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**INTERNATIONAL TRADE IN SERVICES STATISTICS - MONITORING PROGRESS ON
IMPLEMENTATION OF THE MANUAL AND ASSESSING DATA QUALITY**

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1 Introduction

This note aims to inform delegates participating to the 2004 joint OECD-Eurostat Expert Meeting on Trade-in-services statistics of the progress made in the implementation of the *Manual on Statistics of international trade in services (Manual)* and to provide a quality assessment of international trade-in-services statistics¹.

In the first section, we explore the progress made in implementing the core recommendations in the *Manual*. In the two following sections, we look at the quality of the trade statistics:

- using the OECD quality framework,
- considering bilateral and multilateral mirror statistics using balance of payments service data

In the last section we refer to the joint Eurostat-OECD Methodological Soundness Questionnaire, we consider that it has the potential to be a useful tool to compare national practices.

1. Are we making progress in implementing the recommendations of the Manual on Balance of payments international trade-in-services data?

If we look at the core recommendations of the *Manual* they are principally the following^{2,3}:

1. Implement the BPM5 recommendations in relation to trade in services.
2. Collect balance of payments trade-in-services data using Extended Balance of Payments Services (EBOPS) Classification.

¹ This paper develops some ideas set out by William Cave in *Implementing the Manual on Statistics on International Trade in Services: Are we progressing ?*, ISI 2003, Berlin.

² Manual on Statistics of International Trade in Services, pp. 5-6

³ Other recommended items are :

- The completion of the implementation of EBOPS including the memorandum items.
- The augmentation of basic FATS statistics.
- Collect statistics on natural persons working abroad under the GATS framework.
- Separate out the trade with related parties from that with unrelated parties.
- Allocate the transactions between residents and non-residents over the GATS modes of supply.

3. Collect complete statistics on foreign direct investment (FDI) classified by ISIC Rev.3 activities.
4. Collect FATS statistics for basic variables such as sales, value added, employment, exports and imports by activity categories based on ISIC Rev3 - i.e. ISIC Categories for foreign affiliates (ICFA).
5. Collect FATS and balance of payments trade-in-services statistics by partner country.

We address in this first section the question of progress in implementing the core recommendations of the *Manual*.

3.1 Implementation of BPM5 and compilation of balance of payments data according to EBOPS.

Balance of payments data are relatively well established following IMF's fifth Manual and there has been significant improvements in detail and comparability since mid-nineties. The data collection by the IMF, the OECD and Eurostat is being adapted to EBOPS classification.

The following 2 tables, borrowed from the WTO training module give an indication of the progress made in reporting of new BPM5 major Service's components between October 1997 and January 2003. We note for instance that, 39 % of IMF countries reported communication services in 1997, whereas they were 76 % in January 2003. We can consequently infer from this table a quite significant progression in the collection of data during this period.

Progress in reporting of new BPM5 Major Service's components.

<u>Exports</u>	Reporting countries October 1997 %	Reporting countries January 2003 %
Communications services	39	76
Construction services	21	48
Insurance services	61	83
Financial services	26	60
Computer and information services	11	47
Royalties and licence fees	32	53
Other business services	92	92
Personal, cultural and recreational services	14	44

Source WTO

The table below presents the progress in reporting of selected BPM5 supplementary services items. Regarding these items, there is also to see a constant progression as for instance 7% of IMF countries reported research and development services in 1997 and they were 16 % in 2003.

Progress in reporting of selected supplementary services items.

Exports	Reporting countries October 1997 %	Reporting countries January 2003 %
Miscellaneous business, professional and technical services	44	72
Legal, accounting, management, consulting and public relations services	8	31
Advertising, market research and public opinion polling services	10	25
Research and development services	7	16
Architectural, engineering and other technical services	8	22
Agricultural, mining and on-site processing services	4	15
Other services	28	49

Source WTO

3.2 *Are we making progress in answering the recommendations of the Manual on Foreign affiliates trade-in-services (FATS) data?*

FATS Statistics were published for the first time by the OECD in 2002 in *Measuring Globalisation The Role of Multinationals in OECD Economies, Volume II: Services*. They were based on 1998 and 1999 surveys. The publication covers 20 countries in varying detail. The 2003 survey, to be published in the end of 2004 is expected to provide more information on a larger number of countries. The data will be available in the first half of 2004 on Source OECD (WDS), the OECD data dissemination system.

FATS, are relatively under-developed compared to BOP data. The data collection is currently expanding at Eurostat, OECD and UNCTAD.

FATS partner country data are collected at the OECD. The table on the next page gives an idea of the current state of the collection of FATS data.

Status of the collection of EBOPS and FATS data (end 2003)

	Country	Number of EBOPS components reported	FATS inward	FATS outward
1	Australia	48	No (but planned 2004)	No (but planned end 2003)
2	Austria	22	Yes	Yes
3	Belgium-Luxembourg	62	-	-
	Belgium	-	Yes	Yes
	Luxembourg	-	Yes	No
4	Canada	45	No	Yes
5	Czech Republic	75	Yes	No
6	Denmark	4	Yes	No
7	Finland	52	Yes	Yes
8	France	47	Yes	Yes
9	Germany	58	Yes	Yes
10	Greece	55	No	Yes
11	Hungary	20	Yes	No
12	Iceland	26	No	No
13	Ireland	41	Yes	No
14	Italy	62	Yes	No
15	Japan	25	Yes	Yes
16	Korea	16	No	No
17	Mexico	30	No	No
18	Netherlands	44	Yes	No
19	New Zealand	29	No	No
20	Norway	56	Yes	No
21	Poland	62	Yes	No
22	Portugal	68	Yes	Yes
23	Slovak Republic	31	No	No
24	Spain	53	No	No
25	Sweden	58	Yes	Yes
26	Switzerland	10	No	No
27	Turkey	20	Yes	No
28	United Kingdom	46	Yes	No
29	United States	52	Yes	Yes

3.3 Compilation of statistics on trade-in-services by partner country.

Regarding statistics on trade-in-services, the *Manual* suggests to collect three levels of detail for international collection of trade data by partner country:

- For total services – Core recommendation
- For 11 main types of services as set out in BPM5 – Core recommendation
- For extended Balance of payments Statistics classification (EBOPS): full detail by type of service – desirable as far as possible.

