								
MON		Montenegro														
MOZ	MZ	Mozambique	1994 2008	1962 2008	1994 2008	1976 2008	1994 2008	1988 2008			2005 2008	2005 2008		2005 2008	2000 2008	1998 2008
MRT	MR	Mauritania	1962 2008	1962 2008	1995 2008	1976 2008	2000 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008		1988 2008	1948 2008	1948 2008
MSR		Montserrat	1975 2008	1970 2008	1993 2008	1976 2008	1993 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008		1995 2008	1961 2008	1959 2008
MTQ		Martinique	1962 1994	1962 1995	1976 1995	1976 1995	1988 1995	1988 1995			1960 2008	1960 2008		1988 1996	1962 1996	1948 2008
MUS	MU	Mauritius	1970 2008	1962 2008	1980 2008	1976 2008	1988 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008		1988 2008	1948 2008	1948 2008
MWI	MW	Malawi	1966 2008	1965 2008	1977 2008	1976 2008	1990 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008		1988 2008	1964 2008	1959 2008
MYS	MY	Malaysia	1962 2008	1962 2008	1978 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008		1988 2008	1960 2008	1956 2008
MYT	YT	Mayotte	2000 2008	2000 2008	2000 2008	2000 2008	2000 2008	2000 2008			1988 2008	1988 2008		1988 2008		
NAM	NA	Namibia	2000 2008	2000 2008	2000 2008	2000 2008	2000 2008	2000 2008	2007 2008	2007 2008	1960 2008	1960 2008		1990 2008		
NCL	NC	New Caledonia	1962 2008	1962 2008	1976 2008	1976 2008	1999 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008		1988 2008	1963 2008	1948 2008
NER	NE	Niger	1962 2008	1962 2008	1976 2008	1976 2008	1995 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008		1988 2008	1960 2008	1959 2008
NFK		Norfolk Island		1970 2008		1977 2008		1988 2008	2007 2008	2007 2008	1960 2008	1960 2008		2001 2008		

Table A/continuation

3-digit iso-code	2-digit iso-code	Country	COMTRADE UN Rev. 1		COMTRADE UN Rev. 2		COMTRADE UN Rev. 3		COMTRADE UN Rev. 4		OECD Monthly Statistics		Eurostat-COMEXT		IMF-DOT	
			as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to
NGA	NG	Nigeria	1962 2008	1962 2008	1991 2008	1976 2008	1996 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
NIC	NI	Nicaragua	1965 2007	1962 2008	1986 2007	1976 2008	1993 2007	1988 2008	2007 2007	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
NIU	NI	Niue		1970 2008	1985 1985	1977 2008		1988 2008	2007 2008	2007 2008	1974 2008	2001 2008				
NLD	NL	Netherlands	1962 2008	1962 2008	1978 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
NOR	NO	Norway	1962 2008	1962 2008	1976 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
NORU		Norway unspecified									1960 2008					
NPL	NP	Nepal	1974 2003	1962 2008	1982 2003	1976 2008	1994 2003	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1981 2008	1960 2008
NRU		Nauru		1970 2008		1976 2008		1988 2008	2007 2008	2007 2008	1960 2008		1988 2008	1988 2008	1948 1979	
NZE		Neutral Zone		1970 2008		1976 2008		1988 2008	2007 2008	2007 2008						
NZL	NZ	New Zealand	1964 2008	1962 2008	1979 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
NZOC		New Zealand Oceania											1988 2000	1988 2000		
OMN	OM	Oman	1975 2008	1962 2008	1981 2008	1976 2008	1988 2008	1988 2008	2007 2007	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1970 2008	1948 2008
PAK	PK	Pakistan	1962 2008	1962 2008	1982 2008	1976 2008	1990 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
PAN	PA	Panama	1962 2008	1962 2008	1986 2008	1976 2008	1995 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
PCE		Pacific Islands		1970 1991		1976 1991		1988 1991								
PCN		Pitcairn		1971 2008		1977 2008		1988 2008	2007 2008	2007 2008	1965 2008	1965 2008	1988 2008	1988 2008		
PCZ		Form. Panama-Canal-Z.		1962 1977		1976 1977					1960 2008	1960 2008				
PER	PE	Peru	1962 2008	1962 2008	1976 2008	1976 2008	1992 2008	1988 2008	2008 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
PHL	PH	Philippines	1962 2008	1962 2008	1977 2008	1976 2008	1991 2008	1988 2008		2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
PLW	PW	Palau		1992 2008		1992 2008		1992 2008		2007 2008	1960 2008	1960 2008	1996 2008	1996 2008		
PNG	PG	Papua New Guinea	1971 2004	1962 2008	1981 2004	1976 2008	1998 2004	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1964 2008	1948 2008
POL	PL	Poland	1980 2008	1962 2008	1980 2008	1976 2008	1992 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
POLR		Polar Regions														
PRI	PR	Puerto Rico									1960 2008	1960 2008	1988 2000	1988 2000		
PRK	KP	Korea, Dem. Rep.		1962 2008		1976 2008		1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1981 2008	1959 2008
PRT	PT	Portugal	1962 2008	1962 2008	1979 2008	1976 2008	1988 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
PRY	PY	Paraguay	1962 2008	1962 2008	1983 2008	1976 2008	1989 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1948 2008	1948 2008
PSE		Occup. Palestinian Terr.		2000 2008		2000 2008		2000 2008		2007 2008	1965 2008	1965 2008	1995 2008	1995 2008		
PYF	PF	French Polynesia	1962 2008	1962 2008	1976 2008	1976 2008	1996 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1971 1979	1948 1979
QAT	QA	Qatar	1972 2008	1962 2008	1989 2008	1976 2008	1991 2008	1988 2008	2007 2008	2007 2008	1960 2008	1960 2008	1988 2008	1988 2008	1972 2008	1948 2008

