

OECD Science, Technology and Industry Working Papers
2011/06

Compilation of Bilateral Trade Database by Industry and End-Use Category

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https://dx.doi.org/10.1787/5k9h6vx2z07f-en

OECD

Unclassified **DSTI/DOC(2011)6**

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development **20-Dec-2011**

English - Or. English

DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY

DSTI/DOC(2011)6
Unclassified

COMPILATION OF BILATERAL TRADE DATABASE BY INDUSTRY AND END-USE CATEGORY

By S. Zhu, N. Yamano and A. Cimper

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JT03313691

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A new tool for analysing global production networks:

OECD STAN Bilateral Trade Database by Industry and End-use (BTDIxE)

Shiguang Zhu, Norihiko Yamano and Agnès Cimper

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ABSTRACT

During the last decade, the volume of international trade has increased significantly as international economic integration has deepened, especially in emerging countries, and national industrial structures have become increasingly aligned with international trade in intermediate goods. The OECD STAN Bilateral Trade Database by Industry and End-use Category (BTDIxE) presents international trade in goods flows broken down both by industry sectors and by end-use categories, allowing insights into the patterns of trade in intermediate goods between countries to track global production networks and supply chains as well as helping to address other trade-related policy issues such as trade in value added and tasks.

Key words: trade statistics, trade in intermediates, global value chains

The authors would like to thank Colin Webb for his helpful comments and suggestions on earlier drafts.

Un nouvel outil pour l'analyse des réseaux de production mondiaux : la Base de données STAN de l'OCDE sur le Commerce Bilatéral par Industrie et Utilisation finale (BTDIxE)

Shiguang Zhu, Norihiko Yamano et Agnès Cimper

Direction de la science, de la technologie et de l'industrie de l'OCDE

RÉSUMÉ

Ces dix dernières années ont vu croître de manière importante le volume du commerce international et s'accentuer l'intégration des nations- en particulier les pays émergents- à l'économie mondiale. Dans le même temps, la structure sectorielle des économies s'est essentiellement appuyée sur les échanges internationaux de biens intermédiaires. La base de données STAN de l'OCDE sur le Commerce Bilatéral par Industrie et Catégorie d'Utilisation finale (BTDIxE) présente les flux bilatéraux du commerce international des biens, ventilés par branches d'activités économiques et par catégories d'utilisation finale ; cette base donne un aperçu de la structure des échanges internationaux de biens intermédiaires afin d'identifier les réseaux de production mondiaux et les chaînes d'approvisionnement . Elle permet également d'aborder d'autres questions d'intérêt public, comme le commerce en valeur ajoutée et le commerce des tâches.

Les auteurs tiennent à remercier Colin Webb pour la pertinence de ses commentaires et suggestions pour l'élaboration de ce document.

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1. INTRODUCTION

In recent decades, globalisation has not only been characterised by a steady growth of international trade in goods and services, but also by two significant structural changes in trade patterns: the increasing importance of emerging economies in world trade and the rapid growth of trade in intermediate goods as a result of vertical specialisation.

Given this context, traditional trade statistics aggregated by product classifications may not fully reveal the economies' comparative advantages (Dean, Fung and Wang, 2008). Vertical specialisation in a global context generally means that each country is specialised in one or more innovation and production processes and thus it is common for the value chain of a particular final product to span several countries (Bridgman, 2010). Consequently, global trade in intermediate goods currently represents about 56% of total trade in goods and therefore it is useful to estimate trade flows by end-use categories such as final goods and intermediate inputs to better monitor international trade patterns (Miroudot, Lanz and Ragoussis, 2009).

Rather than simply considering international trade as a set of bilateral flows from one country to another, it is more interesting to show the structure of global value chains. Those can be tracked by combining world trade data and multi-country input-output (I-O) tables (Wixted, Yamano and Webb, 2006). Reasonable profiles of global value chains can be produced by carefully constructing input-output tables for OECD countries and their main trading partners and by applying international intermediate input-output linkages for each sector. To do so, efforts have been made to compile and develop harmonised I-O (www.oecd.org/sti/inputoutput/, Yamano and Ahmad 2006), as well as harmonised bilateral trade data (Guo, Webb and Yamano, 2009).

The OECD *STAN Bilateral Trade Database* (BTD),[1] regularly published since the mid-1990s, presents trade values broken down by the 3rd Revision of the International Standard Industrial Classification (ISIC Rev.3). It has been used by many researchers for analysing international trade by industrial sectors. Meanwhile, the United Nation Statistics Department (UNSD), in its Comtrade database, publishes bilateral trade statistics according to Broad Economic Categories (BEC). Indeed UNSD is the custodian of the BEC classification[2] as well as the producer of correspondences between the Harmonised System (HS) product classification and BEC. BEC was designed to summarise trade in international goods by classifying commodities according to industrial processing stage (*e.g.* primary or processed goods) and ultimate main use (*e.g.* industry or household consumption), its structure allowing some aggregation into the three basic classes of goods in the System of National Accounts (SNA) namely capital, intermediate and consumption goods. To date, there are no published estimates of international trade classified by both end-use categories and industries.[3]

Based on earlier work, we have developed the OECD STAN **Bilateral Trade Database by Industry and End-use category (BTDIxE)**, where values of imports and exports of goods are broken down by industrial sectors and by end-use categories at the same time. The purpose of developing BTDIxE is twofold: first, to provide analysts and policy makers with an efficient tool to produce indicators of international trade in goods by industry and end-use and second, to contribute to global value chain analyses. Recent research using international inter-country Input-Output tables combined with trade data broken down by BEC, has hinted at the need to improve the use of BEC (Koopman, Powers, Wang and Wei, 2010). Bearing this in mind, the end-use categories in BTDIxE sometimes differ in composition from those derived purely from BEC. As explained in Section 2.3, these end-use categories

better align trade data to national account end-use categories. BTDIxE is useful for further analysing how industrial processes are fragmented across countries by product end-use categories for each sector, rather than only analysing the bilateral trade balances by industrial sectors. BTDIxE not only provides information on how the intermediate goods flow through the world but also allows links to industry x industry I-O country tables, showing how and where value-added is produced, and identifying where the final products are shipped to, while the I-O tables themselves show how those goods are consumed or invested.

In this first version of BTDIxE, estimates of imports and exports are presented for 65 reporters: (*i.e.* the 34 OECD member countries in 2011 and 30 non-member economies and the Total World) and 67 partners (all 34 OECD countries, 30 non-member economies, 2 'residual partners' Rest of world and unspecified, as well as a world total). Trade flows are divided into 58 economic activities and 9 categories of goods including the three main end-use categories capital, intermediate inputs and consumption. Data are expressed in current US dollars and broadly cover the time-period 1988-2010.

This paper proceeds as follows: the next section defines the end-use and industry classifications used for compiling the BTDIxE Database. It describes the methodology used to convert commodity-based trade data, reported according to various versions of the Harmonised System (HS 1988, HS 1996, HS 2002 and HS 2007) to industries and end-use categories via a range of conversion keys. In section 3, we give an overview of BTDIxE coverage and confronting issues of adjustment for re-exports as well as other statistical and data issues. The concluding remarks are given in Section 4.

2. DATA SOURCES AND METHODOLOGY

2.1 Data sources

The OECD **Bilateral Trade Database by Industry and End-Use Category** (BTDIxE) is derived from OECD's *International Trade by Commodities Statistics* database (ITCS[4]) and UNSD's Comtrade database,[5] where values and quantities of imports and exports are compiled by partner country and according to product classifications.

OECD's ITCS database is updated on the basis of annual data submissions received directly from OECD member countries and, in some cases, from EUROSTAT. Due to the convergence of OECD ITCS and UNSD Comtrade updating processes, data sharing and other related co-operation between the two organisations, BTDIxE tables can also be computed for non-OECD members as reporting countries, notably the countries which belong to the OECD *Enhanced Engagement Programme*, namely Brazil, China, India, Indonesia and South Africa and other members of G20 such as Argentina, Russian Federation and Saudi Arabia.

In ITCS and Comtrade, data are classified by reporting, or declaring, country (*i.e.* the country supplying the information), by partner country (*i.e.* origin of imports and destination of exports) and by product (currently reported according to HS Rev.3, 2007[6]). For both data sources, trade flows are stored according to *i)* the HS product classification used by the declaring country at the time of data collection, and *ii)* earlier versions of HS, via standard HS to HS conversion keys, to provide long times series *e.g.* HS 1988 estimates are available for 1988-2010 for many countries.[7]

To compile the bilateral trade database by industry and end-use category, each traded product in each HS version from ITCS and Comtrade was assigned to a unique ISIC Rev.3 industry and a unique end-use category. Thus, eight sets of conversion keys were estimated by using classification correspondence tables developed internally by the OECD's Directorate for Science, Technology and Industry based on the classification correspondence tables published by UNSD (see section 3.1.1). Table

1 shows, for each published source of international trade statistics, the availability of data according to the classifications used.

Table 1. Published international trade databases

Source	Name	Classification	Product	Industry	End-use	Bilateral	Details of sectors
Trade statistics (official statistics)							
OECD	ITCS	HS / SITC	Yes	No	No	Yes	>5300,<5600
OECD	ITCS	ISIC *	No	Yes	No	Yes	40-50
UNSD	Comtrade	HS / SITC	Yes	No	No	Yes	>5300,<5600
UNSD	Comtrade	BEC	Some	No	Yes	Yes	19
IMF	Direction of Trade Statistics (DOT)	-	-	-	No	Yes	
OECD	Trade in Services (TIS)	EBOPS	Yes	No	No	Yes	50
UNSD	Service Trade (UST)	EBOPS	Yes	No	No	Yes	50
NSIs	Supply and Use Tables (SUT) and product-by-product Symmetric I-O (SIOT)	*e.g.* CPC	Yes	No	Import only	No	25-500
NSIs	Industry-by-industry Symmetric Input-Output (SIOT)	*e.g.* CPC or ISIC	-	Yes	Import only	No	25-500
Analytical database							
OECD	STAN Bilateral Trade Database (BTD)	ISIC	No	Yes	No	Yes	43
OECD	**Bilateral Trade Database by Industry and End-use (BTDIxE)**	**ISIC / END-USE**	**Yes**	**Yes**	**Yes**	**Yes**	**58 sectors x 9 end-use**
WIOD	World Input-Output Database	BOP/NACE/END-USE	Yes	No	Yes	Yes	31 NACE sectors, 3 end-use categories
CEPII	BACI / CHALEM	HS	Yes	No	No	Yes	>5300,<5600
NBER	International Trade Data, NBER-UN world trade data	SITC Rev 2	Yes	No	No	Yes	
GTAP,IDE-JETRO OECD, AISHA	Inter-country Input-Output Tables (ICIO)	Product / Industry	Yes	Yes	Yes	Yes	

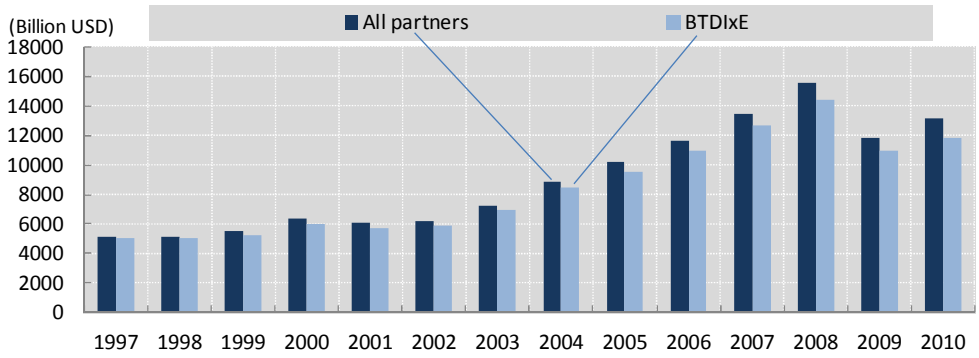
* Internal use; NSIs: National Statistical Institutes.
** ICTS: International Trade by Commodity Statistics

2.2 Coverage

2.2.1 Reporters and partners

In BTDIxE, the reporter list includes all 34 OECD countries, and 30 non-OECD countries. Furthermore, trade flows are presented for the reporter **Rest of world** which covers the 132 countries and areas which are not shown separately in the database. Since most of the principal international trade flows are covered in BTDIxE, we estimated the reporter **World** by aggregating the trade flows of all BTDIxE reporters. The estimated reporter **World** presented in BTDIxE covers approximately 95% of total reported world trade (Figure 1).

Figure 1. Total world trade (import flows) of BTDIxE and UN Comtrade, 1997-2010



Source: UN Comtrade, OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

For each reporter, bilateral trade flows are treated for the 249 partners available from ITCS/Comtrade as well as the partner **World** which corresponds to the total value of traded goods of the reporter. In the final database, the non-member partners have been chosen to cover the OECD *Enhanced Engagement* countries (Brazil, China, India, Indonesia and South Africa), other G20 countries (Argentina, Russian Federation and Saudi Arabia), other selected South-East Asian economies (Brunei Darussalam, Cambodia, Chinese Taipei, Hong Kong, China, Malaysia, Philippines, Singapore, Thailand and Viet Nam), the six non-OECD EU countries (Bulgaria, Cyprus, Latvia, Lithuania, Malta and Romania) and CEFTA[8] countries (including EU candidates). The partner **Rest of world** subsequently covers 181 countries and areas which are not shown separately, while the partner **Unspecified** includes 11 confidential partners classified by geography and transport nature.

In BTDIxE, there are cases where data are given where the declaring and partner countries are identical, for example: Australia imports from Australia or France exports to France. While such data can be attributed to re-imports or re-exports of goods, this is not always the case as illustrated in Annex Tables 14 and 15. Re-imports may be recorded when goods return after being exported for outward processing *i.e.* minor transformation (branding, packaging, repair); or return in an unaltered state (for example goods returned to the seller after cancellation of an order, art items returned after an exhibition held abroad, etc.). Similarly, re-exports are recorded when goods are exported after having been imported for inward processing; or are being returned in an unaltered state. Note that such data is prevalent for import data and only present for a few countries and often for only a few years. For most countries, exports (or imports) reported to OECD and UNSD implicitly include re-exports (or re-imports) although in BTDIxE (and indeed in ITCS and Comtrade) very few countries report them separately.

2.2.2 Time-period

Estimates in BTDIxE start from 1988 onwards and are currently up to the year 2010 in most cases. Remaining updates for the year 2010 will be completed as soon as countries' data are updated in the source databases ITCS and COMTRADE. Table 2 provides the time coverage of BTDIxE for each reporter (*i.e.* 34 OECD countries + 30 non-OECD economies).

