

[illegible]

9.D.3 *Calculation*

- Initially selected 54 GTAP countries:

/AUS, CHN, HKG, JPN, KOR, IDN, MYS, PHL, SGP, THA, IND,
 CAN, USA, MEX, BRA, CHL, URY,
 AUT, BEL, CYP, CZE, DNK, EST, FIN, FRA, DEU, GRC, HUN, IRL, ITA, LVA, LTU,
 LUX, MLT,
 NLD, POL, PRT, SVK, SVN, ESP, SWE, GBR,
 CHE, NOR, BGR, HRV, ROU, RUS,
 IRN, TUR, EGY, MAR, NGA, ZAF
 /;

- It appears that corresponding levels between UN en Eurostat don't differ much, therefore EUROSTAT levels (in US dollars) within EU27 prevail over UN levels, since for Eurostat the availability of these flows is much better than for the UN data
- Exception on this rule is ROU since on the intra trade cell per sector a value can be observed. Therefore we use the UN numbers for this EU country
- Calculating the percentage missing flows per sector and reporting country per year. This also includes the cells with value zeros. At this stage it is not known if a value is zero or missing. That results in the following table:

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Table 9.D.3.1 Percentage missing flows per sector and reporting country in 2007 for 54 countries.

	TTT	TRA	WTP	ATP	OTP	TRV	CMN	CNS	ISR	OFI	CIS	RLF	OBC	ROS	OSG	OCS
AUS	13.0	26.9	64.8	65.7	66.7	23.1	45.4	76.9	68.5	53.7	49.1	54.6	28.7	59.3	47.2	63.9
CHN	34.3	40.7	56.5	63.0	63.0	44.4	64.8	74.1	71.3	66.7	62.0	66.7	49.1	65.7	64.8	64.8
HKG	11.1	14.8	39.8	38.9	50.9	43.5	44.4	76.9	50.9	40.7	44.4	55.6	41.7	56.5	86.1	64.8
JPN	13.9	22.2	61.1	64.8	69.4	18.5	37.0	37.0	38.0	34.3	40.7	37.0	24.1	52.8	38.0	33.3
KOR	34.3	45.4	63.0	65.7	66.7	60.2	69.4	76.9	68.5	71.3	73.1	70.4	46.3	77.8	67.6	63.0
IDN	42.6	58.3	75.9	74.1	75.9	65.7	78.7	88.0	82.4	76.9	83.3	82.4	63.0	88.0	72.2	69.4
MYS	42.6	54.6	72.2	67.6	75.0	63.9	75.9	84.3	82.4	78.7	77.8	80.6	63.9	81.5	74.1	68.5
PHL	44.4	59.3	77.8	75.0	82.4	66.7	81.5	89.8	82.4	79.6	81.5	83.3	72.2	88.9	80.6	71.3
SGP	22.2	42.6	62.0	69.4	71.3	64.8	69.4	73.1	73.1	68.5	61.1	66.7	39.8	72.2	78.7	60.2
THA	43.5	50.9	70.4	66.7	74.1	56.5	79.6	86.1	83.3	76.9	80.6	80.6	63.9	83.3	75.0	69.4
IND	38.9	46.3	63.0	70.4	68.5	56.5	69.4	75.0	75.9	71.3	63.0	68.5	49.1	76.9	68.5	59.3
CAN	3.7	44.4	57.4	56.5	59.3	6.5	59.3	77.8	73.1	63.0	56.5	64.8	47.2	63.0	60.2	62.0
USA	24.1	11.1	50.9	51.9	56.5	16.7	42.6	54.6	25.9	13.0	42.6	22.2	37.0	24.1	51.9	42.6
MEX	39.8	58.3	74.1	73.1	77.8	58.3	80.6	87.0	79.6	81.5	81.5	75.9	63.0	86.1	77.8	70.4
BRA	38.9	50.9	66.7	73.1	72.2	51.9	72.2	79.6	79.6	75.9	74.1	75.9	60.2	78.7	74.1	63.9
CHL	51.9	64.8	78.7	80.6	84.3	64.8	86.1	90.7	86.1	86.1	88.9	87.0	74.1	90.7	81.5	74.1
URY	60.2	75.9	84.3	88.0	91.7	86.1	91.7	88.9	92.6	89.8	94.4	92.6	75.0	92.6	88.9	75.0
AUT		1.9	64.8	60.2	63.0	1.9	64.8	69.4	68.5	33.3	63.0	72.2	1.9	71.3	68.5	48.1