Trade-in-services partner country data are published by Eurostat and since 2002 by the OECD. UNSD has done some feasibility studies on collection of trade in services by partner country and had sent a questionnaire to 160 non-OECD countries on their activity in the collection of data on trade in services. About 40 responses had been received of which 8 had some partner country data. In the ASEAN region there were some efforts to collect more trade-in-services data mainly on FATS. Most respondents planned to improve their trade-in-services statistics in some way.

The latest OECD issue presenting partner country data from 1999 to 2001 was released in October 2003. The data cover 27 countries and 75% of world exports. This publication responds to the first level but only partly to the second level requested of the *Manual's* recommendations because currently only 4 types of

services (transportation, travel services, government services, other commercial services) and the total services are presented in this publication. In order to reach compliance with the second level of detail requested by the *Manual*, OECD plans to ask the countries to provide, for the 2005 publication, trade-in-services data by partner country for the 11 main types of services set out in the BPM5.

2 OECD framework for OECD statistics: provide a systematic and organised assessment of international trade-in-services statistics

The OECD Quality Framework⁴ identifies dimensions that are considered as important to describe the quality of statistics. These dimensions help provide a means to identify quality problems and to increase the transparency of the processes used by the OECD to ensure quality. An important feature regarding quality of the trade-in-services data published by the OECD is datasharing between OECD and Eurostat for the *OECD Statistics on International Trade in Services, detailed Tables by Service Category* publication. Eurostat provides data for European countries and the OECD provides the information for the other OECD Member countries⁵. This coedition agreement diminishes the reporting burden on countries.

In the context of trade-in-services statistics, the quality framework helps to identify following issues:

1. Trade analysts have expressed the opinion that the *relevance* of trade-in-services data could be improved by a presentation by modes of the trade-in-services statistics. A first attempt to meet their needs was made in the OECD (2003), “Preliminary Draft Indicators or Trade in Services by Modes of Supply”, *Room Document* of the meeting of experts in Trade-in-services, spring 2003.[...]. More work should be done in this area in order to improve the relevance to users of trade-in-services data.
2. *Accuracy* and comparability of trade-in-services data broken down by partner country can be monitored over time by using mirror statistics and by using tools like the asymmetry coefficient (*cf.* section 3).
3. *Timeliness* is an important issue because lack of timely updating weakens the *coherence* of OECD data on trade-in-services stored in two different data bases: i) trade-in-services broken down by services category and ii) trade-in-services broken down by partner country. This is due to a number of reasons including the delays in the transmission from countries and the delays in processing due to the OECD secretariat itself. Improving both the databases and the processes used to update the databases could help improving the overall consistency of trade-in-services data. A project of technical cooperation and shared databases between the UNSD and OECD could help achieving that objective. This project could also permit better navigability between datasets.
4. The *interpretability* of the OECD and Eurostat trade-in-services statistics is assisted by the maintenance of metadata (*i.e.* country methodological information.) An effort has been conducted on OLIS, source OECD and in the CD-Roms to get metadata linked to data as recommended by the OECD Dissemination Policy for Statistics. Another problematic issue regarding interpretability is the lack of historical data for the 2003 edition of the partner country

⁴ In “Quality Framework for OECD statistics” (2002) on OLIS STD/HLG/(2002)3.

⁵ OECD and Eurostat currently plan in 2005 to publish the 25 EU members in the joint OECD Eurostat *Statistics on International Trade in Services, Detailed Tables by Service Category*, this implies that the OECD Statistics on international trade in services publication will hold 36 countries instead of 30.

publication which only presents data from 1999 to 2001. This lack of historical data is an obstacle to a proper analysis of the figures.

5. The *accessibility* of the service data has improved over the past years: the OECD statistics on international trade-in-services data are available via the Olis System and Source OECD. There is however large room for improvement in the area of accessibility as it can still be difficult for an external user to locate and access the relevant statistics.

3 Bilateral and multilateral mirror data

Given difficulty of measurement, it is a complex task to assess data quality. However, in the context of international trade, the most “natural” way of checking data quality seems to lie in the analysis of partner country mirror data. This could provide an indicator of international comparability of trade statistics. The IMF is also looking at global discrepancies between total exports and total imports that can help identify under-reportings. We are aware of the few inherent conceptual asymmetries (for instance for merchanting services) but in general mirror data should give a measure of comparability following bilateral or multilateral approaches.

- Mirror data can help checking whether the flows reported by each reporting country is also declared by its partner country.
- To check whether the reported flows are the same.
- To detect systematic errors in the reporting process.
- To detect differences in definitions from one country to the other.

Mirror data are also useful in case of lack of reported data. For instance for Africa, in the next table, no reported data are available but about three-quarters of Africa’s reported services can be estimated by reported imports of services from the 27 OECD countries. The table below also illustrates that OECD partner country data cover 75 % of world exports and more than 90 % if reported data are supplemented with mirror data.