Table 2. Time coverage by reporting country (as of November 2011)

Country		Years covered	Country		Years covered
OECD					
Australia	AUS	1988-2010	Japan	JPN	1988-2010
Austria	AUT	1995-2010	Korea	KOR	1994-**2009**
Belgium	BEL	1988-2010[9]	Luxembourg	LUX	1999-2010
Canada	CAN	1988-2010	Mexico	MEX	1990-2010
Chile	CHL	1990-**2009**	Netherlands	NLD	1988-2010
Czech Republic	CZE	1993-2010	New Zealand	NZL	1989-2010
Denmark	DNK	1988-2010	Norway	NOR	1988-2010
Estonia	EST	1995-2010	Poland	POL	1992-**2009**
Finland	FIN	1988-2010	Portugal	PRT	1988-2010
France	FRA	1988-2010	Slovak Republic	SVK	1997-2010
Germany	DEU	1988-2010	Slovenia	SVN	1994-2010
Greece	GRC	1988-2010	Spain	ESP	1988-**2009**
Hungary	HUN	1992-2010	Sweden	SWE	1988-2010
Iceland	ISL	1988-2010	Switzerland	CHE	1988-2010
Ireland	IRL	1988-2010	Turkey	TUR	1989-2010
Italy	ITA	1988-2010	United Kingdom	GBR	1988-2010
Israel[10]	ISR	1995-**2009**	United States	USA	1989/90-2010
Non OECD					
Albania	ALB	1996-2010	Lithuania	LTU	1994-2010
Argentina	ARG	1993-2010	FYR Macedonia	MKD	1994-**2009**
Bosnia & Herzegovina	BIH	2003-2010	Malaysia	MYS	1989-2010
Brazil	BRA	1989-2010	Malta	MLT	1994-2010
Brunei Darussalam	BRN	1992-**2006**	Moldova, Rep. of	MDA	1994-2010
Bulgaria	BGR	1996-2010	Montenegro	MNE	2006-2010
Cambodia	KHM	2000-2010	Philippines	PHL	1996-2010
China	CHN	1992-2010	Romania	ROU	1989-2010
Chinese Taipei	TWN	1990-2010	Russian Federation	RUS	1996-2010
Croatia	HRV	1992-2010	Saudi Arabia	SAU	1991-2010
Cyprus[11]	CYP	1989-2010	Serbia	SRB	2004-2010
Hong Kong, China	HKG	1992-2010	Singapore	SGP	1989-2010
India	IND	1988-2010	South Africa	ZAF	1992-2010
Indonesia	IDN	1989-2010	Thailand	THA	1988-2010
Latvia	LVA	1994-2010	Viet Nam	VNM	2000-**2009**

2.3 End-use category classification

The BTDIxE end-use classification adds a new dimension to the traditional commodity-based trade statistics and enables trade statistics to be linked to National Accounts (Input-Output) in which flows of goods and services are reported according to end-users. In the National Accounts system, there are generally three basic kinds of domestic end-use categories: industrial intermediate inputs, consumption (households and public sectors) and fixed capital formation (private and public). Using the detailed classification system of trade in goods (*i.e.* the Harmonised System), bilateral flows of exports and

imports can be broadly classified into intermediate goods, households consumption goods and capital goods (*e.g.* via the HS to BEC conversion keys developed by UNSD).[12]

Various studies (Dean, Fung and Wang, 2007; Koopman, Wang and Wei, 2008; and Miroudot, Lanz and Ragoussis, 2009) have used the BEC classification to split commodities coded according to HS, as each HS code can be allocated to one BEC category, and each BEC represents roughly the characteristics of goods.

Nevertheless, the BEC system is not ideal for splitting commodities into relevant National Account end-use categories (see Table 3) since the allocation of BEC categories (and indeed individual commodities) to end-use categories can sometimes be ambiguous. This is notably the case when products can be either for intermediate demand and household consumption, or for capital goods in industries and household consumption. An example is the BEC sub-categories 32, *Processed fuels and lubricants* and 63, *Non durable consumer goods* (*e.g.* processed fuels can be consumed by households or firms, while packed medicines can be purchased by households or hospitals). Another example is the BEC sub-categories 51, *passenger cars* and 61, *durable consumer goods* (*e.g.* small and medium passenger cars and laptop computers can be purchased by households or firms). We have thus developed an alternative correspondence table which links directly between end-use categories where BEC is not suitable to allocate commodities (BEC 32, 51, 61 and 63).

Furthermore, several consumer-oriented final goods can be consumed by households, private industries or public sectors (*e.g.* personal computers and phones) and, therefore, should be allocated to distinct categories. A certain number of processed and final consumption products (*e.g.* precious metals and antique arts) can also be treated separately. This is notably the case for products which may not be deteriorating over time under normal conditions and are acquired and held primarily as stores of value (United Nations, 1993; Eurostat, 1996). Therefore, the following five additional categories were created to complement the three initial end-use categories mentioned above (Table 3): personal computers, passenger cars, personal phones, packed medicines, and valuable products. These five additional categories account for less than 10% of the total trade, as illustrated in Figure 2.

In fact, users can further refer to the industry classification to determine which commodity is represented. For example, monetary gold is in industry Unallocated and end-use category EUC7; uncut diamonds are in ISIC 14 and EUC7; pearls are in ISIC 05 and EUC7; antique arts, collection pieces and worked precious stones (jewellery form) are in ISIC 36 and EUC7.

Table 3. Products groups and National Accounts end-use categories based on UN Broad Economic Category (BEC) classification

<table>
<tr><td colspan="2" rowspan="2"></td><td colspan="4">End-use</td></tr>
<tr><td rowspan="2">Intermediate</td><td colspan="2">Final demand goods</td><td rowspan="2">Other</td></tr>
<tr><td>Household consumption</td><td>Industrial capital goods</td></tr>
<tr><td rowspan="8">Products characteristics</td><td rowspan="2">Primary products</td><td rowspan="2">Food and beverages (111)
Industrial supplies (21)
Fuels and lubricants (31)</td><td></td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td>Food and beverages (112)</td></tr>
<tr><td rowspan="3">Processed unfinished</td><td></td><td>Food and beverages (122)</td><td rowspan="3"></td><td rowspan="3"></td></tr>
<tr><td colspan="2">Fuels and lubricants e.g. gasoline (32)</td></tr>
<tr><td>Food and beverages (121)
Industrial supplies (22)
Parts and components of transport equipments (53)
Parts and components of capital goods (42)</td><td></td></tr>
<tr><td rowspan="4">Processed finished</td><td colspan="2">Packed medicines (part of 63)</td><td rowspan="2"></td><td rowspan="2"></td></tr>
<tr><td rowspan="3"></td><td>Non-industrial transport equipments (522)
Non durable consumer goods (63)
Semi-durable consumer goods (62)
Durable consumer goods for households (61)</td></tr>
<tr><td colspan="2">Durable personal consumer goods e.g. personal computers (part of 61)
Mobile phones (part of 41)
Passenger motor cars (51)
Fixed line phones (part of 62)</td><td></td></tr>
<tr><td></td><td>Capital goods (41)
Industrial transport equipments (521)</td><td></td></tr>
<tr><td>Other</td><td></td><td></td><td></td><td>Goods n.e.c (7)</td></tr>
</table>

UN BEC codes are given in parentheses.

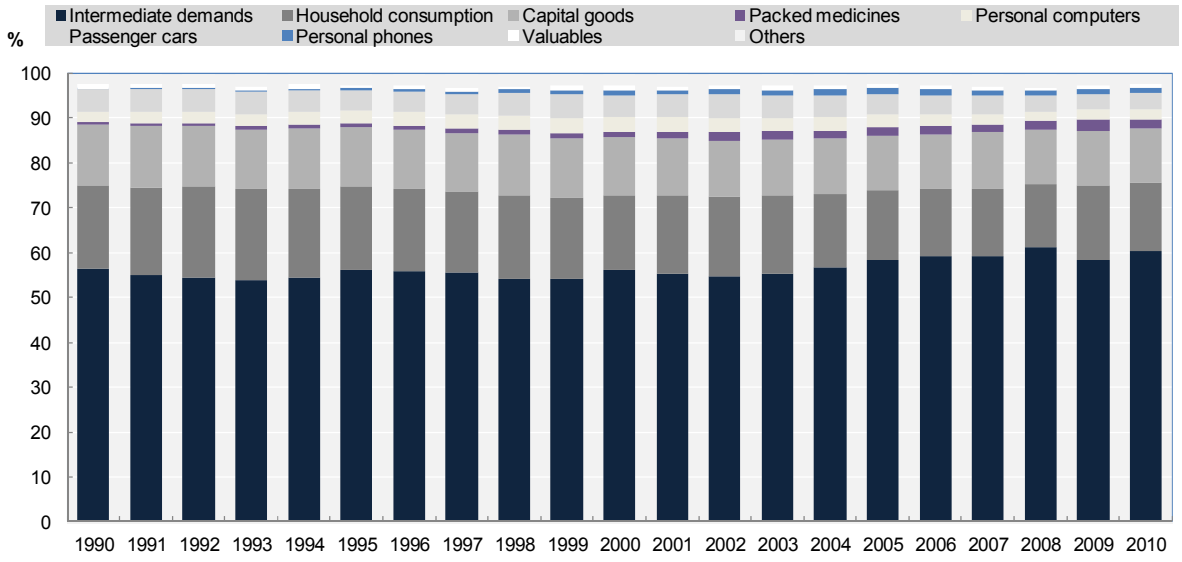
The nine End-Use categories identified in BTDIxE are summarised in Table 4.

Table 4. End-use categories and trade statistics classifications

End-use (EUC)		BEC	HS 1988	HS 1996 and HS2002	HS 2007
1	Intermediate goods	111, 121, 21, 22, 31, 32*, 42	(01-19, 21-45, 47-56,58-60,63,65-76,78-85,87,89-96)*		
2	Household consumption	112, 122, 32*, 522, 61*,62*,63*	(02-04,06-11,15-24,30,32-40,42-44,46,48-52,54-59,61-74,76,82-85,87-97)*		
3	Capital goods	41, 521	(01,71,73,76,82-91,93-96)*		
4	Packed medicaments	63*	3004xx		
5	Personal computers	61*	8471xx		8471xx, 852841, 852851
6	Passenger cars	51	87032x, 87033x, 87039x		
7	Phones (fixed and mobile)	41*, 62*	851710, 852520	851711, 852520	851711, 851712
8	Valuables	21*, 22*, 61*, 7*	7101xx, 7102xx, 7103xx, 710820, 970400, 970500, 970600		
9	Other	7*	Commodities not elsewhere specified		

*part

Figure 2. Export shares by end-use category – World total, 1988-2010



Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

2.4 Industry classification

BTDIxE's economic activities are grouped into 45 sectors based on ISIC Rev. 3 and 8 additional sectors covering waste, used, recycled and unspecified goods (see Table 5).[13] This industry list is basically compatible with the lists used in other OECD industrial databases *e.g.* STAN and Input-Output Databases. It also includes some special aggregations such as manufactures groups according to their technology intensity (www.oecd.org/dataoecd/43/41/48350231.pdf).[14]

BTDIxE, with its detailed industry list combined with end-use categories, becomes a powerful tool for analysing structural changes in trade patterns, and notably trade in intermediate goods.

Table 6 shows the shares of intermediate goods in the exports of the Machinery and Equipment sector (ISIC Rev.3 29-33) for OECD and selected non-OECD countries. While there is expected variation across individual countries, the intermediate shares of exports of general machinery (ISIC 29) have, on average, grown steadily for both OECD and non-OECD economies between 1995 to 2010. Trends of intermediate shares of other machinery and equipment manufacturing sectors (ISIC 30-33) differ between OECD and non-OECD aggregates. For example, the intermediate export shares of electronic machinery (ISIC 31) have increased in non-OECD economies, while remaining relatively stable in the OECD. Meanwhile, exports of parts and components of radio, television and communication equipment (ISIC 32) have declined in OECD while increasing in non-OECD – notably in China where the share of intermediates in exports of ISIC 32 has doubled in the past 15 years.

Table 5. Industry classification in BTDIxE

	Description	ISIC Rev. 3
1	GRAND TOTAL	
2	Agriculture, Hunting, Forestry and Fishing	01-05
3	...Agriculture, hunting	01
4	...Forestry, logging	02
5	...Fishing	05
6	Mining and Quarrying	10-14
7	...Mining of coal and lignite; extraction of peat	10
8	...Extraction of crude petroleum and natural gas	11
9	...Mining of uranium and thorium ores	12
10	...Mining of metal ores	13
11	...Other mining and quarrying	14
12	Total Manufacturing	15-37
13	Food products, Beverages and Tobacco	15-16
14	Textiles, Textile Products, Leather and Footwear	17-19
15	Wood and Products of Wood and Cork	20
16	Pulp, Paper, Paper Products, Printing and Publishing	21-22
17	Chemical, Rubber, Plastics and Fuel Products	23-25
18	….Coke, Refined Petroleum Products and Nuclear Fuel	23
19	….Chemicals and Chemical Products	24
20	……..Chemicals excluding Pharmaceuticals	24 excluding 2423
21	……..Pharmaceuticals	2423
22	….Rubber and Plastics Products	25
23	Other Non-Metallic Mineral Products	26
24	Basic Metals and Fabricated Metal Products	27-28
25	….Basic Metals	27
26	……..Iron and Steel	271+2731
27	……..Non-Ferrous Metals	272+2732
28	….Fabricated Metal Products	28
29	Machinery and Equipment	29-33
30	….Machinery and Equipment, not elsewhere classified	29
31	….Electrical and Optical Equipment	30-33
32	……..Office, Accounting and Computing Machinery	30
33	……..Electrical Machinery and Apparatus, n.e.c.	31
34	……..Radio, Television and Communication Equipment	32
35	……..Medical, Precision and Optical Instruments	33
36	Transport Equipment	34-35
37	….Motor Vehicles, Trailers and Semi-Trailers	34
38	….Other Transport Equipment	35
39	……..Building and Repairing of Ships and Boats	351
40	……..Aircraft and Spacecraft	353
41	……..Railroad and Transport Equipment, n.e.c.	352+359
42	Manufacturing not elsewhere classified; Recycling	36-37
43	Electricity and Gas	40
44	Others	41,72,74,92,93
45	Waste leather	-
46	Recovered paper	-
47	Waste polymer	-
48	Used rubber & plastics	-
49	Ferrous metal scraps	-
50	Non ferrous metals scraps	-
51	Worn textiles	-
52	Waste	-
53	Confidential and unallocated	-
54	High-Technology Manufactures	2423 + 30 + 32 + 33 + 353
55	Medium-High Technology Manufactures	24 excluding 2423 + 29 + 31 + 34 + 352 + 359
56	Medium-Low Technology Manufactures	23 + 25 + 26 + 27 + 28 + 351
57	Low-Technology Manufactures	15+16 + 17+19 + 20 + 21+22 + 36+37
58	Information and Communication Technology Manufactures	313 + 30 + 32 + 3312 + 3313

Table 6. Shares of intermediates in exports, Machinery and equipment sector, 1995-2010, %