BEL			6.5	13.0	21.3	0.9	13.0	55.6	33.3	10.2	16.7	39.8	10.2	52.8	63.9	49.1
CYP		11.1	13.9	27.8	60.2	12.0	33.3	52.8	57.4	24.1	44.4	68.5	13.9	35.2	64.8	3.7
CZE		1.9	33.3	7.4	2.8	20.4	38.9	38.9	54.6	35.2	25.9	51.9	7.4	38.9	32.4	3.7
DNK				3.7	3.7	2.8	4.6	23.1	4.6	39.8	13.0	13.9		17.6	10.2	
EST	2.8	8.3	31.5	38.9	41.7	9.3	44.4	66.7	76.9	46.3	48.1	70.4	19.4	63.9	61.1	14.8
FIN	5.6	38.0	37.0	55.6	61.1	30.6	57.4	50.0	42.6	53.7	18.5	40.7	14.8	62.0	56.5	39.8
FRA					3.7	0.9	3.7	8.3	17.6	13.9	20.4	15.7	4.6	6.5	14.8	44.4
DEU	13.0				0.9	26.9	0.9	0.9	15.7	5.6	3.7	13.9		25.9		
GRC	6.5	40.7	46.3	43.5	30.6	38.9	48.1	46.3	50.0	50.0	44.4	50.0	19.4	48.1	50.9	47.2
HUN		5.6	36.1	8.3	11.1	15.7	11.1	50.0	54.6	25.9	12.0	25.0	4.6	21.3	12.0	
IRL	37.0	41.7	69.4	63.0	68.5	38.9	56.5	75.9	58.3	51.9	57.4	64.8	45.4	67.6	75.9	50.0
ITA		0.9	11.1	1.9	33.3		15.7	13.0	31.5	40.7	30.6	36.1		38.9	23.1	
LVA	17.6	25.9	44.4	46.3	47.2	29.6	62.0	70.4	84.3	70.4	63.0	77.8	40.7	76.9	82.4	39.8
LTU	7.4	13.0	35.2	41.7	25.9	20.4	50.0	68.5	73.1	63.0	61.1	72.2	35.2	71.3	47.2	23.1
LUX		2.8	76.9	69.4	73.1	6.5	70.4	75.9	70.4		65.7	73.1	0.9	75.9	78.7	
MLT	0.9	49.1	67.6	75.0	78.7	51.9	70.4	88.0	83.3	74.1	77.8	87.0	21.3	87.0	88.0	18.5
NLD		0.9	1.9	2.8	1.9	1.9		5.6	8.3	14.8	2.8	2.8		13.9	12.0	
POL		2.8	6.5	7.4	4.6	26.9	22.2	34.3	49.1	29.6	26.9	40.7	9.3	28.7	29.6	48.1
PRT	16.7	41.7	73.1	68.5	68.5	40.7	61.1	71.3	75.9	66.7	67.6	73.1	51.9	71.3	66.7	30.6
SVK	2.8	13.0	54.6	33.3	15.7	15.7	38.0	45.4	54.6	38.0	29.6	36.1	11.1	25.9	28.7	5.6
SVN	5.6	20.4	36.1	35.2	31.5	14.8	29.6	52.8	54.6	55.6	40.7	62.0	14.8	45.4	50.9	48.1
ESP	6.5	13.0	63.0	63.9	63.9	23.1	63.0	66.7	64.8	56.5	62.0	67.6	52.8	62.0	71.3	
SWE		5.6	23.1	29.6	29.6	33.3	14.8	32.4	25.9	21.3	19.4	27.8	9.3	38.0	48.1	
GBR			0.9	0.9	39.8		53.7	62.0	54.6	50.0	51.9	51.9	51.9	55.6	4.6	
CHE	33.3	42.6	56.5	53.7	56.5	41.7	54.6	57.4	61.1	48.1	54.6	54.6	44.4	56.5	63.0	55.6
NOR	24.1	25.9	42.6	52.8	48.1	33.3	49.1	60.2	63.0	60.2	51.9	64.8	36.1	60.2	59.3	65.7
BGR	5.6	10.2	38.9	25.0	29.6	18.5	44.4	54.6	56.5	55.6	48.1	72.2	18.5	60.2	74.1	17.6
HRV	4.6	15.7	46.3	49.1	55.6	32.4	53.7	76.9	75.9	72.2	59.3	71.3	29.6	59.3	62.0	12.0
ROU	0.9	15.7	45.4	50.9	46.3	17.6	43.5	60.2	68.5	56.5	49.1	65.7	30.6	61.1	43.5	54.6
RUS			4.6		9.3	9.3		18.5	2.8	4.6	1.9	4.6		8.3	12.0	59.3
IRN	50.9	62.0	70.4	74.1	74.1	69.4	74.1	79.6	83.3	75.0	77.8	88.9	58.3	89.8	73.1	69.4
TUR	40.7	49.1	61.1	61.1	63.0	52.8	68.5	75.0	78.7	70.4	74.1	82.4	54.6	77.8	67.6	62.0
EGY	46.3	57.4	67.6	69.4	78.7	62.0	72.2	83.3	87.0	85.2	78.7	88.9	61.1	88.9	73.1	68.5
MAR	50.0	65.7	75.0	74.1	83.3	75.9	80.6	88.9	91.7	87.0	88.0	90.7	74.1	91.7	80.6	71.3
NGA	58.3	74.1	83.3	83.3	85.2	80.6	85.2	88.0	90.7	88.9	90.7	91.7	74.1	90.7	81.5	75.0
ZAF	38.9	53.7	71.3	74.1	75.0	59.3	75.9	83.3	80.6	77.8	73.1	75.9	55.6	76.9	73.1	66.7