Exporting region	Total exports (billion USD)	Total available exports data by partner country, % of total exports	
		Reported data	Reported data supplemented with mirror data
World	1493.8	75.0	91.7
OECD	1165.1	93.7	97.6
NAFTA	328.5	94.7	95.9
OECD Asia and Oceania	114.2	97.1	97.4
EU total	633.2	98.4	98.4
OECD Europe other	89.2	51.8	98.4
Africa	32.1	0.0	76.8
America	370.4	84.0	99.6
Asia and Oceania	332.8	42.3	73.5
Europe	756.8	88.4	96.6

Source: OECD, IMF.

Of course, as stated by the International Trade Center⁶ - in the context of trade in goods - mirror data are a second best solution, and present a number of shortcomings when compared to nationally reported data:

- They don't cover trade with other non-reporting countries as a result they don't cover south-south trade.
- There is a problem of transshipment which can hide the actual source of supply.
- They invert the reporting standards by valuing exports in CIF terms (i.e. including transport cost and insurance) and import in FOB terms (excluding these items).

For trade-in-services the last two do not apply but in the specific context of services there may be the problems of agents in large commercial centers which can hide the ultimate client, whether supplier or customer (Financial or Insurance Services, Shipments etc).

A very simple asymmetry coefficient can be calculated in order to check the comparability of exports and related imports flows.

If X =exports and mM= Mirror imports, the Asymmetry Coefficient = $(X-mM)/((X+mM)/2)$.

There is perfect symmetry (exports are equal to mirror imports) when the coefficient is equal to zero. The more the coefficient diverges from zero, the more the dissymmetry between exports and mirror imports becomes important.

The asymmetry coefficient is potentially useful because it can be monitored over time. This coefficient is also useful because as it can be either positive or negative, it can then be used to estimate if a country is globally (relatively to declared partner flows) overestimating or underestimating its trade with partner countries. It can also be used to identify other types of regularities. Mirror statistics and the asymmetry coefficient are of interest to look at bilateral and multilateral trade statistics.

3.1 Bilateral mirror statistics

Mirror statistics can help to detect global imbalances where total exports are very different from total imports. In the table below, we present some selected examples of bilateral BOP services asymmetries with the calculation for year 2001⁷ of an asymmetry coefficient for trade between Japan, USA and EU for the following categories: Total services, transportation, travel, government services and other commercial services.

⁶ International Trade Center, June 2003, "Reliability of Trade Statistics, Indicators of consistency between trade figures reported by countries and their corresponding mirror estimates", Market analysis section.

⁷ Data for year 2002 are expected to be published at the end of 2004.

\$ Mn	2001	Export	Mirror imports	Asymmetry Coefficient		Export	Mirror imports	Asymmetry Coefficient		Export	Mirror imports	Asymmetry Coefficient	
Japan to USA					Japan to EU					EU to US			
Total Services		20587	18618	0.10		13064	9977	0.27		108056	73720	0.38	
Transportation		5713	6261	-0.09		5270	3066	0.53		28153	21245	0.28	
Travel		550	2700	-1.32		441	789	-0.57		23350	20323	0.14	
Government services		410	1455	-1.12		115	110	0.04		3538	7922	-0.77	
Other commercial services		13914	8201	0.52		7236	6013	0.18		53016	24230	0.75	
USA to Japan					EU to Japan					US to EU			
Total Services		31294	35414	-0.12		15761	20854	-0.28		88684	109776	-0.21	
Transportation		6104	5060	0.19		4708	5576	-0.17		13694	21809	-0.46	
Travel		9785	6828	0.36		3840	4369	-0.13		21453	22236	-0.04	
Government services		482	444	0.08		55	168	-1.01		2554	1664	0.42	
Other commercial services		14924	23083	-0.43		7161	10742	-0.40		50983	64067	-0.23	

This table is illustrative of the kind of discrepancies that can exist when measuring trade-in-services. For instance, in 2001, the United States services exports to EU were 89 billion USD while the EU imports of services from the US were 110 billion USD (see the highlighted grey areas). The table illustrates also that in general; the more detailed the breakdowns, the more variable are the discrepancies in the mirror data. A straightforward way to illustrate this is to calculate the average of the absolute values of the above calculated asymmetry coefficients by category of services. The “grand total” category corresponding to “the total services” in the table below obtains the lowest average of asymmetry coefficients, the government services category obtains the largest.

	Average of absolute values of calculated bilateral asymmetry coefficients.
Total services	0.22
Transportation	0.28
Travel	0.42
Other commercial services	0.42
Government services	0.57

3.2 Multilateral mirror statistics

Another way of looking at mirror data is the multilateral approach. In the tables presented in the annex, we present exports from the U.S., Japan and the European Union to individual OECD countries for total services, transportation, travel, other commercial services and government services. Mirror imports reported by their partner countries are also shown and asymmetry coefficients are calculated. These coefficients help identify if a country is - relatively speaking - overestimating or underestimating its imports and exports to a given individual partner or to the rest of OECD, when we look at the total line.

For instance, in the table 9 of the annex (see the highlighted grey area in table 9), the EU15 reports 5.7 billion USD Total services exports to Canada, Canada declares 6.9 billion USD Total services imports from the EU, this provides a negative asymmetry coefficient which means that EU15 is relatively

underestimating its exports to Canada. The table below summarizes the multilateral trade tables presented in the annex by presenting the total line of each table.