	29: Machinery and equipment, n.e.c.				**30**: Office, Accounting and Computing Machinery				**31**: Electrical Machinery and Apparatus, n.e.c.				**32**: Radio, Television and Communication Equipment				**33**: Medical, Precision and Optical Instruments			
	1995	2000	2005	2010	1995	2000	2005	2010	1995	2000	2005	2010	1995	2000	2005	2010	1995	2000	2005	2010
OECD	35	36	37	39	38	38	40	44	69	68	69	69	68	64	60	61	24	25	23	22
AUS	38	42	42	44	43	51	52	49	65	66	70	65	47	54	59	43	25	25	12	10
AUT	37	37	37	36	38	48	31	42	73	68	68	63	50	61	63	69	25	24	21	20
BEL	37	37	37	43	30	35	22	39	68	71	70	70	46	56	38	46	33	28	27	26
CAN	37	43	40	47	70	60	42	40	62	64	64	61	67	52	67	49	17	24	15	18
CHL	19	47	39	45	21	12	37	42	72	60	62	89	42	34	38	31	16	23	16	18
CZE	48	51	48	48	34	55	19	18	77	82	81	80	66	26	37	37	29	23	26	25
DNK	41	41	42	45	44	42	41	38	60	49	51	39	37	34	25	34	22	29	25	23
EST	39	47	47	47	96	59	23	47	73	94	79	82	70	22	41	36	11	20	24	30
FIN	35	40	35	39	17	19	27	30	41	45	51	40	25	32	19	29	15	16	15	14
FRA	40	41	42	46	32	32	28	34	74	75	74	75	67	55	59	68	30	26	23	22
DEU	34	35	37	38	34	39	32	41	73	73	71	68	62	59	55	70	23	23	21	21
GRC	23	21	20	29	48	32	35	30	91	86	82	84	74	76	42	47	41	21	19	18
HUN	46	43	45	40	69	13	9	8	73	80	77	77	47	33	17	14	38	32	16	19
ISL	15	13	25	26	53	35	47	48	71	76	55	90	41	40	48	49	5	14	4	3
IRL	29	36	38	36	23	30	22	39	76	67	67	65	77	68	71	49	37	44	40	24
ISR	40	40	42	42	35	29	34	38	53	49	46	46	55	54	62	58	14	26	18	19
ITA	31	34	35	38	48	62	58	40	68	69	71	72	66	70	64	69	33	29	25	24
JPN	28	29	28	32	37	43	66	83	67	66	67	72	72	71	71	76	31	33	34	37
KOR	21	22	24	33	51	33	60	73	72	53	53	70	79	70	66	81	30	28	13	17
LUX	49	51	53	42	28	45	5	5	33	87	87	76	7	44	14	25	21	15	25	10
MEX	45	50	45	37	33	30	23	9	77	74	76	77	42	34	30	16	16	17	30	24
NLD	39	39	39	30	29	28	31	34	70	65	69	68	69	66	49	45	21	22	20	23
NZL	27	23	22	32	43	57	40	41	65	57	66	65	41	50	60	54	16	14	9	7
NOR	39	45	43	48	26	25	39	30	66	73	77	77	51	42	32	40	25	23	29	26
POL	46	51	45	40	48	48	44	11	81	78	81	77	71	33	38	25	27	26	24	28
PRT	31	32	35	35	43	29	86	33	85	82	83	77	80	71	77	65	32	29	30	23
SVK	51	47	54	56	46	44	27	26	73	74	76	70	47	67	15	10	29	37	29	30
SVN	35	33	40	40	55	61	45	67	79	74	76	78	51	32	47	56	14	19	22	19
ESP	33	35	36	41	18	24	42	36	78	80	74	70	30	43	27	64	23	22	28	26
SWE	40	40	40	43	42	34	33	32	67	71	72	69	45	51	41	41	21	17	16	15
CHE	36	37	39	41	32	39	47	70	67	62	64	64	63	78	73	78	15	13	10	8
TUR	28	30	24	25	31	20	35	32	80	81	77	78	15	6	4	12	33	32	26	19
GBR	38	40	41	43	28	30	36	48	63	59	59	58	56	50	51	46	20	20	21	20
USA	40	40	44	44	42	46	44	38	65	67	68	67	76	76	81	73	22	23	24	22
non-OECD	27	28	30	30	38	43	39	37	54	53	58	60	62	70	66	67	24	25	25	27
ARG	35	37	44	37	18	20	35	36	84	80	78	70	36	49	62	66	13	9	8	10
BRA	29	31	27	33	30	25	15	28	58	60	62	54	79	36	16	33	26	27	26	20
CHN	19	22	25	27	43	42	34	30	44	48	54	57	25	37	42	50	16	18	24	27
TWN	23	24	27	33	44	43	54	66	65	60	57	61	80	84	87	88	25	25	17	19
IND	43	48	50	48	63	87	51	45	71	73	64	61	47	65	62	32	25	38	40	45
IDN	46	45	48	36	50	27	37	64	53	54	62	58	32	54	53	41	11	25	23	31
ZAF	37	32	25	28	36	49	43	47	66	65	68	65	41	36	60	59	19	19	17	16

Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

2.5 Trade in used, recycled and waste materials

Increasing international trade in used and recycled goods and assorted waste is of particular interest to industrial and environmental researchers and it is important to distinguish resold items and recycled products from waste. This detailed information is useful for I-O analysts to identify imported inputs to produce new industrial products, distinguish second-hand goods from the output of recent manufacturing production and waste products. Table 7 shows the increasing share of trade in used, recycled and waste materials.

Table 7. Share of trade in used, recycled and waste materials in total trade (OECD), in %

	Export			Import		
	2000	2005	2010	2000	2005	2010
Australia	0.5	1.2	1.9	0.0	0.0	0.0
Austria	0.5	0.7	0.9	0.5	0.7	1.4
Belgium	0.5	0.6	0.8	1.0	0.8	1.4
Canada	0.4	0.6	1.0	0.5	0.5	0.8
Chile	0.7	0.3	0.5	0.1	0.1	0.2
Czech Republic	0.7	0.8	1.5	0.2	0.3	0.3
Denmark	0.5	0.8	1.2	0.2	0.2	0.2
Estonia	2.5	1.9	3.3	0.9	0.4	0.3
Finland	0.4	0.5	0.7	0.5	1.5	2.2
France	0.5	0.8	1.3	0.3	0.3	0.4
Germany	0.6	0.6	1.0	0.6	0.7	1.0
Greece	0.5	0.6	1.3	0.2	0.7	0.9
Hungary	0.4	0.6	0.7	0.1	0.1	0.3
Iceland	0.4	0.5	0.6	0.0	0.0	0.1
Ireland	0.1	0.2	0.3	0.1	0.1	0.2
Israel	0.2	0.4	0.6	0.1	0.0	0.0
Italy	0.2	0.2	0.4	0.6	0.7	1.0
Japan	0.2	0.6	1.0	0.4	0.3	0.5
Korea	0.2	0.2	0.4	1.2	1.4	1.5
Luxembourg	0.5	0.9	0.7	3.1	4.4	6.1
Mexico	0.2	0.3	0.5	0.4	0.4	0.5
Netherlands	1.0	1.2	1.8	0.6	0.7	0.8
New Zealand	0.3	0.9	0.9	0.1	0.1	0.2
Norway	0.2	0.2	0.4	0.5	0.4	0.5
Poland	0.7	0.8	1.2	0.2	0.2	0.4
Portugal	0.3	0.7	1.4	0.1	0.3	0.5
Slovak Republic	0.4	0.6	0.7	0.4	0.5	0.9
Slovenia	0.4	0.7	1.3	1.0	1.6	2.3
Spain	0.4	0.3	2.2	0.7	0.9	1.1
Sweden	0.3	0.5	0.8	0.6	0.5	0.9
Switzerland	0.6	0.5	0.7	0.3	0.9	1.0
Turkey	0.3	0.2	0.3	1.4	2.7	4.0
United Kingdom	0.5	1.0	1.8	0.4	0.2	0.5
United States	0.7	1.1	1.7	0.2	0.2	0.3
OECD	0.5	0.7	1.1	0.4	0.5	0.7

Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

Table 7 (cont.) Share of trade in used, recycled and waste materials in total trade (Non-OECD), in %

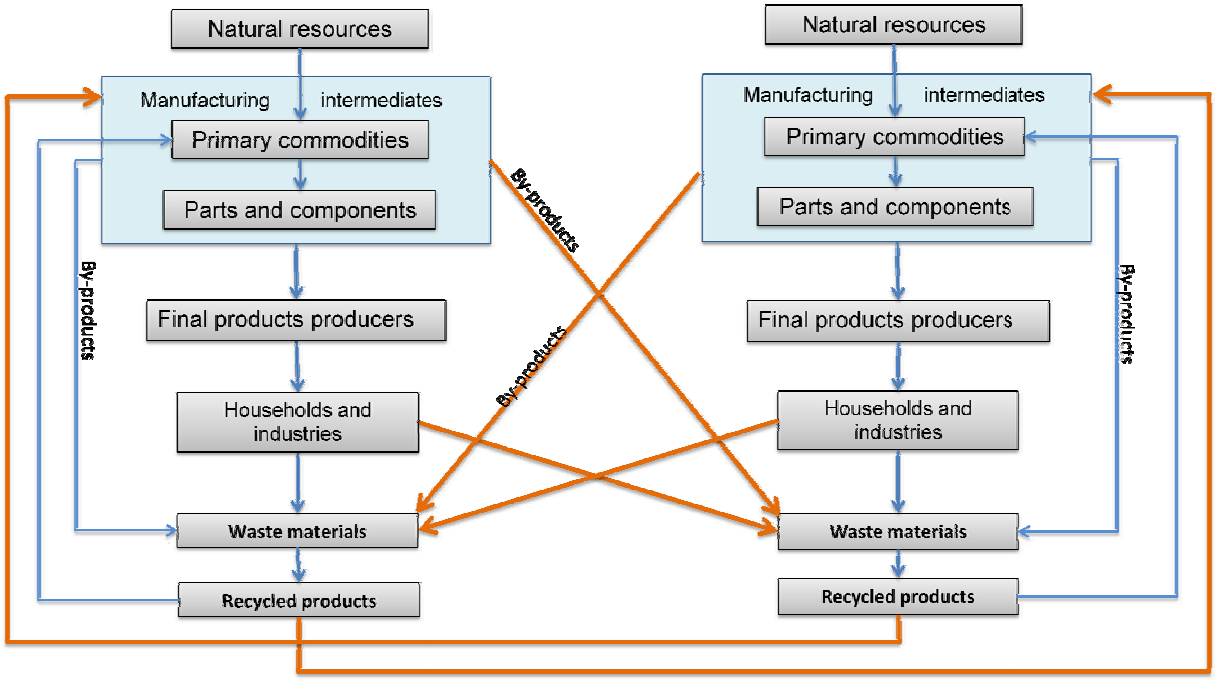
	Export			Import		
	2000	2005	2010	2000	2005	2010
Argentina	0.1	0.1	0.1	0.0	0.0	0.1
Brazil	0.1	0.1	0.1	0.1	0.1	0.1
China	0.0	0.0	0.1	1.5	1.8	2.2
Chinese Taipei	0.2	0.3	0.3	0.6	1.1	1.5
India	0.1	0.1	0.3	1.3	1.8	1.3
Indonesia	0.1	0.3	0.2	1.6	1.1	1.0
Russian Federation	1.6	1.6	0.4	0.1	0.0	0.1
Singapore	0.4	0.4	0.6	0.1	0.2	0.1
South Africa	1.1	0.7	1.3	0.1	0.1	0.1
Hong Kong SAR of China	1.1	2.9	2.9	0.5	0.6	0.8
Malaysia	0.2	0.2	0.9	0.5	0.7	1.0
Philippines	0.5	1.0	1.3	0.3	0.1	0.1
Thailand	0.2	0.3	0.7	0.5	0.6	0.6
Romania	2.7	1.8	3.0	0.3	0.1	0.3
Viet Nam	0.1	0.0	0.1	0.2	0.3	1.3
Saudi Arabia	0.1	0.2	0.4	0.1	0.1	0.1
Brunei Darussalam	0.1	0.3	0.3	0.1	0.1	0.1
Bulgaria	1.1	2.1	3.4	0.3	0.3	1.6
Cyprus	1.0	1.9	4.2	0.0	0.0	0.0
Latvia	1.7	1.4	2.5	1.2	0.6	1.8
Lithuania	6.0	1.5	2.1	0.6	0.3	0.5
Malta	0.2	0.3	0.7	0.0	0.0	0.0
Cambodia	0.2	1.7	1.3	3.2	1.8	1.4
Albania	1.8	4.4	4.3	0.6	0.8	2.6
Bosnia & Herzegovina	1.7	2.4	3.0	0.1	0.5	0.2
Croatia	1.2	1.8	2.7	0.2	0.1	0.1
Macedonia	0.2	2.2	2.0	0.1	0.9	1.4
Moldova, Rep. of	1.9	1.1	2.6	0.4	0.3	0.2
Montenegro	n.a.	2.7	5.1	n.a.	n.a.	0.2
Serbia	0.8	1.0	2.2	n.a.	0.1	0.3
Serbia & Montenegro	0.7	1.5	2.1	0.2	n.a.	n.a.
Unspecified	0.0	0.2	0.7	n.a.	n.a.	n.a.
Rest of world	0.6	0.6	0.6	0.2	0.3	0.4
Non-OECD	0.4	0.4	0.5	0.6	0.8	1.0

n.a.: data not available.

Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

Previous studies (*e.g.* van Beukering *et al*., 2000) have introduced the idea of combining input-output analysis with life cycle assessment and revealed the significant value of recycled material. Figure 3 shows the life cycle of products between different categories in the input-output system.

Figure 3. Material life cycle in an international production network



Source: van den Bergh and Janssen (2004).

In BTDIxE, we identify most kinds of these commodities (Table 8). However, other types of used goods cannot be properly identified, such as discarded PCs and second-hand transport equipment for re-use (such as aircraft): they may be "recorded and classified under the appropriate commodity heading if their value is positive" (The United Nations, 1998). All identifiable used products (except antique arts and collection pieces) are listed in the following table.