- On basis of information above we remove IRN, MAR, NGA, CHL and URY. Criterion is percentage of missings at TTT is higher than 50%
- We also remove IDN, THA, MYS, PHL, EGY and ZAF. Criterion number of missings at TTT > 40% and for all other sectors > 50%.
- This results in the following table for 2007

Table 9.D.3.2 Percentage missing flows per sector and reporting country in 2007 for 43 countries.

	TTT	TRA	WTP	ATP	OTP	TRV	CMN	CNS	ISR	OFI	CIS	RLF	OBC	ROS	OSG	OCS
AUS	4.7	20.9	55.8	57.0	58.1	15.1	36.0	72.1	60.5	47.7	43.0	46.5	17.4	51.2	45.3	54.7
CHN	17.4	25.6	45.3	53.5	53.5	30.2	55.8	67.4	64.0	58.1	52.3	58.1	36.0	57.0	55.8	55.8
HKG	2.3	5.8	32.6	32.6	43.0	39.5	38.4	70.9	46.5	36.0	38.4	51.2	29.1	51.2	82.6	55.8
JPN	4.7	16.3	51.2	55.8	61.6	11.6	34.9	34.9	36.0	31.4	33.7	32.6	15.1	44.2	33.7	27.9
KOR	17.4	31.4	53.5	57.0	58.1	50.0	61.6	70.9	60.5	64.0	66.3	62.8	32.6	72.1	59.3	53.5
SGP	11.6	27.9	52.3	61.6	64.0	55.8	61.6	66.3	66.3	60.5	51.2	58.1	24.4	65.1	73.3	50.0
IND	23.3	32.6	53.5	62.8	60.5	45.3	61.6	68.6	69.8	64.0	53.5	60.5	36.0	70.9	60.5	48.8
CAN		30.2	46.5	45.3	48.8	3.5	48.8	72.1	66.3	53.5	45.3	55.8	33.7	53.5	50.0	52.3
USA	7.0	2.3	38.4	39.5	45.3	9.3	27.9	43.0	20.9	4.7	27.9	16.3	20.9	17.4	39.5	30.2
MEX	24.4	47.7	67.4	66.3	72.1	50.0	75.6	83.7	74.4	76.7	76.7	69.8	53.5	82.6	72.1	62.8
BRA	23.3	38.4	58.1	66.3	65.1	41.9	65.1	74.4	74.4	69.8	67.4	69.8	50.0	73.3	67.4	54.7
AUT			58.1	52.3	55.8		57.0	61.6	61.6	20.9	54.7	65.1		64.0	62.8	34.9
BEL			8.1	10.5	19.8		14.0	45.3	23.3	7.0	10.5	32.6	9.3	41.9	54.7	36.0
CYP		3.5	4.7	19.8	51.2	7.0	22.1	43.0	48.8	17.4	32.6	60.5	5.8	26.7	58.1	1.2
CZE			20.9	3.5		4.7	24.4	27.9	44.2	18.6	9.3	40.7	2.3	27.9	29.1	2.3
DNK					1.2	1.2	1.2	16.3	2.3	24.4	4.7	3.5		7.0		4.7
EST			17.4	26.7	26.7	1.2	30.2	58.1	70.9	36.0	34.9	62.8	3.5	54.7	51.2	3.5