Multilateral summary asymmetry table								
\$bn	2001	Export	Mirror imports	Asymmetry coefficient		Imports	Mirror exports	Asymmetry coefficient
EU15 to rest of OECD								
Total services		152.134	126.969	0.18		144.634	130.834	0.1
Transportation		40.787	36.379	0.11		31.451	29.232	0.07
Travel		35.071	34.226	0.02		31.078	30.051	0.03
Other commercial services		72.518	47.853	0.41		80.098	68.555	0.16
Government services n.i.e.		3.762	8.495	-0.77		2.008	2.975	-0.39
Japan to rest of OECD								
Total services		39.563	36.945	0.07		65.899	54.136	0.2
Transportation		13.677	11.6	0.16		13.765	13.517	0.02
Travel		1.691	5.051	-1		15.732	18.023	-0.14
Other commercial services		23.514	16.706	0.34		35.73	23.95	0.39
Government services n.i.e.		0.681	1.655	-0.83		0.673	0.584	0.14
US to rest of OECD								
Total services		149.335	174.212	-0.15		114.409	152.713	-0.29
Transportation		26.29	35.041	-0.29		35.495	45.669	-0.25
Travel		42.918	38.787	0.10		32.1	32.059	0
Other commercial services		85.079	111.535	-0.27		41.673	84.733	-0.68
Government services n.i.e.		3.41	2.347	0.37		9.819	4.198	0.8

We observe that the EU15, reports higher imports and exports to OECD countries (with positive asymmetry coefficients), compared to the figures declared by its partners, in the case of total services, transportation, travel, and other commercial services. On the other hand, the EU15 is relatively underestimating its exports and imports of government services to the rest of the OECD (with a negative asymmetry coefficient) compared to the reported mirror flows.

It is almost the same picture for Japan, which seems to be reporting higher imports and exports figures than those declared from partners in the mirror flows in the case of total services, transportation, other commercial services to the rest of OECD. On the other hand, Japan seems to be relatively underestimating its exports of travel and government services, the imports of government services being -relatively- slightly overestimated compared to the mirror exports.

On the contrary, the mirror flows show that the United States are globally declaring less imports and exports than their partners for total services, transportation services, and other commercial services. In particular the US reports imports of other commercial services which are less than half then reported mirror exports of other commercial services to US. The United States are, on the other hand, relatively overestimating their imports and exports of government services, as well as travel services, to the rest of the OECD.

These observations, where government services - and also travel in two cases - appears to have an asymmetry coefficient in the opposite sign compared to the other services categories⁸ tends to confirm the special status of government services in international trade.

If we calculate the average of the absolute values of the above calculated asymmetry coefficients by category of services, we find that the “grand total” category corresponding to “the total services” in the table below obtains the second lowest average of asymmetry coefficients, transportation getting the lowest. Government services gets the largest average value which means that this category of service presents the largest discrepancies between reported exports and mirror flows.

	Average of absolute values of calculated Multilateral asymmetry coefficients.
Total services	0.165
Transportation	0.15
Travel	0.215
Other commercial services	0.375
Government services	0.55

4 The Methodological Soundness Questionnaire

Another tool that is useful in order to look at the quality of data is the Methodological Soundness Questionnaire. This is a joint initiative from the OECD and Eurostat. The questionnaires were sent out in June 2003. Up to now, 32 countries have filled the joint questionnaire. The OECD was responsible for the collection of information from 10 countries, until now, the OECD has received replies from 8 countries: Iceland, Japan, Korea, Norway, New Zealand, Switzerland, Australia and USA. OECD has not yet received information for Canada and Mexico.

Eurostat has received the questionnaire filled in by 22 countries: Belgium, Czech Republic, Denmark, Estonia, Spain, Finland, France, Germany, United Kingdom, Hungary, Ireland, Italy, Luxembourg, Latvia, Malta, Netherlands, Poland, Portugal, Romania, Slovenia, Sweden and Turkey.⁹ Eurostat have not yet received responses for the following 5 countries: Austria, Cyprus, Greece, Lithuania, and Slovakia.

The results will be discussed with experts first before being made more widely available. We see this Methodological Soundness Questionnaire as a useful means to identify and compare national practices and eventually to foster good practice.

Concluding remarks.

Four main conclusions have risen from this note:

1. Progress can be observed in the implementation of the core recommendation of the *Manual*.

⁸ This observation is however led on a very small population (3 countries, five categories of services, one year), so we will be cautious and wont draw yet any conclusions from it.

⁹ Methodology of International Trade in Services Questionnaire, Follow-up and Action Plan, Draft, presented at the Balance of payments working group in Luxembourg 18-19 March 2004.

2. The OECD quality framework helps us to identify that the relevance of international trade-in-services statistics could be improved by a presentation by modes – this is also a recommendation of the *Manual*. The cooperation with the UNSD for a future shared database could improve the data updating processes and the coherence of the datasets broken down by partner country and by category of services.
3. Mirror Statistics are useful i) to identify if countries are relatively underestimating or overestimating trade with partners and ii) to identify irregularities.
4. The Methodological Soundness Questionnaires will be a useful tool to compare national practices and to foster good practices.

The delegates are invited i) to comment on the approach, the substance and the conclusions of this note, ii) to suggest areas for further research or improvement to the analysis.