Table 8. Commodities of used, recycled goods and wastes

Sector	End-use	HS1988	HS1996	HS2002	HS2007	Description
Waste	Intermediate			271091	271091	Waste oil
				271099	271099	
				382510	382510	Municipal waste
				382520	382520	Sewage sludge
				382530	382530	Clinical waste
				382541	382541	Halogenated waste
				382549	382549	
				382550	382550	Wastes of metal Pickling liquors, Hydraulic fluids, brake fluids and anti-freeze fluids
				382561	382561	Waste mainly containing organic constituents
				382569	382569	
				382590	382590	Other waste
Waste polymer	Intermediate	391510	391510	391510	391510	Waste of polymers of Ethylene
		391520	391520	391520	391520	Waste of polymers of Styrene
		391530	391530	391530	391530	Waste of polymers of Vinyl chloride
Used rubber & plastics	Intermediate	391590	391590	391590	391590	Waste of Other plastics
		400400	400400	400400	400400	Rubber waste and scrap
		401220	401220	401220	401220	Used pneumatic
Waste leather	Intermediate	411000	411000	411520	411520	Waste leather
Recovered paper	Intermediate	4707xx	4707xx	4707xx	4707xx	Recovered paper or paperboard
Worn textiles	Household consumption	630900	630900	630900	630900	Worn clothing and other worn articles.
		6310xx	6310xx	6310xx	6310xx	Used rags, rope etc
Non ferrous metal scrap	Intermediate	7112xx	7112xx	7112xx	7112xx	Precious metal ash
		740400	740400	740400	740400	Non ferrous scrap and waste
		750300	750300	750300	750300	
		760200	760200	760200	760200	
		780200	780200	780200	780200	
		790200	790200	790200	790200	
		800200	800200	800200	800200	
			854810	854810	854810	Used batteries
Ferrous metal scrap	Intermediate	7204xx	7204xx	7204xx	7204xx	Ferrous scrap and waste
		890800	890800	890800	890800	Vessels for breaking up

3. DATA COMPILATION

3.1 Development of conversion keys for different classification systems

3.1.1 Sources for conversion keys and correspondences tables

The Harmonised System (HS) is an international commodity coding system, hosted by the World Customs Organisation (WCO),[15] which is revised every five years. There are currently four versions of HS system from 1988 onwards.[16] HS Rev. 4 (2012) enters into force on 1 January 2012. Though the main 2-digit chapters of each version are similar, some detailed (6-digit) coding can be very different, especially for the Information and Communication Technology (ICT) commodities reflecting significant technological changes in recent years.

In the previous editions of the OECD STAN Bilateral Trade Database (BTD), the underlying data were extracted according to HS 1988 (converted from later versions of HS to maximise time coverage) and then aggregated into industries using a standard HS 1988 to ISIC Rev.3 conversion key. However, due to some one-to-many and many-to-many backward correspondences across HS versions that are difficult to condense into useable one-to-one or many-to-one backward conversions, and the nature of the HS-HS conversions themselves (see Box 1), this methodology can result in a loss of information, notably for ICT goods.

Box 1. HS to HS conversions in Comtrade and ITCS

The conversion keys used in the ITCS and Comtrade systems to convert trade data from HS 2007 to HS 2002, and to earlier versions of HS, only pass trade values at the 6-digit level and then only for regular HS codes (*i.e.* excluding any special codes *e.g.* for confidential data). Once converted, *e.g.* from HS 2007 to HS 2002, data at the 2-digit level are calculated as the sum of the converted 6-digit level data. This can lead to the break in series since any missing 6-digit information identified upstream in HS 2007 is neither passed to HS 2002, nor to earlier versions of HS. For example, in 2009 US exports, a difference of 90% can be observed for chapter 88 "Aircraft, spacecraft and parts thereof" when comparing the reported exports in HS2007 with those reported in HS2002 (see Annex Table 15 as a general illustration of this issue). This difference has a significant impact not only at the industry level but can affect all partners too.

We therefore developed HS, ISIC Rev.3 and EUC conversion tables for each version of HS (four sets of correspondences), so that the information loss due to inconsistencies between different HS versions is reduced, especially for the years after 2002. As mentioned earlier, our HS-ISIC-EUC conversion keys are based on the various concordance keys published by UNSD[17] and summarised in Table 9 below. Examples of resulting conversions are shown in Table 10.

Table 9. Generation of conversion keys via existing UNSD correspondence tables

	To	ISIC Rev. 3		End use categories (EUC)	
		origin	*via*	*origin*	*via*
From	HS 1988	OECD	*UNSD HS88 - HS96* *UNSD HS96 - ISIC 3*	OECD	*UNSD HS88 - HS96* *OECD HS96 - EUC**
	HS 1996	UNSD	*UNSD HS96 - ISIC 3*	OECD	*UNSD HS96 - BEC (part)*
	HS 2002	OECD	*UNSD HS02 - ISIC 3.1* *UNSD ISIC 3.1 - ISIC 3*	OECD	*UNSD HS02 - BEC (part)*
	HS 2007	OECD	*UNSD HS07 - HS02* *UNSD HS02 - ISIC 3.1* *UNSD ISIC 3.1 - ISIC 3*	OECD	*UNSD HS07 - BEC (part)* *OECD HS02 - EUC** (part)* *UNSD HS07 - HS02*

Table 10. Example of BTDIxE conversion table for HS2002, ISIC Rev. 3 and End-use category

Description	Trade (HS 2002)	Industry (ISIC3)	End-use category
Flour	1101.00	1531	1 Intermediate
High Voltage fuse	8535.10	3120	1 Intermediate
Milk processed	0401.10	1520	2 Household consumption
Man/boy's shirt	6105.10	1810	2 Household consumption
Wearing apparel confidential	61CF.00	1810	2 Household consumption
Truck	8704.21	3410	3 Capital goods
Computer with unitary housing structure	8471.41	3000	5 Personal computers
Gasoline motor vehicle less than 1000cc	8703.21	3403	6 Passenger cars
…	…	…	…
Chemicals products confidential	37CF.00	2429	9 Others

3.1.2 Declaring countries and reported HS versions

BTDIxE time-series were broadly built by extracting merchandise trade data, for each reporter, from all published versions of HS in the underlying ITCS and Comtrade databases, and then by combining those data according to the time-periods for which the reported HS values were available.

For all declaring countries, the time-series were built by fixing as the starting year of each HS version the year following the latest available year of the previous HS version. In other words, for each HS version, the maximum year used for building the time-series would be adjacent to the minimum year for the subsequent HS version so to avoid discontinuities in the time-series. For most reporters, trade values from HS 1988 were used for the time-period 1988-1995, values from HS 1996 for 1996-2001, values from HS 2002 for 2002-2006 and values from HS 2007 from 2007 onwards.

A summary of the reporting countries who did not adopt new revisions of HS when they came into force, or for whom the time coverage is not continuous through versions of HS versions, are given in Table 11 below.

Table 11. Countries with limited availability of declaring data

Reporter (default years)	HS 1988 (1988-1995)	HS 1996 (1996-2001)	HS 2002 (2002-2006)	HS 2007 (2007-2011)
Albania	1997-	1997-	2006-	2009-
Belgium	1993-			
Belgium, Luxembourg	1988-1992	not available	not available	not available
Bosnia & Herzegovina	2003-	2003-	2003-	2008-
Brazil	1989-	1997-		
Brunei Darussalam	1992-1994,1997-1998, 2001-2003,2006	2002, 2003, 2006	not available	not available
Cambodia	2000-2004,2008	2000-2004,2008	2004, 2008	2008
Chile	1990-	1997-		
China	1992-			
Chinese Taipei	1990-	1997-		not available
Croatia	1992-	1997-		
India			2003-	2009-
Indonesia	1989-		not available	not available
Latvia	1994-	1997-		
Lithuania	1994-	1997-		
Luxembourg	1999-	1999-		
FYR Macedonia	1994-			
Malaysia	1989-	1997-		2009-
Mexico	1990-			2008-
Moldova	1994-	2000-	2004-	2009-
Montenegro	2006-	2006-	2006-	2008-
Philippines	1996-	2000-	2007-	not available
Romania	1989-	1997-		
Russian Federation	1996-	1997-		
Saudi Arabia	1991-1996 and 1998-	1999 -		
Serbia	2004-	2004-	2004-	
Serbia & Montenegro	1992,1996, 1997-2002,2004	2000-2002, 2004	not available	not available
Singapore	1989-	1997-		
South Africa	2000-	2000-		
Southern African Union	1992-1999	1997-1999	not available	not available
Thailand	1988-	1999-		
Viet Nam	2000-2008	2000-2008	2004-2008	2008-

Source: OECD, International Trade by Commodity Statistics (ITCS), November 2011.

3.1.3 Confidential trade

Over the past years, the OECD and UNSD have been working together to agree on the best statistical treatment of all aspects relating to international trade data and to align their respective data processing practices. Additional information regarding methodological changes and the operational UNSD-OECD Joint Trade Data Collection and Processing System, is available from OECD ITCS Internet page.[18] It is worth noting that both organisations should have identical data since 2005 and are also progressively aligning their historical data to improve the quality and consistency of their databases.

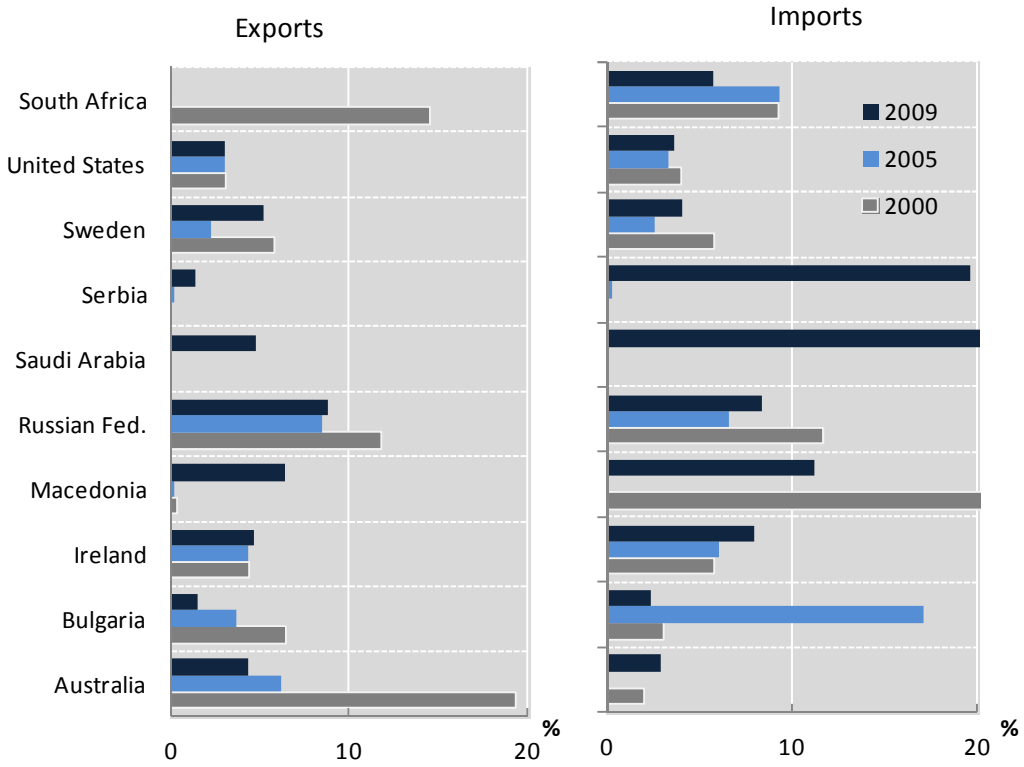
Despite that, users should bear in mind that there are a number of problems associated with the trade estimates presented in BTDIxE. While most of the issues are not unique to BTDIxE or to ITCS (but are inherent in all international trade databases), some of them are linked to the conversion keys used in ITCS and in Comtrade for converting international trade in goods, expressed in HS 2007, to earlier versions of the Harmonised System.

An example of an issue which affects the quality of data is the unallocated or confidential trade. It corresponds to trade which is not allocated to any regular (HS or SITC) product codes and/or not recorded by partner country, due to confidentiality or other reasons such as incomplete or ambiguous information. In the source database ITCS, it stems from the category "commodities not specified according to kind" (for products) and from "other areas not elsewhere specified" (for partners). The share of unallocated or confidential trade in total trade varies across reporters and is often likely to be concentrated in certain groups of products (or industries), partners and sometimes certain years.

In BTDIxE, we try to reduce the volume of confidential trade by adjusting for any differences between the data at the 2-digit level of HS and the sum of the corresponding 6-digit data (section 3.2.2).

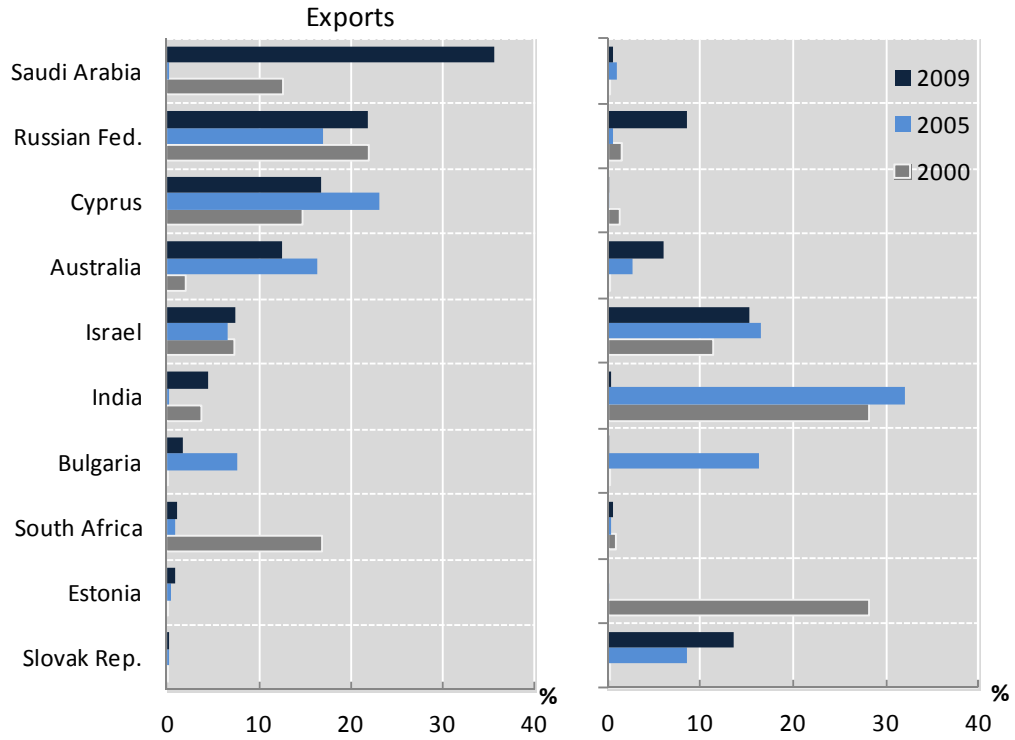
The following sets of charts (Figure 4 and Figure 5) give an overview on BTDIxE reporters (OECD and Non-OECD) where the problem of unallocated or confidential trade is significant. The first two bar charts illustrate the share of unallocated or confidential trade in total trade (*i.e.* trade which is not allocated to any particular product/industry), while the last two show the share of other areas not elsewhere specified in total trade (*i.e.* trade which is not allocated to any particular partner country). Note that for some countries, the prevalence of unallocated or confidential trade may be high in the first release of annual merchandise trade statistics but then reduced in subsequent revision(s).

Figure 4. Share of unallocated or confidential products in total trade



Source: OECD Bilateral Trade Database by Industry and End-Use Category (BTDIxE), November 2011.

Figure 5. Share of unspecified partner in total trade



Source: OECD Bilateral Trade Database by Industry and End-Use Category (BTDIxE), November 2011.