FIN	2.3	23.3	30.2	45.3	51.2	14.0	47.7	43.0	29.1	41.9	15.1	30.2	9.3	52.3	55.8	24.4
FRA							1.2	3.5	15.1	10.5	9.3	11.6	3.5	2.3	15.1	30.2
DEU	4.7					15.1		1.2	7.0	1.2		5.8		12.8		
GRC	2.3	25.6	34.9	29.1	23.3	23.3	34.9	36.0	37.2	40.7	31.4	37.2	9.3	34.9	45.3	34.9
HUN			26.7	2.3	2.3	9.3		39.5	43.0	15.1	3.5	15.1		9.3	10.5	
IRL	23.3	26.7	61.6	53.5	60.5	23.3	46.5	69.8	48.8	40.7	47.7	55.8	33.7	59.3	69.8	39.5
ITA			8.1		18.6		2.3	7.0	18.6	27.9	16.3	22.1		25.6	18.6	
LVA	4.7	11.6	32.6	33.7	34.9	17.4	53.5	62.8	80.2	62.8	53.5	72.1	26.7	70.9	77.9	25.6
LTU		3.5	30.2	29.1	8.1	8.1	37.2	60.5	66.3	53.5	51.2	65.1	18.6	64.0	34.9	4.7
LUX			73.3	64.0	67.4		64.0	69.8	64.0		58.1	66.3		69.8	73.3	
MLT		38.4	61.6	68.6	73.3	40.7	62.8	84.9	79.1	67.4	73.3	83.7	11.6	83.7	84.9	17.4
NLD							3.5	4.7	5.8			1.2		7.0	8.1	
POL				1.2		10.5	8.1	17.4	36.0	15.1	11.6	27.9	3.5	15.1	24.4	34.9
PRT	4.7	29.1	67.4	61.6	61.6	25.6	51.2	64.0	70.9	58.1	59.3	66.3	40.7	64.0	59.3	27.9
SVK		2.3	44.2	23.3	4.7	2.3	24.4	33.7	43.0	25.6	15.1	24.4	2.3	12.8	18.6	
SVN		5.8	22.1	20.9	18.6	5.8	16.3	41.9	43.0	45.3	26.7	52.3	2.3	32.6	43.0	34.9
ESP		5.8	55.8	55.8	57.0	11.6	54.7	58.1	57.0	46.5	53.5	59.3	43.0	52.3	66.3	
SWE		2.3	23.3	23.3	23.3	18.6	15.1	30.2	25.6	17.4	18.6	26.7	11.6	36.0	46.5	
GBR				1.2	30.2		41.9	52.3	43.0	37.2	39.5	39.5	39.5	44.2	3.5	
CHE	16.3	27.9	45.3	41.9	45.3	26.7	43.0	46.5	51.2	34.9	43.0	43.0	30.2	45.3	53.5	44.2
NOR	4.7	7.0	27.9	40.7	34.9	16.3	36.0	50.0	53.5	50.0	39.5	55.8	19.8	50.0	48.8	57.0
BGR		2.3	27.9	14.0	17.4	8.1	34.9	44.2	45.3	44.2	34.9	65.1	4.7	51.2	67.4	3.5
HRV	1.2	3.5	37.2	40.7	44.2	15.1	44.2	70.9	69.8	65.1	51.2	64.0	19.8	50.0	59.3	1.2
ROU		3.5	36.0	44.2	37.2	10.5	33.7	53.5	60.5	46.5	37.2	57.0	22.1	53.5	41.9	43.0
RUS			1.2		1.2	2.3		5.8			1.2			1.2	9.3	48.8
TUR	25.6	36.0	51.2	51.2	53.5	40.7	60.5	68.6	73.3	62.8	67.4	77.9	43.0	72.1	59.3	52.3