ANNEX - MULTILATERAL TRADE IN SERVICES MIRROR STATISTICS

1 US multilateral trade

Table 1 - US Total services

Million U.S. dollars	Total services 2001					
	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
REPORTING COUNTRY: United States						
Canada	24448	25919	-0.06	18431	21631	-0.16
Mexico	14604			11159		
United States	-	-	-	-	-	-
Australia	4909	3103	0.45	3640	2439	0.40
Japan	31294	35414	-0.12	18618	20587	-0.10
Korea						
New Zealand						
Czech Republic						
Hungary						
Iceland						
Norway						
Poland						
Slovak Republic						
Switzerland						
Turkey						
EU-15	88684	109776	-0.21	73720	108056	-0.38
Denmark						
Sweden						
United Kingdom	29674	17960	0.49	23673	24828	-0.05
Euro area						
Austria						
Belgium-Luxembourg	3507	6303	-0.57	2522	7702	-1.01
Finland						
France	9772	11805	-0.19	9256	16458	-0.56
Germany	14882	21546	-0.37	15082	16303	-0.08
Greece						
Ireland						
Italy	5120	7870	-0.42	6184	7038	-0.13
Netherlands	6866	8118	-0.17	5721	7904	-0.32
Portugal						
Spain						
Total : EU 15 + other OECD countries.	149335	174212	-0.15	114409	152713	-0.29

Table 2 - US Transportation

REPORTING COUNTRY: United States	Transportation 2001					
	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	3880	3639	0.06	3982	3602	0.10
Mexico	1621			2354		
United States	-			-		
Australia	638	427	0.40	970	385	0.86
Japan	6104	5060	0.19	6261	5713	0.09
Korea	1794	3620	-0.67	2628	3698	-0.34
New Zealand	260			463		
Czech Republic	-					
Hungary	-					
Iceland	-					
Norway	180	486	-0.92	409	4118	-1.64
Poland	-			-		
Slovak Republic	-			-		
Switzerland	451			1069		
Turkey	-			-		
EU-15	13694	21809	-0.46	21245	28153	-0.28
Denmark	-			-		
Sweden	405	194	0.70	270	784	-0.98
United Kingdom	4589	3481	0.27	6217	3772	0.49
Euro area	-			-		
Austria	-			-		
Belgium-Luxembourg	685	1151	-0.51	876	1614	-0.59
Finland	-			-		
France	1515	2947	-0.64	2099	3259	-0.43
Germany	2666	2653	0.00	3837	3104	0.21
Greece	-			-		
Ireland	-			-		
Italy	754	1103	-0.38	1456	668	0.74
Netherlands	1018	1963	-0.63	1639	3230	-0.65
Portugal	-			-		
Spain	506	404	0.22	391	500	-0.24
Total : EU 15 + other OECD countries.	26290	35041	-0.29	35495	45669	-0.25

Table 3 - US Travel

REPORTING COUNTRY: United States	Travel 2001					
	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	7054	7102	-0.01	6501	6453	0.01
Mexico	5541			6904		
United States	-			-		
Australia	1488	693	0.73	1645	708	0.80
Japan	9785	6828	0.36	2700	550	1.32
Korea	2739	1650	0.50	701	803	-0.14
New Zealand	536			814		
Czech Republic	-			-		
Hungary	-			-		
Iceland	-			-		
Norway	399	278	0.36	230	195	0.16
Poland	-			-		
Slovak Republic	-			-		
Switzerland	1022			715		
Turkey	-			-		
EU-15	21453	22236	-0.04	20323	23350	-0.14
Denmark	-			-		
Sweden	639	970	-0.41	238	500	-0.71
United Kingdom	9373	5449	0.53	6438	3563	0.57
Euro area	-			-		
Austria	-			-		
Belgium-Luxembourg	450	1011	-0.77	319	1117	-1.11
Finland	-			-		
France	2440	3405	-0.33	3590	5177	-0.36
Germany	3183	2670	0.18	2440	2368	0.03
Greece	-			-		
Ireland	-			-		
Italy	1256	1669	-0.28	3056	3153	-0.03
Netherlands	1121	1492	-0.28	687	1047	-0.42
Portugal	-			-		
Spain	998	1406	-0.34	1428	2181	-0.42
Total : EU 15 + other OECD countries.	42918	38787	0.10	32100	32059	0.00

Table 4 – Other commercial services

Million U.S. dollars	Other commercial services 2001					
REPORTING COUNTRY: United States	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	13343	15049	-0.12	7650	11368	-0.39
Mexico	7418			1696		
United States						
Australia	2577	1873	0.32	883	1305	-0.39
Japan	14924	23083	-0.43	8201	13914	-0.52
Korea	2588	6099	-0.81	436	3757	-1.58
New Zealand	406			71		
Czech Republic						
Hungary						
Iceland						
Norway	664	1364	-0.69	273	1373	-1.34
Poland						
Slovak Republic						
Switzerland	4349			2583		
Turkey						
EU-15	50983	64067	-0.23	24230	53016	-0.75
Denmark						
Sweden	2137	2822		739	1492	-0.68
United Kingdom	15154	8706	0.54	10275	17090	-0.50
Euro area						
Austria						
Belgium-Luxembourg	2235	4060	-0.58	1041	4918	-1.30
Finland						
France	5567	5385	0.03	3244	8000	-0.85
Germany	8758	15909	-0.58	3908	8123	-0.70
Greece						
Ireland						
Italy	3026	4827	-0.46	848	3188	-1.16
Netherlands	4218	4405	-0.04	3191	3582	-0.12
Portugal						
Spain	1857			401		
Total : EU 15 + other OECD countries.	85079	111535	-0.27	41673	84733	-0.68