Table A/continuation

3-digit iso-code	2-digit iso-code	Country	COMTRADE UN Rev. 1		COMTRADE UN Rev. 2		COMTRADE UN Rev. 3		COMTRADE UN Rev. 4		OECD Monthly Statistics		Eurostat-COMEXT		IMF-DOT	
			as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to	as reporter from to	as partner from to
REU		Réunion	1962 1995	1962 1995	1976 1995	1976 1995	1988 1995	1988 1995							1959 1996	1948 2008
ROM	RO	Romania	1989 2008	1962 2008	1976 2008	1976 2008	1989 2008	1988 2008	2007 2008	2007 2008			1999 2008	1988 2008	1948 2008	1948 2008
RUS	RU	Russian Federation	1996 2008	1992 2008	1996 2008	1992 2008	1996 2008	1992 2008	2007 2008	2007 2008				1992 2008	1992 2008	1992 2008
RWA	RW	Rwanda	1996 2008	1963 2008	1996 2008	1976 2008	1996 2008	1988 2008	2008 2008	2008 2008				1988 2008	1964 2008	1960 2008
RYU		Ryukyu Islands		1962 1972												
SAU	SA	Saudi Arabia	1968 2007	1962 2008	1976 2008	1976 2008	1991 2007	1988 2008	2007 2007	2007 2008				1988 2008	1960 2008	1948 2008
SBH		Sabah	1962 1963	1962 1963												
SDN	SD	Sudan	1963 2008	1962 2008	1995 2008	1976 2008	1995 2008	1988 2008	2008 2008	2007 2008				1988 2008	1948 2008	1948 2008
SEM		Serbia and Montenegro														
SEN	SN	Senegal	1962 2008	1962 2008	1977 2008	1976 2008	1996 2008	1988 2008	2008 2008	2007 2008				1992 2005	1993 2008	1993 2005
SER		Serbia	1992 2008	1992 2008	1992 2008	1992 2008	1992 2008	1992 2008	2007 2008	2007 2008				1988 2008	1960 2008	1957 2008
SGP	SG	Singapore	1962 2008	1962 2008	1979 2008	1976 2008	1989 2008	1988 2008	2007 2008	2007 2008				2005 2008	2000 2008	1998 2008
SGS		South Georgia and the South Sandwich Islands		2000 2008		2000 2008		2000 2008		2007 2008				2001 2008		
SHN		Saint Helena		1970 2008		1976 2008		1988 2008		2007 2008				1988 2008		1960 1979
SIK		Sikkim		1971 1974												
SJM		Svalbard, Jan Mayen Isl.												1995 1996		
SIB	SB	Solomon Islands	1970 1988	1966 2008	1984 2007	1976 2008	2002 2007	1988 2008		2007 2008				1988 2008	1975 2008	1958 2008
SLE	SL	Sierra Leone	1963 2002	1962 2008	1983 2002	1976 2008	2002 2002	1988 2008		2007 2008				1988 2008	1948 2008	1948 2008
SLV	SV	El Salvador	1963 2008	1962 2008	1986 2008	1976 2008	1994 2008	1988 2008	2007 2008	2007 2008				1988 2008	1948 2008	1948 2008
SMR	SM	San Marino		2000 2008		2000 2008		2000 2008		2007 2008				1994 2008		
SOM	SO	Somalia	1962 1982	1962 2008	1981 1982	1976 2008		1988 2008		2007 2008				1988 2008	1960 2008	1948 2008
SPE		Special Categories		1962 2008		1976 2008		1988 2008		2007 2008						
SFM		St. Pierre and Miquelon	1979 1989	1962 2008	1979 1989	1976 2008		1988 2008		2007 2008				1988 2008		1948 1979
STP	ST	Sao Tome and Principe	1999 2008	1962 2008	1999 2008	1976 2008	1999 2008	1988 2008		2007 2008				1988 2008	1969 2008	1948 2008
SUN	SU	Former USSR		1962 1991		1976 1991		1988 1991						1988 1992	1948 1991	1948 1991
SUR	SR	Suriname	1962 2008	1962 2008	1988 2008	1976 2008	1994 2008	1988 2008		2007 2008				1988 2008	1948 2008	1948 2008
SVK	SK	Slovak Republic	1994 2008	1993 2008	1994 2008	1993 2008	1994 2008	1993 2008	2007 2008	2007 2008			1999 2008	1993 2008	1993 2008	1993 2008
SVN	SI	Slovenia	1992 2008	1992 2008	1992 2008	1992 2008	1992 2008	1992 2008	2007 2008	2007 2008			1999 2008	1992 2008	1993 2008	1993 2008
SVR		Vietnam, Rep.	1963 1973	1962 1974												