- Results are obviously much better, but for some countries and sectors still rather high, which sometimes means that more than 50% of the cells of that country have to be estimated
- Calculating reliability index for exporters and importers for period 2004-2008

The reliability index for exporters and importers for period 2004-2008 has been recalculated using the 43 remaining countries. The tables can be seen below:

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Figure 9.D.3.3 Reliability index (in %) for reporting importers in services, 2004-2008

	TTT	TRA	WTP	ATP	OTP	TRV	CMN	CNS	ISR	OFI	CIS	RLF	OBC	ROS	OSG	OCS
AUS	6.7	4.2				8.3	0.6		8.9	0.7		19.8	0.4	6.0	0.6	
CHN																
HKG	11.2	9.2	0.1	2.8		0.0	1.1		6.6	3.5	2.5	24.8	0.4			
JPN	18.6	5.2	1.0	2.9		5.7	0.6	0.5	5.9	4.0	1.3	20.1	1.9	0.4	0.6	6.7
KOR	1.5	7.3				11.4	1.3		0.3			15.1	0.8			
SGP	5.4	0.3									1.0	1.3	2.3	1.6		
IND																
CAN	28.3	18.9				26.2			15.4	22.5		32.2			0.7	
USA	7.2	10.1				6.5			0.1	2.3		8.8		0.0		4.3
MEX																
BRA																
AUT	39.3	2.1	2.0	0.0	0.5	35.3	1.1	2.4	0.1	10.0	7.1		34.0	0.1	4.3	38.3
BEL	36.0	25.0	4.7	18.6	20.1	44.8	13.3	36.3	1.0	4.2	16.8	22.1	4.0	39.6	0.9	17.6
CYP	1.2	2.5	2.3	29.3		17.5	23.8	0.1	30.5	0.9	0.6	18.3	0.7	14.9	12.5	0.4
CZE	51.1	25.7	15.5	0.2	32.9	34.1	41.1	25.0	23.8	12.6	19.1	0.4	38.9	11.2	0.1	42.8
DNK	48.0	6.8	7.1	0.2	15.0	52.7	23.2	0.9	3.2	16.6	23.0	20.2	28.1	0.5	0.3	41.3
EST	22.9	11.3	25.8	32.8	3.1	44.7	31.5	2.6		16.0	46.5	1.5	26.9	19.9	1.9	17.9
FIN	39.3	42.3	22.2	0.1	11.1	35.6	19.9	2.3	10.7	0.3	30.5	6.1	33.2	1.0		24.8
FRA	10.1	30.4	7.6	12.8	37.2	14.0	14.3	5.2	0.8	0.4	0.2	0.3	16.5	1.4	6.3	8.5
DEU	44.7	37.5	20.4	20.1	24.9	45.2	10.3	2.3	0.9	1.0	0.9	13.8	35.9	21.3	1.0	26.2
GRC	30.2	1.4	1.8	7.1	0.6	8.3	20.8	3.5	0.2	2.0	3.9	7.9	30.5	3.4	1.1	5.2
HUN	49.3	18.1	0.8	6.2	7.2	26.5	1.5	14.1	4.6	1.4	30.1	8.5	45.7	0.6	1.4	47.0
IRL	23.9					42.9	21.7		0.0	27.4	0.7	6.2	1.2	1.8	9.1	9.2
ITA	27.2	24.4	17.8	27.9	0.7	30.0	7.2	1.2	5.2	2.3	3.6	26.8	0.6	24.0	0.1	1.6
LVA	3.3	12.7		18.4	1.1	27.1	37.3	18.0			2.1	0.9	4.1	10.3	21.6	2.2
LTU	28.9	7.4	8.6	1.5	1.6	20.5	42.0	14.5	21.0	0.1	2.6	20.2	3.6		0.4	5.2
LUX	14.5	25.3		42.9	19.1	28.9	12.9	32.6		2.9	56.2	11.9	1.9			4.9
MLT	35.7	2.2	7.1	11.9			8.9		14.3	0.2	0.3	6.7	9.5			0.1
NLD	24.8	13.4	6.1	9.8	23.0	2.2	25.5	0.5	1.8	0.1	18.5	8.6	35.1	0.4	11.3	31.2
POL	43.0	20.5	10.3	2.2	2.0	33.9	42.7	10.9	0.1	18.4	4.2	1.7	44.9	16.7	1.9	73.1
PRT	25.1	4.7				41.4	44.0		25.4	0.4	2.7	6.4	2.4		0.3	2.1
SVK	43.5	18.5	15.8	32.3	11.8	5.9	17.4	35.5	26.7	1.0	32.1	7.7	2.7	0.6	0.3	43.9
SVN	22.4	40.4	25.0	11.2	43.9	4.8	13.7	10.4	1.2	10.4	32.6	0.9	0.8	0.3	1.1	54.4
ESP	2.5	1.5				37.9	7.3		7.8	9.0					6.9	1.5
SWE	47.9	3.5	34.2		0.0	28.7	10.3	24.8	9.6		25.8	16.8	17.3		18.7	48.4
GBR	4.2	8.4	6.5	23.0		35.1									16.4	2.8
CHE																
NOR	7.0	2.0	0.0			1.6				2.3				0.9		
BGR	18.3	13.8	7.2	27.0	7.2	8.6	24.7	1.2	0.4	15.5	0.8	1.1	19.9	1.0	5.2	47.6
HRV	7.4	4.1			0.1	2.6	0.1							0.0		4.5
ROU	27.4	1.5				0.6	0.0	12.7	0.0				11.2			
RUS	7.2	2.6	0.2	3.0		3.8	4.4	2.0	2.1	2.7	4.5	0.8	2.0	0.6	0.3	
TUR																