Table 5 - US Government services

Million U.S. dollars	Government services n.i.e 2001					
REPORTING COUNTRY: United States	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	171	129	0.28	298	208	0.36
Mexico	25			204		
United States						
Australia	203	110	0.59	144	42	1.10
Japan	482	444	0.08	1455	410	1.12
Korea						
New Zealand						
Czech Republic						
Hungary						
Iceland						
Norway						
Poland						
Slovak Republic						
Switzerland						
Turkey						
EU-15	2554	1664	0.42	7922	3538	0.77
Denmark						
Sweden						
United Kingdom	559	324	0.53	743	403	0.59
Euro area						
Austria						
Belgium-Luxembourg	138	81	0.52	286	53	1.37
Finland						
France	250	69	1.13	323	21	1.76
Germany	276	314	-0.13	4898	2708	0.58
Greece						
Ireland						
Italy	83	271	-1.06	824	28	1.87
Netherlands	510	258	0.66	202	47	1.24
Portugal						
Spain						
Total : EU 15 + other OECD countries.	3410	2347	0.37	9819	4198	0.80

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Table 6 - Japan Total services

REPORTING COUNTRY: Japan	Total services 2001					
	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	1669	1298	0.250	1750	1130	0.431
Mexico	639	-	-	-	-	-
United States	20587	18618	0.100	35414	31294	0.124
Australia	1031	916	0.118	2507	1749	0.356
Japan	-	-	-	-	-	-
Korea	3212	6136	-0.626	5374	4202	0.245
New Zealand	160	-	-	456	-	-
Czech Republic	-	-	-	-	-	-
Hungary	-	-	-	-	-	-
Iceland	-	-	-	-	-	-
Norway	-	-	-	-	-	-
Poland	-	-	-	-	-	-
Slovak Republic	-	-	-	-	-	-
Switzerland	927	-	-	1354	-	-
Turkey	-	-	-	-	-	-
EU-15	13064	9977	0.268	20854	15761	0.278
Denmark	-	-	-	-	-	-
Sweden	137	336	-0.841	453	607	-0.291
United Kingdom	4949	2384	0.700	7663	4297	0.563
Euro area	-	-	-	-	-	-
Austria	-	-	-	-	-	-
Belgium-Luxembourg	491	598	-0.197	908	1119	-0.208
Finland	-	-	-	-	-	-
France	801	884	-0.099	2756	2157	0.244
Germany	2208	2630	-0.174	3410	2822	0.189
Greece	-	-	-	-	-	-
Ireland	-	-	-	-	-	-
Italy	496	632	-0.241	1648	1824	-0.101
Netherlands	2347	710	1.071	2126	1469	0.366
Portugal	-	-	-	-	-	-
Spain	221	322	-0.372	389	306	0.239
Total : EU 15 + other OECD countries.	39563	36945	0.07	65899	54136	0.20

Table 7 - Japan Transportation

REPORTING COUNTRY: Japan	Transportation 2001					
	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	386	304	0.24	592	357	0.50
Mexico	98	-	-	54	-	-
United States	5713	6261	-0.09	5060	6104	-0.19
Australia	640	466	0.31	810	591	0.31
Japan	-	-	-	-	-	-
Korea	1668	1503	0.10	1727	1757	-0.02
New Zealand	92	-	-	172	-	-
Czech Republic	-	-	-	-	-	-
Hungary	-	-	-	-	-	-
Iceland	-	-	-	-	-	-
Norway	-	-	-	-	-	-
Poland	-	-	-	-	-	-
Slovak Republic	-	-	-	-	-	-
Switzerland	197	-	-	252	-	-
Turkey	-	-	-	-	-	-
EU-15	5270	3066	0.53	5576	4708	0.17
Denmark	-	-	-	-	-	-
Sweden	67	96	-0.36	146	273	-0.61
United Kingdom	1543	570	0.92	1612	574	0.95
Euro area	-	-	-	-	-	-
Austria	-	-	-	-	-	-
Belgium-Luxembourg	222	96	0.79	190	108	0.55
Finland	-	-	-	-	-	-
France	259	396	-0.42	721	736	-0.02
Germany	1080	689	0.44	1126	1143	-0.01
Greece	-	-	-	-	-	-
Ireland	-	-	-	-	-	-
Italy	301	287	0.05	487	294	0.49
Netherlands	1099	426	0.88	762	1382	-0.58
Portugal	-	-	-	-	-	-
Spain	73	125	-0.53	43	38	0.12
Total : EU 15 + other OECD countries.	13677	11600	0.16	13765	13517	0.02

Table 8 - Japan Travel

Million U.S. dollars		Travel 2001				
REPORTING COUNTRY: Japan	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	185	124	0.39	742	486	0.42
Mexico	15	-	-	57	-	-
United States	550	2700	-1.32	6828	9785	-0.36
Australia	97	164	-0.51	1039	972	0.07
Japan	-	-	-	-	-	-
Korea	418	1274	-1.01	2754	2940	-0.07
New Zealand	21	-	-	242	-	-
Czech Republic	-	-	-	-	-	-
Hungary	-	-	-	-	-	-
Iceland	-	-	-	-	-	-
Norway	-	-	-	-	-	-
Poland	-	-	-	-	-	-
Slovak Republic	-	-	-	-	-	-
Switzerland	11	-	-	437	-	-
Turkey	-	-	-	-	-	-
EU-15	441	789	-0.57	4369	3840	0.13
Denmark	-	-	-	-	-	-
Sweden	12	99	-1.57	114	69	0.49
United Kingdom	194	160	0.19	973	488	0.66
Euro area	-	-	-	-	-	-
Austria	-	-	-	-	-	-
Belgium-Luxembourg	7	71	-1.64	199	255	-0.25
Finland	-	-	-	-	-	-
France	63	115	-0.58	741	805	-0.08
Germany	92	-	-	550	-	-
Greece	-	-	-	-	-	-
Ireland	-	-	-	-	-	-
Italy	21	142	-1.48	817	1291	-0.45
Netherlands	14	12	0.15	193	107	0.57
Portugal	-	-	-	-	-	-
Spain	8	-	-	284	-	-
Total : EU 15 + other OECD countries.	1691	5051	-1.00	15732	18023	-0.14