3.2 Special data treatments

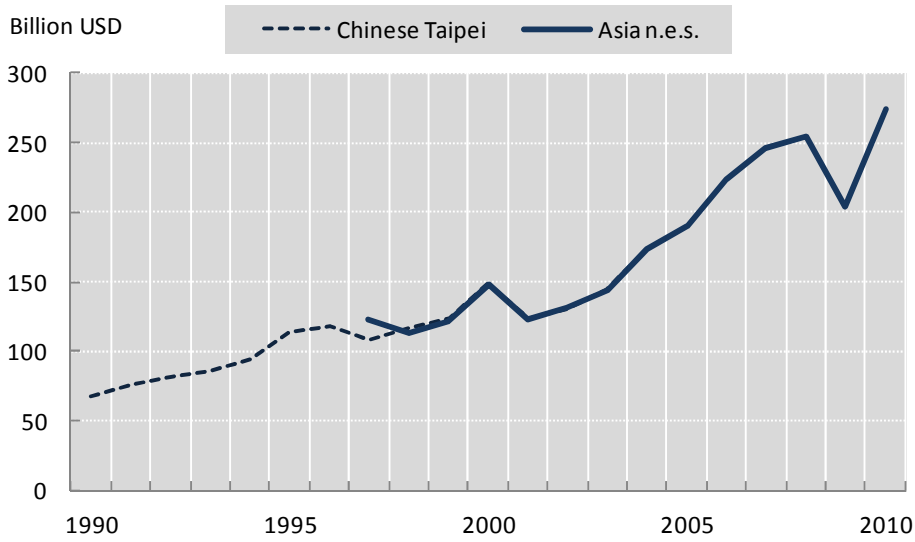
3.2.1 Building up long time-series for countries

In BTDIxE, we extended the series of a few reporting countries for which the time coverage was limited in the underlying data sources ITCS and Comtrade.

For example, trade values for reporter Chinese Taipei (country code 158) were collected and compiled by the OECD for the period 1990-2006, but from 2007 onwards the series were discontinued. Comparing the compiled data for Chinese Taipei with that for the Comtrade reporter "Asia not elsewhere specified" (country code 490)[19] – for each partner and each 2-digit HS chapter – we observed that both sets of series were sufficiently similar that we could legitimately use the Asia n.e.s. data to extend Chinese Taipei series from 2007 onwards. Figure 6 shows how Chinese Taipei and Asia n.e.s. trade flows compare at the aggregate level of commodities with partner Total World.

Similarly, trade values for reporter Belgium (country code 56) were extended backwards for the period 1988-1992 using data for the reporter Union of Belgium-Luxembourg (country code 58), and data for reporter South Africa (country code 710) were extended backwards for the period 1992-1999 using series concerning the South Africa Customs Union (country code 711).

Figure 6. Chinese Taipei and Asia n.e.s. reported export flows



Source: OECD International Trade by Commodity Statistics (ITCS), November 2011. UN Comtrade, November 2011.

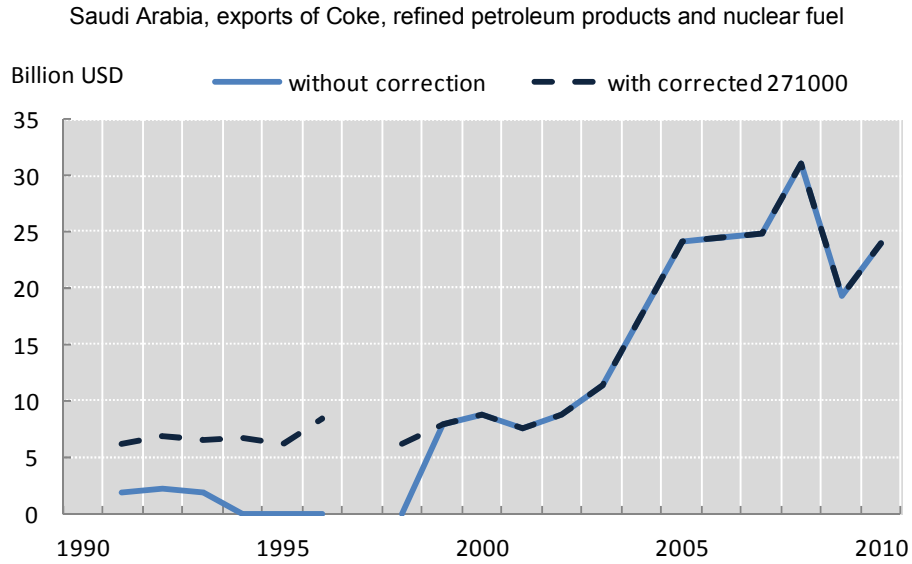
3.2.2 Adjustments between 2-digit and 6-digit HS

In ITCS, there are special codes (or memorandum items) at the 6-digit level of HS to deal with confidential, or special, trade data. However, these codes have not been systematically used in recent years meaning that discrepancies may arise when comparing trade flows at the 2- and 6-digit levels (in other words, data for 2-digit level "parents" values can significantly differ from the sum of their 6-digit level "children").

The differences in values at the 2- and 6-digit levels are taken into account in the compilation of BTDIxE. When HS codes at the 2-digit level can be allocated to one explicit ISIC division (or one end-use category), the differences between the values at the 2- and 6-digit chapters are also allocated to the corresponding ISIC industry (or corresponding end-use category). When the corresponding ISIC division (or end-use category) could not be determined, the differences at the 2- and 6-digit levels were added up and allocated to the BTDIxE industry "confidential and unallocated" (or to the end-use category "Others").

In BTDIxE, we also deal with differences which affect several declaring countries regarding reported trade for HS product "*Oils petroleum, bituminous, distillates, except crude*" at the 4- and 6-digit levels (HS codes 2710 and 271000 respectively). In HS, by definition, the product code 271000 is the unique "child" of 2710, and as such, trade values for commodity 271000 should equal those for 2710. However, in ITCS and Comtrade, there are a few reporters for which data are not available for 271000 although reported for 2710. This anomaly, which mainly concerns years prior to 2001, can distort trade estimates notably for industry 23 *Coke, Refined Petroleum Products and Nuclear Fuel*, and related industries (see Figure 7 illustration for Saudi Arabia, ISIC3 sector 23). In BTDIxE, this anomaly was corrected by allocating to 271000 the values given for 2710.

Figure 7. Example of adjustment for HS code 271000 and impact on ISIC3 sector,



Source: UN Comtrade, November 2011

3.2.3 Mirror statistics (re-exports adjustments)[20]

One of the major issues with merchandise trade is mirror statistics which often do not match between two countries, *i.e.* the export values from country A to country B (reported by country A) may well not agree with the import values to country B from country A (reported by country B).

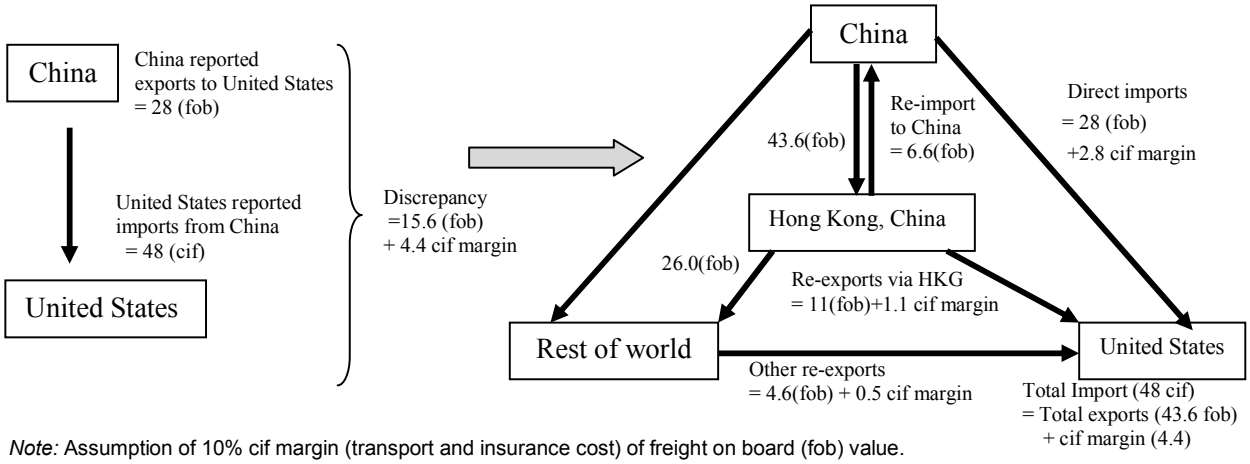
This issue exists for almost all trade flows; nonetheless, the differences observed may be relatively small. In a few cases, the discrepancy can be significant but concern some particular reporter-partner combinations.

For example, according to BTDIxE data, in 2005 China reported USD 28 billion exports of textile goods (BTDIxE industry code 17T19 *Textiles, Textile Products, Leather and Footwear*) to the United States, whilst for the same year United States reported USD 48 billion imports of textile goods from China, meaning a discrepancy of USD 20 billion (Figure 8).

Reasons for this discrepancy can vary. They can be due to statistical errors, different criteria used in the statistical offices (such as the recorded currency and the reporting threshold used), differences due to cost, insurance and freight (*c.i.f.*) valuation for imports versus freight on board (*f.o.b.*) valuation for exports, effects of merchanting, and can also stem from one of the most important factors: **re-export** activities.

Re-exports occur when products enter a customs territory from one country and are shipped to another country without undergoing any transformation.[21] As such, re-exports are more likely to occur in countries and regions with favorable geographical position, in terms of intercontinental transportation, as well as competitive transportation and logistics costs. Using the example of above, China actually exported USD 28 billion textile products directly to United States in 2005 and USD 11 billion and USD 4.6 billion textile products were re-exported from Hong Kong, China and other re-export centres respectively.

Figure 8. Adjustment using Hong Kong, China re-exports, billion USD, 2005



Note: Assumption of 10% cif margin (transport and insurance cost) of freight on board (fob) value.

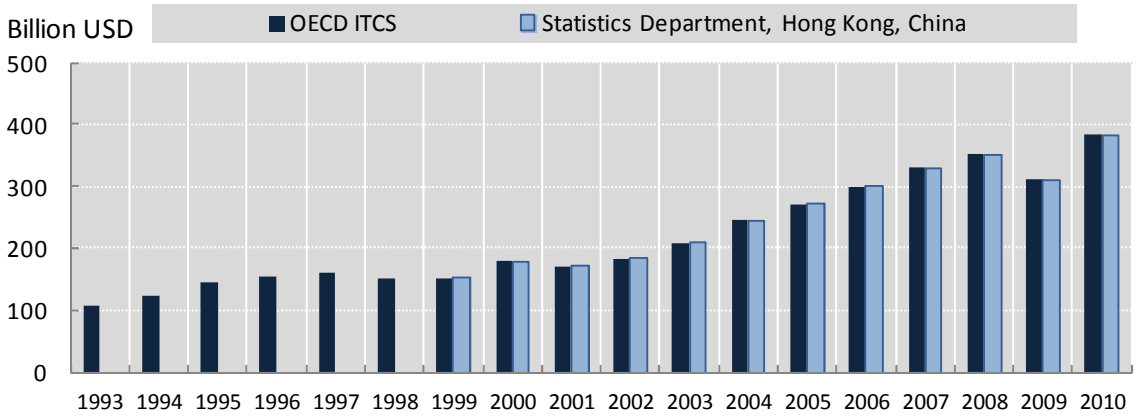
Although the harmonised information of re-exports statistics across countries are generally not available, or not reported to Comtrade/ITCS, related data sources (such as National Accounts and import matrices of Input-Output information) indicate that the role of re-export and transhipment activities are significant in some countries which have major maritime ports *e.g.* Hong Kong, China and Singapore in Asia, Belgium and the Netherlands in Europe. However, the complete information of re-exports, *i.e.* the origin and destination countries by product, is not publicly available – although there have been regular requests for countries to report re-exports to UNSD and OECD.[22]

Over the last decade, much focus has been on the re-exporting activities of Hong Kong, China, due to the significant and increasing economic presence of mainland China as both importer and exporter. Using detailed data provided by the Census and Statistics Department of the Hong Kong, China which shows re-exports by both originating country and final destination, it is possible to make adjustments for re-exports via Hong Kong, China, for each reporter.

The re-exports database of Hong Kong, China is recorded in Hong Kong, China dollars (HKD) and converted into US dollars applying the appropriate market exchange rates of each year. Re-exports are available by country/territory of origin and country/territory of destination (which includes all 34 OECD countries, the major non-member economies and additional zones), at the HS 6-digit level, for the time-period 1999-2010. HS data of Hong Kong, China are converted into BTDIxE industries and end-use categories by applying the conversion keys and methodology as outlined in section 2.

We compared the re-exports of Hong Kong, China available in ITCS database (which are only given by destination) with that provided by the Census and Statistics Department, for the common period 1999-2010. Comparisons were undertaken at the aggregate level, by destination, and by destination and industry. The two sets of data are broadly consistent at the aggregate level (see Figure 9) nonetheless, some divergences occur when comparing them by destination, and that is even more true when looking at destinations crossed with industries. However, it turns out that less than 1.3% of Hong Kong, China observations are much smaller than ITCS re-exports, and those mainly concern the *Non-ferrous Metals* industry; while a little more than 1.6% of Hong Kong, China re-exports are greater than that reported in ITCS, and those mainly concern the partner (destination) *Unspecified*.

Figure 9. Comparison of Hong Kong, China total re-exports



Sources: OECD ITCS and Statistics Department, Hong Kong, China.

In BTDIxE, the adjustments for re-exports, using the Census and Statistics Department Hong Kong, China data, are made as follows:

For each country A of origin, the total value of its re-exports with partner Hong Kong, China is estimated as the sum of its re-exports to all available countries of destination. The estimates are made for each year, each BTDIxE industry and end-use category.

The re-exports values (reported by Hong Kong, China) are then subtracted from the exports values (reported by A) from country A to Hong Kong, China (*i.e.* adjusted exports = reported exports *minus* estimated re-exports). Meanwhile the same re-exports are added to the exports values (reported by A) from country A to country B (*i.e.* adjusted exports = reported exports *plus* estimated re-exports).

Depending on the reporter, the difference between non-adjusted and adjusted exports can sometimes be significant; as is the case for Japan, the United States and China (Table 12).