Table A/continuation

			COMTRADE UN Rev. 1	COMTRADE UN Rev. 2	COMTRADE UN Rev. 3	COMTRADE UN Rev. 4	OECD Monthly Statistics	Eurostat-COMEXT	IMF-DOT
		Country	as reporter from to	as reporter from to	as reporter from to	as reporter from to	as reporter from to	as reporter from to	as reporter from to
3-digit iso-code	2-digit iso-code	Sweden	1962 2008	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	1948 2008
		Sarawak	1962 1963						
								</	

Table A/continuation

			COMTRADE UN Rev. 1	COMTRADE UN Rev. 2	COMTRADE UN Rev. 3	COMTRADE UN Rev. 4	OECD Monthly Statistics	Eurostat-COMEXT	IMF-DOT
3-digit iso-code	2-digit iso-code	Country	as reporter from to	as reporter from to	as reporter from to	as reporter from to	as reporter from to	as reporter from to	as reporter from to
UZB	UZ	Uzbekistan	1992 2008	1992 2008	1992 2008	2007 2008	1992 2008	1992 2008	1992 2008
VAT		Holy See	2000 2008	2000 2008	2000 2008	2007 2008	1972 2008	1988 2008	
VCT	VC	St. Vincent and the Grenadines	1976 2008	1993 2008	1993 2008	2007 2008	1973 2008	1988 2008	1969 2008
VDR		Vietnam, Dem. Rep.	1962 1974						
VEN	VE	Venezuela	1962 2008	1982 2008	1990 2008	2007 2008	1960 2008	1988 2008	1948 2008
VGB		British Virgin Islands	1964 2008	1976 2008	1988 2008	2007 2008	1976 2008	1988 2008	
VIR	VI	Virgin Islands, US	1970 1978	1976 1980			1960 2008	1988 2008	
VNM	VN	Vietnam	1997 2008	1997 2008	1997 2008	2008 2008	1960 2008	1988 2008	1948 2008
VUT	VU	Vanuatu	1970 2007	1980 2007	1990 2007	2007 2008	1960 2008	1988 2008	1948 2008
WIND		Westindien							
WLD		World	1962 2008	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	1948 2008
WLF		Wallis and Futuna Islands	1971 2008	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	
WSM	WS	Samoa	1962 2008	1976 2008	2001 2008	2007 2008	1960 2008	1988 2008	1964 2008
XXX1		Stores and Provisions 1						2002 2008	
XXX2		Stores and Provisions 2						1993 2008	
XXX3		Stores and Provisions 3						1988 2004	
XXX4		NOT DETERMINED						1988 2006	
XXX5		NOT DETERMINED INTR						1993 2008	
XXX6		NOT DETERMINED EXTR						1993 2008	
XXX7		SECRET INTR12						1988 1998	
XXX8		SECRET EXTRA12						1988 2006	
XXX9		Secret countries						1988 2004	
YDR		Yemen, Dem. Rep.	1989 1989	1989 1989	1988 1990			1988 1990	1957 1989
YEM	YE	Yemen	1975 2008	1976 2008	2001 2008	2007 2008	1960 2008	1988 2008	1948 2008
YUG	YU	Former Yugoslavia	1962 1990	1988 1990	1988 1990		1960 2008	1988 1992	1948 1992
ZAF	ZA	South Africa	1974 2008	1976 2008	1992 2008	2007 2008	1960 2008	1988 2008	1948 2008
ZAR	CD (ZR)	Congo, Dem. Rep.	1962 1978	1976 2008	1988 2008	2007 2008	1960 2008	1988 2008	1948 2008
ZMB	ZM	Zambia	1966 2008	1976 2008	1993 2008	2008 2008	1963 2008	1988 2008	1948 2008
ZPM		Former Sansibar-Pemb	1962 1964						
ZWE	ZW	Zimbabwe	1984 2008	1984 2008	1990 2008	2008 2008	1960 2008	1988 2008	1948 2008