Table 9 - Japan Other commercial services

Million U.S. dollars		Other commercial services 2001				
REPORTING COUNTRY: Japan	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	1096	836	0.27	398	269	0.39
Mexico	-	-	-	499	-	-
United States	13914	8201	0.52	23083	14924	0.43
Australia	272	274	-0.01	639	181	1.12
Japan	-	-	-	-	-	-
Korea	996	1382	-0.32	868	1415	-0.48
New Zealand	41	-	-	38	-	-
Czech Republic	-	-	-	-	-	-
Hungary	-	-	-	-	-	-
Iceland	-	-	-	-	-	-
Norway	-	-	-	-	-	-
Poland	-	-	-	-	-	-
Slovak Republic	-	-	-	-	-	-
Switzerland	712	-	-	655	-	-
Turkey	-	-	-	-	-	-
EU-15	7236	6013	0.18	10742	7161	0.40
Denmark	-	-	-	-	-	-
Sweden	56	140	-0.86	192	-	2.00
United Kingdom	3200	1641	0.64	5023	3229	0.43
Euro area	-	-	-	-	-	-
Austria	-	-	-	-	-	-
Belgium-Luxembourg	257	428	-0.50	506	756	-0.40
Finland	-	-	-	-	-	-
France	462	359	0.25	1260	617	0.69
Germany	1016	1733	-0.52	1719	1349	0.24
Greece	-	-	-	-	-	-
Ireland	-	-	-	-	-	-
Italy	163	183	-0.12	334	183	0.58
Netherlands	1222	261	1.30	1166	261	1.27
Portugal	-	-	-	-	-	-
Spain	-	-	-	58	-	2.00
Total : EU 15 + other OECD countries.	23514	16706	0.34	35730	23950	0.39

Table 10 - Japan Government services

Million U.S. dollars		Government services n.i.e. 2001				
REPORTING COUNTRY: Japan	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	2	34	-1.78	18	18	0.00
Mexico	-	-	-	7	-	-
United States	410	1455	-1.12	444	482	-0.08
Australia	22	12	0.59	18	5	1.13
Japan	-	-	-	-	-	-
Korea	132	44	1.00	25	24	0.04
New Zealand	5	-	-	4	-	-
Czech Republic	-	-	-	-	-	-
Hungary	-	-	-	-	-	-
Iceland	-	-	-	-	-	-
Norway	-	-	-	-	-	-
Poland	-	-	-	-	-	-
Slovak Republic	-	-	-	-	-	-
Switzerland	8	-	-	11	-	-
Turkey	-	-	-	-	-	-
EU-15	115	110	0.04	168	55	1.01
Denmark	-	-	-	-	-	-
Sweden	3	2	0.40	2	3	-0.40
United Kingdom	12	13	-0.08	55	6	1.61
Euro area	-	-	-	-	-	-
Austria	-	-	-	-	-	-
Belgium-Luxembourg	6	4	0.40	13	0	2.00
Finland	-	-	-	-	-	-
France	17	14	0.19	34	2	1.78
Germany	20	22	-0.10	16	1	1.76
Greece	-	-	-	-	-	-
Ireland	-	-	-	-	-	-
Italy	11	19	-0.53	9	4	0.77
Netherlands	12	10	0.18	6	3	0.67
Portugal	-	-	-	-	-	-
Spain	-	-	-	4	-	2.00
Total : EU 15 + other OECD countries.	681	1655	-0.83	673	584	0.14

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Table 11 – EU15 Total services

Million U.S. dollars		Total services 2001				
REPORTING COUNTRY: EU15	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	5748	6909	-0.183	5894	6226	-0.055
Mexico	2548	-	-	1769	-	-
United States	108056	73720	0.378	109776	88684	0.213
Australia	4816	3828	0.229	3943	3093	0.242
Japan	15761	20854	-0.278	9977	13064	-0.268
Korea	2751	5786	-0.711	2014	3234	-0.465
New Zealand	722	-	-	669	-	-
Czech Republic	2507	2387	0.049	2909	3736	-0.249
Hungary	2417	1774	0.307	2800	1769	0.451
Iceland	390	-	-	345	-	-
Norway	9179	10470	-0.131	6541	9787	-0.398
Poland	3664	-	-	4250	-	-
Slovak Republic	899	1241	-0.320	780	1241	-0.456
Switzerland	34421	-	-	29237	-	-
Turkey	2421	-	-	5033	-	-
EU-15	-	-	-	-	-	-
Denmark	-	-	-	-	-	-
Sweden	-	-	-	-	-	-
United Kingdom	-	-	-	-	-	-
Euro area	-	-	-	-	-	-
Austria	-	-	-	-	-	-
Belgium-Luxembourg	-	-	-	-	-	-
Finland	-	-	-	-	-	-
France	-	-	-	-	-	-
Germany	-	-	-	-	-	-
Greece	-	-	-	-	-	-
Ireland	-	-	-	-	-	-
Italy	-	-	-	-	-	-
Netherlands	-	-	-	-	-	-
Portugal	-	-	-	-	-	-
Spain	-	-	-	-	-	-
Total : EU 15 + other OECD countries.	152134	126969	0.18	144634	130834	0.10