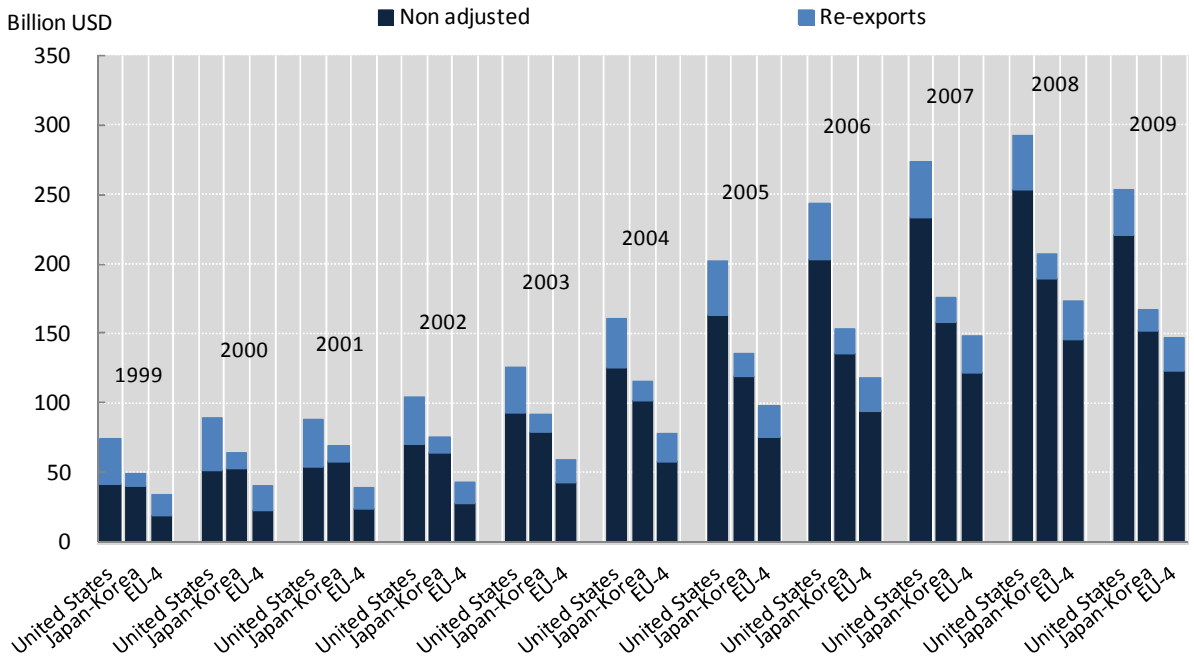
Table 12. Japanese exports of manufactured goods to China, million USD

		2000	2005	2006	2007	2008	2009	2010	2010 shares
Unadjusted	Total trade in goods	**29,217**	**74,070**	**85,741**	**99,109**	**113,613**	**99,474**	**138,102**	**100%**
	Capital goods	5,711	15,797	18,228	19,467	22,300	17,784	31,231	23%
	Households consumption	567	1,924	2,542	3,204	3,696	3,785	4,534	3%
	Intermediate goods	21,954	54,483	63,029	73,403	83,317	73,920	95,569	69%
	Personal computers	175	505	455	474	421	314	295	0%
	Passenger cars	420	1,173	1,357	2,463	3,739	3,496	6,225	5%
	Personal phones	350	94	49	2	2	1	0	0%
	Precious goods	1	3	4	5	5	2	9	0%
	Packed medicines	40	89	75	91	134	172	238	0%
	Miscellaneous	0	1	0	0	0	0	0	0%
Adjusted for Hong-Kong, China re-exports	Total trade in goods	**42,515**	**93,781**	**106,070**	**121,675**	**137,057**	**118,694**	**161,747**	**100%**
	Capital goods	7,961	18,707	21,751	24,068	27,393	21,906	36,253	22%
	Households consumption	945	2,282	2,987	3,756	4,195	4,175	5,019	3%
	Intermediate goods	32,347	70,739	79,247	90,649	101,005	88,494	113,603	70%
	Personal computers	319	576	503	514	466	368	347	0%
	Passenger cars	523	1,277	1,431	2,571	3,838	3,558	6,259	4%
	Personal phones	354	96	53	3	2	1	1	0%
	Precious goods	1	3	6	7	9	3	11	0%
	Packed medicines	65	101	91	107	150	188	253	0%
	Miscellaneous	0	1	0	0	0	0	0	0%

Source: OECD Bilateral Trade Database by Industry and End-Use Category (BTDIxE), November 2011.

Figures 10 and 11 below indicate that, the adjustment values (*i.e.* the Hong Kong, China re-exports) for China with its major trade partners have remained quite stable over the time-period 1999-2009, *i.e.* at an average of USD 36 billion with the United States, USD 14 billion with Japan and Korea and USD 20 billion with the zone EU-4 (which includes France, Germany, Italy and the United Kingdom); while the total trade volume of Chinese exports to the United States has tripled over the same period. This implies that in recent years, more goods have been shipped directly from China to its major trading partners.

Figure 10. Chinese reported exports and re-exports via Hong Kong, China



Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

Figure 11. Chinese exports to seven major countries: reported imports and adjusted exports



Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.
Note: The major seven countries are France, Germany, Italy, Japan, Korea, United Kingdom and United States.

3.2.4 Remaining issues and future developments

Continuing from the previous discussion, an obvious improvement would be to further adjust bilateral trade values by making use of ITCS reported re-exports from Hong Kong, China, for years prior to 1999. Ideally, adjustments would also be made to account for re-exports from other major continental trading hubs such as Belgium, the Netherlands and Singapore.

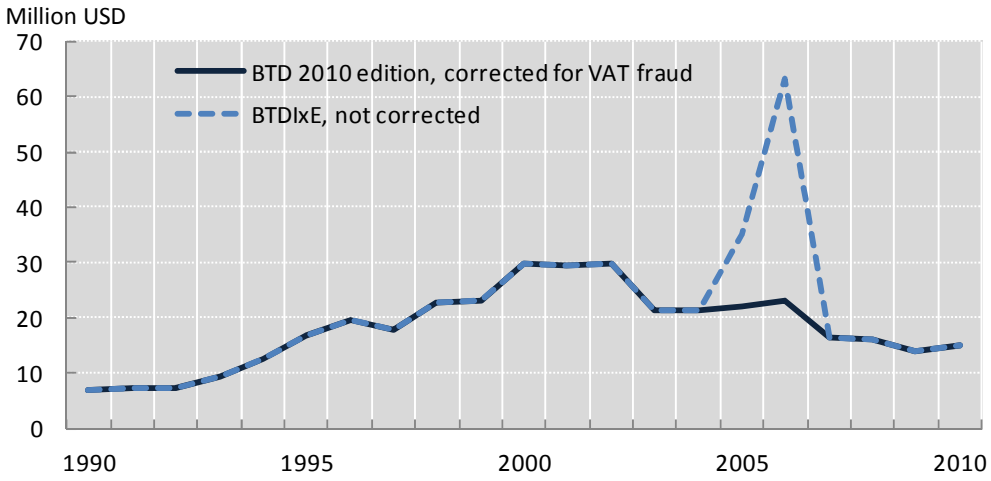
Also, we would like to be able to identify used/second-hand capital goods (such as secondhand aircraft) which currently cannot be differentiated in underlying sources ITCS and COMTRADE from new capital goods.

The Rest of the World will also be separated into several geographical regions/blocs such as North Africa, East Africa, West Africa, Other South America, Other OPEC and Other Asia.

There are also some country specific corrections which are made in the old Bilateral Trade Database, which are not yet reflected in BTDIxE.

An example is the impact of Missing Trader Intra-Community (MTIC) VAT fraud in the United Kingdom, which is evident in the UK reported exports of HS product 852520 *Transmit-receive apparatus for radio, TV* which rose massively in 2005 and 2006 to reach nearly 10% of UK's total exports in 2006, before dropping by 97% in 2007.[23] The phenomenon is also observable for imports, but to a lesser degree. Exports and imports for ISIC industry 322, the parent industry 32 *Radio, television & communication equipment*, and other related aggregates are affected. UK's trading partners mainly concerned are EU countries. In BTD, trade with EU countries in HS product 852520 were corrected by interpolation (Figure 12). The next version of BDTIxE will also include such corrections.

Figure 12. Example of VAT fraud correction for the United Kingdom's total exports, and impact on ISIC sector 32 *Radio, TV and Communication equipment*



Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

4. HOW TO ACCESS BTDIxE?

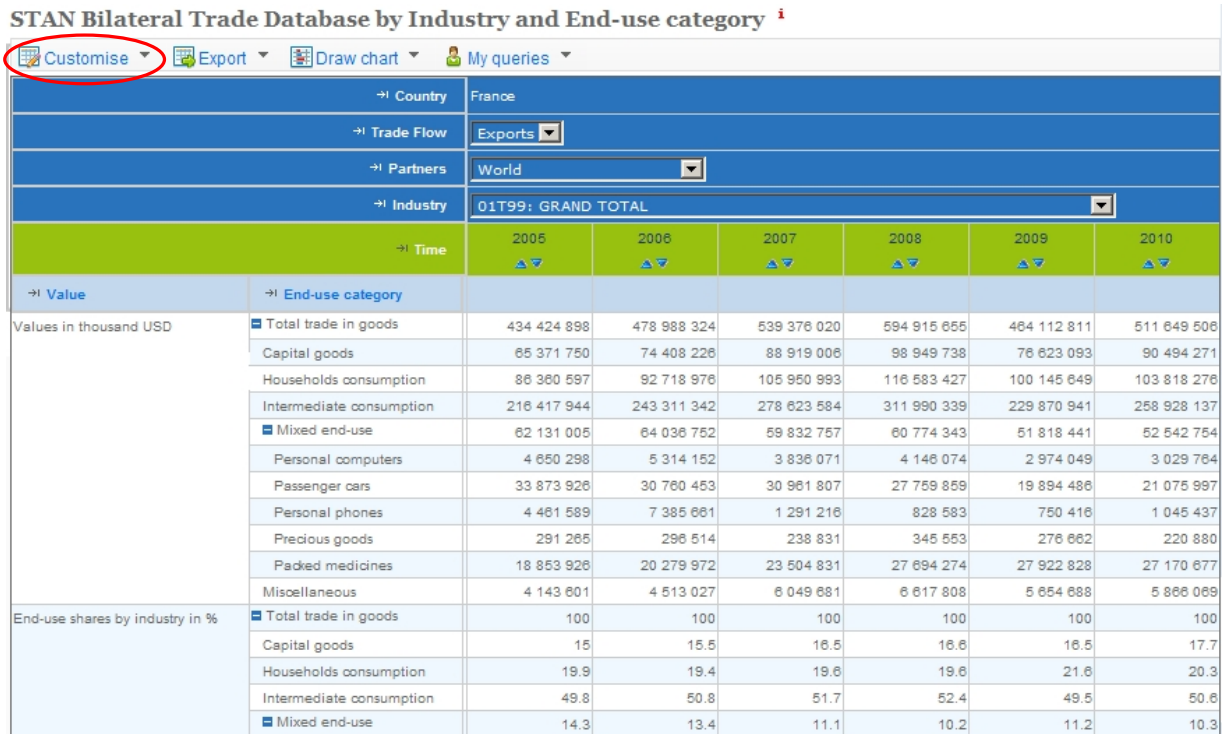
BTDIxE is disseminated in the form of multi-dimensional tables via OECD.Stat, OECD's online data dissemination service which allows viewing, printing, graphing and exporting selected data in a user-friendly manner: http://stats.oecd.org/Index.aspx?DataSetCode=BTDIxE.

The **default view** for BTDIxE on OECD.Stat enables users to view exports and imports broken down by end-use category for their chosen reporter, partner, and industry – in USD thousands and as shares by industry.

Users can change the view, by choosing which dimensions to put in the rows and columns, by using the OECD.STAT "Layout" option within the "Customise" menu – see screen shot below. Various levels of metadata can be accessed by clicking on the little red "i" that appears next to the dataset's title, country names, etc.

Ready-made files of BTDIxE are available in the form of zipped flat files (*.txt), having one zipped file per declaring country. In each zipped file, there are two sets of data, one for the unadjusted flows and another one for the flows adjusted with Hong Kong, China re-exports.

BTDIxE flat files can be downloaded from OECD.Stat by using the 'export excel' facility from the top bar menu and selecting the 'ready-made files' option.



STAN Bilateral Trade Database by Industry and End-use category

Customise | Export | Draw chart | My queries

Country		France					
Trade Flow		Exports					
Partners		World					
Industry		01T99: GRAND TOTAL					
Time		2005	2006	2007	2008	2009	2010
Value	End-use category						
Values in thousand USD	Total trade in goods	434 424 898	478 988 324	539 376 020	594 915 655	464 112 811	511 649 506
	Capital goods	65 371 750	74 408 226	88 919 006	98 949 738	76 623 093	90 494 271
	Households consumption	86 360 597	92 718 976	105 950 993	116 583 427	100 145 649	103 818 276
	Intermediate consumption	216 417 944	243 311 342	278 623 584	311 990 339	229 870 941	258 928 137
	Mixed end-use	62 131 005	64 036 752	59 832 757	60 774 343	51 818 441	52 542 754
	Personal computers	4 650 298	5 314 152	3 836 071	4 146 074	2 974 049	3 029 764
	Passenger cars	33 873 926	30 760 453	30 961 807	27 759 859	19 894 486	21 075 997
	Personal phones	4 461 589	7 385 661	1 291 216	828 583	750 416	1 045 437
	Precious goods	291 265	296 514	238 831	345 553	276 662	220 880
	Packed medicines	18 853 926	20 279 972	23 504 831	27 694 274	27 922 828	27 170 677
	Miscellaneous	4 143 601	4 513 027	6 049 681	6 617 808	5 654 688	5 866 069
End-use shares by industry in %	Total trade in goods	100	100	100	100	100	100
	Capital goods	15	15.5	16.5	16.6	16.5	17.7
	Households consumption	19.9	19.4	19.6	19.6	21.6	20.3
	Intermediate consumption	49.8	50.8	51.7	52.4	49.5	50.6
	Mixed end-use	14.3	13.4	11.1	10.2	11.2	10.3

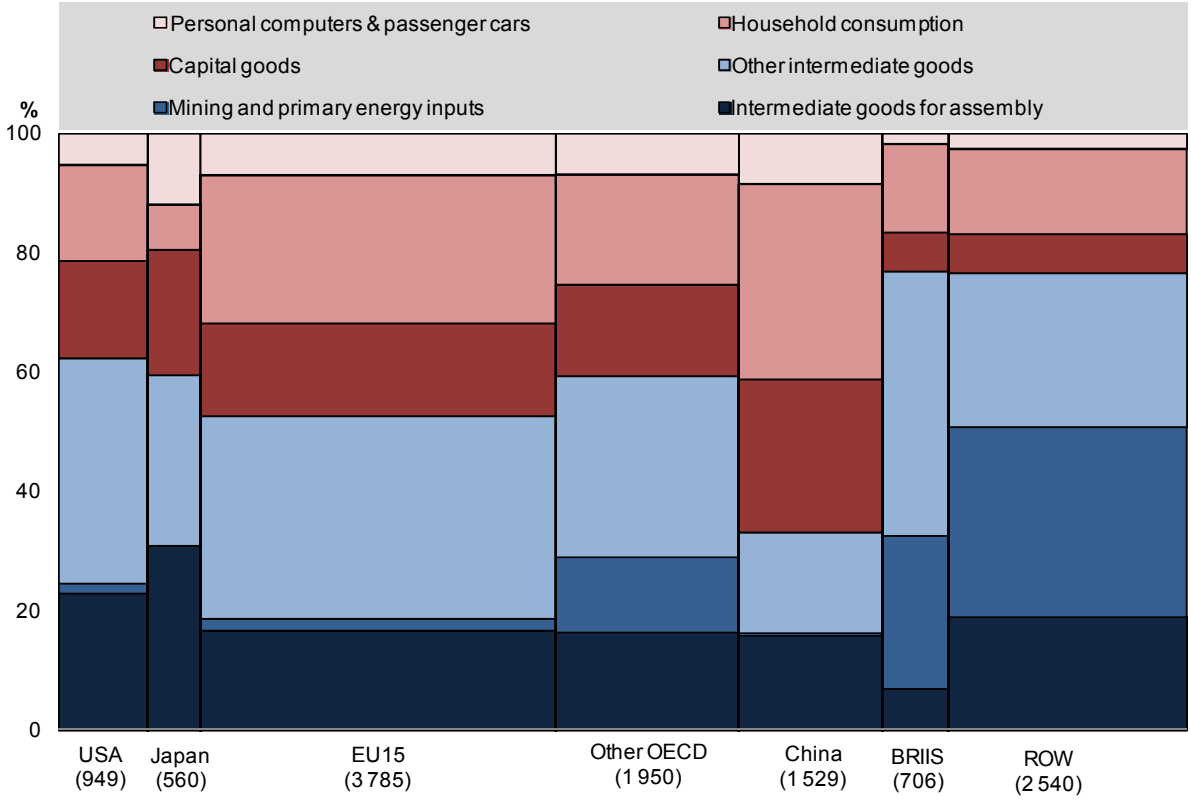
5. EXAMPLES OF OUTPUT USING THE DATABASE

The pace and scale of today's globalisation process is unprecedented. International trade volume is increasing rapidly especially in emerging economies, and the production network is fragmented into different geographical areas. This section briefly presents the general observations that we made from BTDIxE.