Note:

- that indices are comparable or even better than the levels than the ones we calculated for period 1999-2004
- that for some countries the indices is zero for all sectors, meaning that either all cells are either missing or zero.
- If export index > import index we use export flow, otherwise import flow
- If only one flow is available we use this flow
- If no flow is available we estimate this cell using the following rules, generally for both 2004 and 2007:

- o Per sector between eu27 countries flows are estimated based on shares of export DEU in total eu27, except for ROS where we use FRA shares
- o For remaining missing cells we use the FRA shares
- o Per sector trade between non-eu27 countries are estimated based on shares of export DEU in total world, except for ROS based on shares of FRA
- o However, before we use share of DEU in total world, we sometimes have to estimate the world totals
- o Examples SGP, HUN, IRL and CHE for the transport sectors in 2004
- o Generally, neighboring countries are used to estimate the totals.
- o For some countries and certain sectors we set total exports of that sector to the difference between total reported exports and the sum of the underlying available sectors.
- o For some countries and sectors we assume total exports equals zero since the difference between total reported exports and the sum of the underlying sectors equals zero.
- o For general remaining missing cells we use the FRA shares
- o For other remaining missing cells we use different approaches per sector, sometimes we have used **import** shares of TTT
- o 2007 estimates are generally similar to the estimates in 2004
- o However: Here we decided to drop ARG from the list. Total reported exports of services to WLD from this country are only a fraction from the value in 2004. Reported imports in the USA from ARG are already much higher. A reliable total exports is needed to estimate even the totals of other sectors. Only total of CIS is available
- o However, in some cases we have used a different approach. Example are flows from DNK to other countries of sector CNS in 2004 are zero, in 2007 there is a value
- o Sometimes the total exports to the difference between total reported exports and the sum of the underlying sectors is positive, whereas there are values for all the underlying sectors. We ignore this difference.
- o Sometimes the total exports to the difference between total reported exports and the sum of the underlying sectors is negative. We ignore this difference as well.