Table 12 – EU15 Transportation

REPORTING COUNTRY: EU15	Transportation 2001					
	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	1629	2420	-0.39	1442	1395	0.03
Mexico	450			209		
United States	28153	21245	0.28	21809	13694	0.46
Australia	1347	1090	0.21	819	666	0.21
Japan	4708	5576		3066	5270	
Korea	1102	2194	-0.66	954	1844	-0.64
New Zealand	251			115		
Czech Republic	498	273	0.58	487	772	-0.45
Hungary	620	340	0.58	416	467	-0.12
Iceland	77			89		
Norway	2563	2991	-0.15	2228	4888	-0.75
Poland	705			1476		
Slovak Republic	167	250	-0.40	230	236	-0.03
Switzerland	5376			4996		
Turkey	609			1063		
EU-15	-			-		
Denmark	-			-		
Sweden	-			-		
United Kingdom	-			-		
Euro area	-			-		
Austria	-			-		
Belgium-Luxembourg	-			-		
Finland	-			-		
France	-			-		
Germany	-			-		
Greece	-			-		
Ireland	-			-		
Italy	-			-		
Netherlands	-			-		
Portugal	-			-		
Spain	-			-		
Total : EU 15 + other OECD countries.	40787	36379	0.11	31451	29232	0.07

Table 13 - EU15 Travel

REPORTING COUNTRY: EU15	Travel 2001					
	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	1827	1852	-0.01	2149	1852	0.15
Mexico	575			870		
United States	23350	20323	0.14	22236	21453	0.04
Australia	1502	1672	-0.11	1778	1744	0.02
Japan	3840	4369		789	441	
Korea	435	931	-0.73	124	340	-0.93
New Zealand	229			395		
Czech Republic	561	851	-0.41	1190	2042	-0.53
Hungary	335			1136		
Iceland	169			185		
Norway	3106	3882	-0.22	1482	1605	-0.08
Poland	1030			1176		
Slovak Republic	115	346	-1.00	194	574	-0.99
Switzerland	10197			7148		
Turkey	447			2741		
EU-15	-			-		
Denmark	-			-		
Sweden	-			-		
United Kingdom	-			-		
Euro area	-			-		
Austria	-			-		
Belgium-Luxembourg	-			-		
Finland	-			-		
France	-			-		
Germany	-			-		
Greece	-			-		
Ireland	-			-		
Italy	-			-		
Netherlands	-			-		
Portugal	-			-		
Spain	-			-		
Total : EU 15 + other OECD countries.	35071	34226	0.02	31078	30051	0.03

Table 14 - EU15 Other commercial services

REPORTING COUNTRY: EU15	Other commercial services 2001					
	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	2216	2500	-0.12	2244	2800	-0.22
Mexico	1511			663		
United States	53016	24230	0.75	64067	50983	0.23
Australia	1951	1009	0.64	1293	667	0.64
Japan	7161	10742		6013	7236	
Korea	1193	2572	-0.73	910	1022	-0.12
New Zealand	236			152		
Czech Republic	1437	1239	0.15	1211	919	0.27
Hungary	1448	1404	0.03	1220	1286	-0.05
Iceland	139			72		
Norway	3481	3538	-0.02	2790	3238	-0.15
Poland	1910			1557		
Slovak Republic	615	619	-0.01	350	404	-0.14
Switzerland	18809			16978		
Turkey	1336			1165		
EU-15	-			-		
Denmark	-			-		
Sweden	-			-		
United Kingdom	-			-		
Euro area	-			-		
Austria	-			-		
Belgium-Luxembourg	-			-		
Finland	-			-		
France	-			-		
Germany	-			-		
Greece	-			-		
Ireland	-			-		
Italy	-			-		
Netherlands	-			-		
Portugal	-			-		
Spain	-			-		
Total : EU 15 + other OECD countries.	72518	47853	0.41	80098	68555	0.16

Table 15 - EU15 Government services

REPORTING COUNTRY: EU15	Government services n.i.e. 2001					
	Exports (x)	Mirror imports (mm)	Asymmetry coefficient	Imports (m)	Mirror exports (xm)	Asymmetry coefficient
Canada	74	136	-0.59	58	181	-1.03
Mexico	13			28		
United States	3538	7922	-0.77	1664	2554	-0.42
Australia	19	58	-1.01	55	15	1.14
Japan	55	168		110	115	
Korea	20	89	-1.27	24	28	-0.15
New Zealand	5			4		
Czech Republic	12	23	-0.63	22	3	1.52
Hungary	14	30	-0.73	26	16	0.48
Iceland	1			0		
Norway	28	59	-0.71	45	56	-0.22
Poland	19			40		
Slovak Republic	2	10	-1.33	4	7	-0.55
Switzerland	41			118		
Turkey	30			65		
EU-15	-			-		
Denmark	-			-		
Sweden	-			-		
United Kingdom	-			-		
Euro area	-			-		
Austria	-			-		
Belgium-Luxembourg	-			-		
Finland	-			-		
France	-			-		
Germany	-			-		
Greece	-			-		
Ireland	-			-		
Italy	-			-		
Netherlands	-			-		
Portugal	-			-		
Spain	-			-		
Total : EU 15 + other OECD countries.	3762	8495	-0.77	2008	2975	-0.39