While the world trade structure by end-use largely remains stable during the last 20 years (Figure 2), there have been significant changes across regions. In 2009, non-OECD countries accounted for approximately 40% of world trade compared to about 25% in 1995.

Demands for mining and primary energy inputs are driven high and the share of Rest of the world gains much importance. Emerging economies integrate into the global value chain, especially for Asian emerging countries and East European countries. South America is also involved for the latest years.

Figure 13. World trade by end-use category and origin, 2009[24]



Note: BRIIS includes Brazil, Russian Federation, India, Indonesia, and South Africa. Mining and primary energy inputs is intermediate goods of ISIC10-14 industries and Intermediate goods for assembly is intermediate goods of ISIC29-ISIC36 industries.

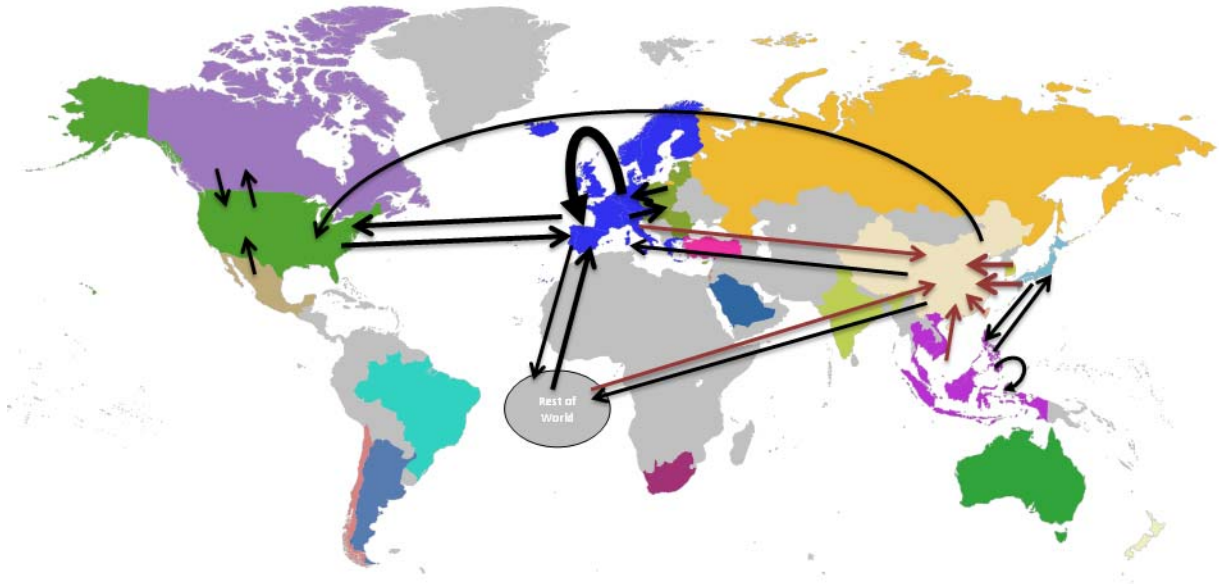
Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

In 1995, the value of China's exports was USD 148 billion, of which 60% was destined for final consumption. By 2009, the value of China's exports had increased more than tenfold to USD 1 529 billion and the structure of its exports had changed substantially, with an increasing role as an exporter of high-end intermediates and capital goods.

The global production network evolves profoundly and the time when all stages of production of final goods remain within national borders has long gone. Today, a wide range of intermediate inputs, including parts and components and semi-finished goods, are delivered from one country to another. The two following figures allow us to better understand this development.

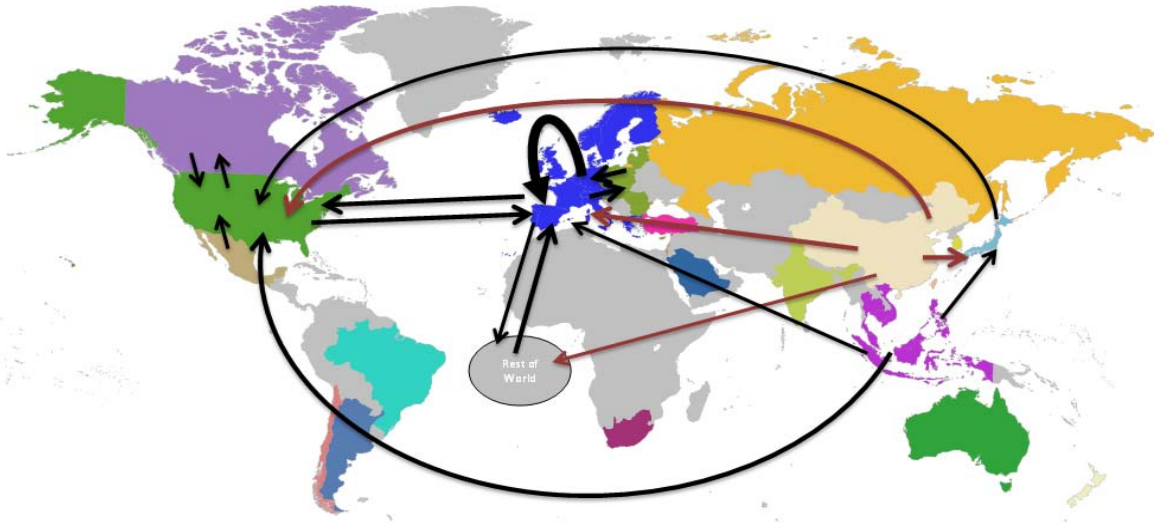
In fact, countries are specialised in different processing stages of production and the value-added encapsulated in many final goods are generated in different countries. Imports contents of exports are very significant for some economies' exports. From BTDIxE, it is apparent that China is importing a large amount of intermediate goods (Figure 14) and is exporting an important share of final products (Figure 15). Studies have shown that the Chinese domestic value-added embodied in some of its exports of final products is very small, while the large part of world value-added is induced by intermediate exports to Chinese manufacturers.[25]

Figure 14. Significant trade flow of non-primary intermediate goods, 2009



Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

Figure 15. Significant trade flow of personal final goods, 2009

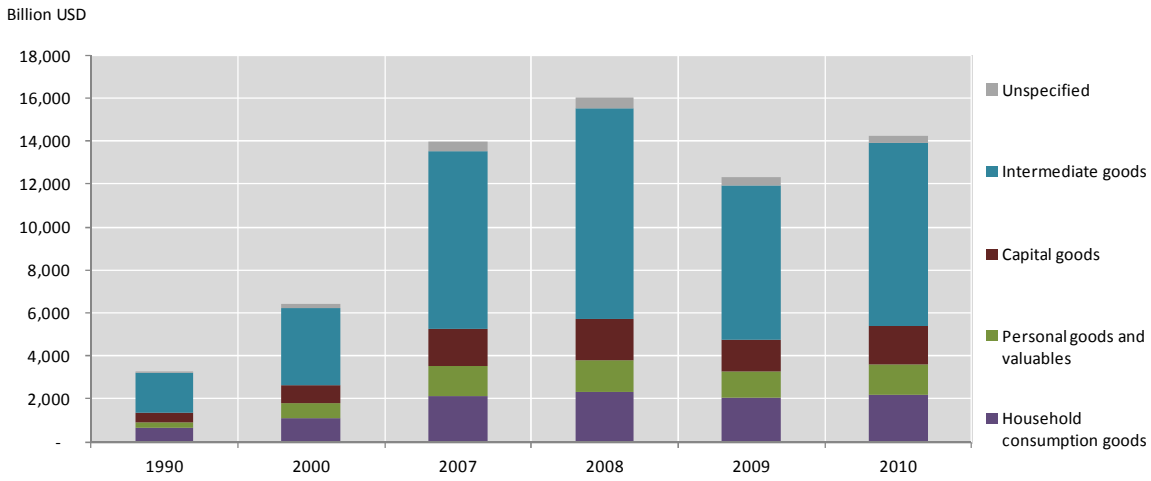


Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

The role of intermediate trade thus merits further analysis. We have also observed that the sensitivities to the 2008/2009 crisis are more pronounced in trade in intermediate goods than in trade in final products. We assume that industrial importers are more sensitive to the financial environment and thus reduce their demands for intermediate goods and capital goods when the crisis comes. The following chart (Figure 16) shows the trade collapse of 2008/2009 and the partial recovery of 2009/2010.

Intermediate goods and capital goods suffer most of the reduction in trade volume while household consumption and personal goods are less affected. By 2010, the world trade volume and structure return to almost the same status as in 2007, while regional changes occur. East Asia recovered faster than North America and Europe.

Figure 16. World trade collapse and recovery from 2008 to 2010



Source: OECD STAN Bilateral Trade Database by Industry and End-use category (BTDIxE), November 2011.

6. CONCLUSION

The Bilateral Trade Database by Industry and End-use category (BTDIxE) is the first database which gathers a large set of bilateral trade flows (exports and imports) broken down by industries (ISIC Rev. 3) and end-use categories. Combined with OECD's Input-Output Database, BTDIxE becomes a powerful tool for international trade analyses for a range of OECD projects - notably to measure trade in value-added and global value chains.

The particularities of BTDIxE are, among other things, the use of multiple conversion keys to exploit trade data according to reported version of HS; the treatment of confidential trade (*i.e.* the difference between reported HS 2-digit data and sum of 6-digit components are, where possible, allocated to industries and end-use categories); adjustments for Hong Kong, China re-exports, (based on the bilateral re-export statistics provided by the Hong Kong Government's Census and Statistics Department); and the separation of certain HS 6-digit products that cannot be allocated to standard end-use categories (*i.e.* household consumption, capital and intermediate goods) into five additional categories: *Packed medicines*, *Personal computers*, *Passenger cars*, *Personal phones* and *Valuables*..

NOTES

1. www.oecd.org/sti/btd.

2. http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=10&Lg=1.

3. Note however that the EC FP7 funded World Input-Output Database (WIOD) project is due to publish estimates for the period 1995-2009 in the 2nd quarter of 2012 – www.wiod.org.

4. http://stats.oecd.org/Index.aspx?DatasetCode=HS1988&lang=en.

5. See http://unstats.un.org/unsd/comtrade/.

6. The World Customs Organisation (WCO) is the custodian of HS. Documentation for HS 2007 is available here: www.wcoomd.org/home_hsoverviewboxes_tools_and_instruments_hsnomenclaturetable2007.htm.

7. In general, source data are held according to Standard International Trade Classification (SITC) Rev. 2 for the time period 1978-1987, the original version of HS (1988) for 1988-1995, HS Rev. 1 (1996) for 1996-2001, HS Rev. 2 (2002) for 2002-2006 and HS Rev. 3 (2007) from 2007 onwards. In ITCS, international trade in goods are stored and published at the 5-digit level of SITC and the 6-digit level of HS, although some countries submit data at the 8- or even 10-digit level.

8. Bosnia-Herzegovina, Croatia, FYR Macedonia, Republic of Moldova, Montenegro and Serbia.

9. Data on 1988-1992 refer to the former Union Belgium, Luxembourg; data from 1993 refer to Belgium.

10. The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

11. The information in this document with reference to « Cyprus » relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the « Cyprus issue ».

12. See for example, http://unstats.un.org/unsd/trade/HS2007-BEC%20-%20Explanatory%20Note.pdf.

13. See http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=2.

14. In order to anticipate future statistics based on ISIC Rev. 4, we have also developed a set of preliminary HS-ISIC Rev. 4 correspondences using the ISIC Rev. 3.1 – ISIC Rev. 4 conversion keys available at http://unstats.un.org/unsd/cr/registry/regso.asp?Ci=60&Lg=1.

15. www.wcoomd.org/home_hsoverviewboxes_tools_and_instruments_hsnomenclaturetable2007.htm.

16. HS 1988 is generally used for the time-period 1988-1995; HS Rev. 1 (1996) for 1996-2001; HS Rev. 2 (2002) for 2002-2006; HS Rev.3 (2007) for 2007-2011. Due to various reasons, not all custom offices have updated to the latest HS version for all time periods.

17. See http://unstats.un.org/unsd/cr/registry/regot.asp?Lg=1 and United Nations (2008), Correlation and Conversion table between HS 2007 and BEC: http://unstats.un.org/unsd/trade/HS2007-BEC%20-%20Explanatory%20Note.pdf.

18. http://www.oecd-ilibrary.org/trade/data/international-trade-by-commodity-statistics_itcs-data-en.

19. Chinese Taipei is not officially recognised by the United Nations so trade figures are not explicitly compiled.

20. For detailed discussion, see Guo *et al.* (2009).

21. http://unstats.un.org/unsd/tradekb/ExportPDF50128.aspx.

22. For example, at the annual meetings of OECD's Working Party on Trade in Goods and Services (WPTGS).

23. At the end of 2006 the UK government implemented changes to VAT accounting rules ('reverse charge') for businesses trading in mobile telephones, computer chips and certain other goods.

24. Charts for both 1995 and 2009, together with the underlying data, are available in the 2011 edition of OECD's Science, Technology and Industry Scoreboard: http://dx.doi.org/10.1787/sti_scoreboard-2011-6-en.

25. See the WTO's "Made in the World Initiative" for commentaries on the issue of "Trade in Value Added": www.wto.org/english/res_e/statis_e/miwi_e/miwi_e.htm.

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ANNEX

Table 13. When reporter and partner are the same, exports

Reporter = partner	Time-period	Average shares in the total World (%)	What does it cover? (ITCS metadata)
Albania	-	-	-
Argentina	-	-	-
Australia	2001-2003	negligible	-
Belgium-Luxembourg	1993-2010	2.1	Bilateral trade with Luxembourg. Goods in transit in Belgium coming from countries outside EU and bound for other Member States.
Bosnia-Herzegovina	-	-	-
Brazil	-	-	-
Bulgaria	-	-	-
Cambodia	-	-	-
Canada	2005-2005	-	-
China	-	-	-
Cyprus	-	-	-
Czech Republic	1993-2007	0.1	Exports to Czech Republic means for example exports to the bonded warehouse.
Spain	1989-1998	2.0	Trade with Spanish territories of Western Africa is not included.
Estonia	-	-	-
France	1988-1995	2.0	-
United Kingdom	-	-	-
Hong Kong, China	-	-	-
Indonesia	-	-	-
Ireland	2005-2010	0.6	-
Italy	1988-2006	negligible	-
Luxembourg	2008-2010	negligible	-
Mexico	1993-2000	negligible	Re-exports, where these refer to goods leaving the country for a limited period in order to be transformed, repaired or stored mainly in Inbound Export Industries (*Maquiladoras*).
Malaysia	-	-	-
New Zealand	-	-	-
Romania	-	-	-
Singapore	2006-2006	negligible	
Slovak Republic	1997-2009	negligible	Trade with Slovak Republic concerns re-imports or re-exports. Re-exports of goods, which were imported in the Slovak Republic for inward processing, for processing under customs control or for temporary use.
Slovenia	-	-	-
Thailand	-	-	-
Turkey	1994-2010	negligible	-
Chinese Taipei	1990-1999	negligible	-
South Africa	-	-	-

Table 14. When reporter and partner are the same, imports

Reporter = partner	Time-period	Average shares in the total World (%)	What does it cover? (ITCS metadata)
Albania	2003-2010	negligible	
Argentina	2006-2009	0.1	
Australia	1998-2010	0.2	Trade with Australia concerns re-imports.
Belgium-Luxembourg	1993-2006	0.7	Bilateral trade with Luxembourg. Goods in transit in Belgium coming from countries outside EU and bound for other Member States.
Bosnia-Herzegovina	2003	0.1	-
Brazil	2000-2010	0.2	-
Bulgaria	2007-2009	0.1	-
Cambodia	2005-2009	negligible	-
Canada	1988-2010	1.4	Trade with Canada concerns the return of goods.
China	2000-2010	6.9	-
Cyprus	2000-2004	negligible	-
Czech Republic	1993-2008	0.5	Trade with Czech Republic concerns imports from custom-bonded warehouses or re-imports.
Spain	1988-1999	0.4	Trade with Spanish territories of Western Africa is not included.
Estonia	2000-2003	negligible	-
France	1988-2010	1.3	-
United Kingdom	2000-2010	1.1	-
Hong Kong, China	2009	0.2	-
Indonesia	2000-2010	0.5	-
Ireland	1993-2010	0.7	-
Italy	1988-2006	negligible	-
Luxembourg	2008-2010	0.8	-
Mexico	1996-2001	1.0	Re-imports, where these refer to goods entering the country for a limited period in order to be transformed, repaired or stored mainly in Inbound Export Industries (*Maquiladoras*).
Malaysia	2004-2010	0.7	-
New Zealand	2002-2010	0.4	Trade with New Zealand concerns re-imports.
Romania	2005-2006	0.2	-
Singapore	-	-	-
Slovak Republic	1997-2010	0.7	Trade with Slovak Republic concerns re-imports or re-exports. Re-imports of goods, which were exported abroad for outward processing or for return in unaltered state.
Slovenia	2004-2010	0.3	-
Thailand	2000-2010	1.3	-
Turkey	2006-2010	negligible	-
Chinese Taipei	1990-1999	0.1	-
South Africa	2002-2010	0.3	-

Table 15. Examples of % differences between HS2007 and HS2002 2-digit chapter data, 2009, exports

Chapter	AUT	BRA	EST	FRA	DEU	HUN	ITA	LVA	LTU	POL	PRT	RUS	SVN	TUR	GBR	USA
01	-	-	-5	-	-15	-3	-10	-4	-2	-2	**-49**	-	-	-	-	-
02	-	-	-8	-	-5	-5	-2	-6	-1	-2	-15	-	-	-	-	-
03	-	-	-12	-	-14	-5	-5	-5	-2	-1	-15	-	-	-	-	-
04	-	-	-3	-	-3	-4	-2	-2	0	-1	-1	-	-	-	-	-
05	-	-	-1	-	-9	-13	-3	-5	-10	-3	-12	-	-	-	-	-
06	-	-	-18	-	-17	-6	-4	0	-8	-9	**-52**	-	-	-	-	-
07	-	-	-3	-	-18	-4	-4	-15	-1	-5	-15	-	-	-	-	-
08	-	-	-10	-	-13	-5	-2	-5	0	-3	-16	-	-	-	-	-
09	-	-	-3	-	-4	-4	-3	-6	-3	-1	-19	-	0	-	-	-
10	-	-	-2	-	-6	-4	-3	-1	0	-1	-15	-	-	-	-	-
11	**-39**	-	-4	-8	-6	-3	-4	-4	-1	-3	-1	-	-	-	-	-
12	-	-	-3	-	-9	-7	-4	-2	-1	-2	-3	-	-	-	-	-
13	-	-	-7	**-54**	-4	-2	-1	-5	-2	-3	0	-	-	-	-	-
14	-	-	-4	-	**-30**	-4	-2	-5	**-46**	-19	**-43**	-	-	-	-	-
15	-	-	-4	-	-5	-4	-2	-10	-1	-1	-5	-	-	-	-	-
16	-	-	-4	-	-9	-4	-2	-5	-1	-2	-5	-	-	-	-	-
17	-18	-	-13	**-28**	-5	-5	-1	-9	-1	-3	-2	-	-	-	-	-
18	-	-	-1	-	-3	-5	-1	-3	-1	-6	-11	-	-	-	-	-
19	-	-	-4	-	-5	-4	-2	-8	-4	-2	-4	-	0	-	-	-
20	-7	-	-7	-	-6	-4	-2	-3	-4	-2	0	-	-	-	-	-
21	-	-	-3	-10	-4	-4	-2	-9	-2	-1	-1	-	-	-	-	-
22	-	-	-4	-	-6	-4	-2	-2	-2	-1	-3	-	-	-	-	-
23	-	-	-1	-	-5	-4	-2	-2	-1	-11	-10	-	-	-	-	-
24	-	-	-2	-	-1	**-79**	0	-1	0	0	-	-	-	-	-	-
25	-3	-	-1	-14	-11	-18	-2	-6	-5	-5	-7	-	-	-5	-3	-
26	-	-	-	-	-9	**-72**	-2	-3	-8	-2	0	-	0	-	-	-
27	-1	-16	-2	0	-10	-4	-6	-2	0	0	0	-	-	-	-1	-
28	**-54**	0	-1	-18	-3	-9	-2	-5	-1	-1	-13	-	-16	**-73**	**-66**	-
29	**-31**	0	-1	**-36**	-2	-24	0	-6	-5	-1	-5	-	-	-3	-7	-
30	-1	0	-14	0	-2	-8	0	-1	-1	-3	-2	0	0	0	-1	0
31	**-88**	-	-2	-6	-2	-5	-2	-4	0	-3	0	-	-	-	**-59**	-
32	-1	-	-2	-2	-5	-5	-2	-4	-5	-2	-9	-	-	-	-	-
33	-	-	-15	-	-3	-3	-2	-10	-3	-1	-7	-	-	-	-	-
34	-	-	-7	-	-5	-3	-2	-5	-5	-1	-8	-	-	-	-	-
35	**-31**	-	-5	-	-3	-10	-2	-5	-2	-2	**-33**	-	-	-	-8	-
36	**-60**	-	-2	**-31**	-11	**-45**	-2	**-39**	-11	-3	-10	-	-	-	**-73**	-
37	-	-	-1	-	-5	-19	-1	-4	-6	-7	**-33**	-	-	-	-	-
38	-10	-	-3	-1	-4	-5	-1	-5	-1	-2	-7	-	-	-	-1	-
39	-4	0	-4	-7	-5	0	-2	-7	-1	-2	-4	0	0	0	-1	1
40	-3	-	-3	-5	-4	-4	-1	-6	-5	-1	-2	-	0	-	-11	-
41	-	-	-7	-	-18	-5	-2	-16	-7	-4	-13	-	-	-	-	-
42	-	-	-17	-	-10	-5	-1	-8	-8	-5	**-21**	-	-	-	-	-
43	-	-	0	-	**-27**	**-87**	-2	-9	-3	-3	0	-	-	-	-	-
44	0	0	-7	-	-11	-8	-4	-4	-7	-5	-8	-	-	-	-	-
45	-	-	-6	-	**-22**	-20	-1	-16	-3	-7	-7	-	-	-	-	-
46	-	-	**-28**	-	-15	-3	0	-1	-18	-14	-1	-	-	-	-	-
47	-	-	-2	-	-9	-4	-2	**-22**	-7	-3	-6	-	-	-	-	-
48	-10	-	-7	-4	-4	-3	-1	-5	-2	-2	-18	-	0	-	-	-
49	-	-	-14	-	-10	-4	-1	-9	-4	-2	**-24**	-	-	-	-11	-
50	-	-	**-22**	-	-14	**-25**	-2	**-22**	-1	-13	**-74**	-	-	-	-	-
51	-	-	-1	-	-9	-10	-1	-14	-1	-5	-9	-	0	-	-	-
52	-	-	-3	-	-16	**-26**	-1	-5	-3	-8	-27	-	0	-	-	-
53	-	-	-11	-11	-15	-11	-2	-3	-1	-7	-13	-	0	-	-	-
54	-11	-	-5	-	-11	**-28**	-1	-1	-2	-3	-6	-	-	-	**-29**	-
55	**-75**	-	-5	-9	-12	**-36**	-2	-1	-2	-10	-5	-	-	**-24**	**-27**	-
56	-	-	-3	-	-7	-5	-1	-6	-1	-4	-16	-	-	-	-	-
57	-	-	-4	-	-15	-16	-1	-4	-3	-3	-13	-	-	-	-	-
58	-	-	-5	-	-19	-2	-3	-5	-5	-5	-6	-	-	-	-	-
59	-6	-	-4	-	-9	-2	-2	-7	-6	-2	-5	-	-	-	-	-
60	-	-	-5	-	-15	-7	-2	-3	-5	-5	-10	-	-	-	-	-
61	-	-	-5	-	-6	-4	-2	-4	-2	-3	-10	-	0	-	-	-
62	-	-	-6	-	-6	-5	-1	-6	-3	-4	-11	-	-	-	-	-
63	-	-	-5	-	-14	-4	-3	-4	-3	-3	-6	-	-	-	-	-
64	-	0	-10	-	-6	-5	-2	-5	-3	-4	-8	-	-	-	-	-
65	-	-	-4	-	-10	**-28**	-3	-6	-13	-6	-4	-	-	-	-	-
66	-	-	**-67**	-	-7	-15	-4	-3	-2	-2	-1	-	-	-	-	-
67	-	-	-5	-	**-21**	-2	0	**-34**	**-22**	-17	**-29**	-	-	-	-	-
68	-	0	-13	-	-10	-4	-2	-5	-3	-3	**-21**	-	-	-	-	-
69	-	-	-6	-	-8	-4	-1	-6	-5	-1	-6	-	-	-	-	-
70	**-33**	-	-3	-	-6	-4	-1	-3	-5	-2	-3	-	-	-	-1	-
71	-	-4	-5	0	-4	**-40**	-1	-9	-2	-1	-2	**-71**	-	-	-	-
72	-3	-	-4	-1	-4	-10	-1	-1	-2	-2	-1	-	-	-	-	-
73	0	-	-8	-14	-10	-7	-1	-5	-4	-4	-14	-	-	-	-	-
74	-	-	-5	-1	-4	-5	-1	-2	-5	-1	-6	-	-	-	-2	-
75	-	-	0	-	-5	-3	-1	0	-3	-1	-	-	-	-	-	-
76	0	-	-6	-	-6	-8	-2	-4	-5	-2	-3	-	-	-	-	-
78	-	-	0	-	-3	**-22**	0	-9	-1	-1	-1	-	-	-	-7	-
79	-1	-	-6	**-47**	-10	-9	-2	-3	-3	-1	-4	-	-	-	-1	-
80	-	-	0	-	-10	-3	-3	-4	-11	-1	-5	-	-	-	-	-
81	**-52**	-	-1	**-56**	-9	**-90**	-2	**-36**	-7	-8	-	-	0	-	-1	-
82	-1	-	-6	-	-12	-5	-3	-14	-8	-1	-9	-	-	-	-	-
83	0	-	-14	-	-7	-4	-2	-13	-7	-3	-8	-	-	-	-	-
84	0	1	-6	0	-6	-4	-1	-2	-2	0	-6	0	1	0	0	1
85	-1	-2	-3	-1	-6	-5	-2	-5	-2	-1	-5	0	-1	0	-2	-1
86	-2	-	-2	-	-3	-6	-5	-2	-4	-2	-2	-	-	-	-	-
87	-1	-	-4	-	-6	-6	-1	-3	-2	0	-1	**-31**	0	-2	-3	-
88	-	-	-	-	-8	**-69**	0	-1	-	-1	0	-	-	0	**-100**	**-90**
89	-	-	-3	-	-2	-13	-1	-2	-	-1	-3	-	-	0	-1	-
90	-6	-	-4	-	-4	-17	-1	-8	-2	-2	-10	-	-	-	0	-
91	-	-	-13	-	-6	-12	-1	-9	-7	-3	-8	-9	-	-	-	-
92	**-36**	-	0	-	-17	-7	-4	-14	-7	-7	-18	-	-	-	-	-
93	**-87**	-1	0	-	-8	**-98**	-1	0	-1	-1	-1	**-92**	**-100**	-14	**-79**	-
94	-	-	-7	-	-10	-4	-2	-6	-2	-2	-11	-	-	-	0	-
95	-1	-	-5	-	-5	-10	-2	-6	-4	-9	**-29**	-	-	-	-	-
96	-	-	-5	-	-10	-6	-2	-7	-7	-6	-12	-	0	-	-	-
97	-	-	-1	-	-11	-1	-1	-3	-	-5	**-74**	-	-	-	-	-
Sum of 2-digit chapters	**-4**	-2	-4	-2	**-6**	**-6**	-2	**-4**	-2	-2	**-7**	-1	0	-1	**-6**	**-7**
99	18423	2246	1417	172271	339	3049	142	828	2071	4664	1398	15	366	363	850	243
TOTAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-