



CIF-FOB vs invoice values for international trade in goods in national accounts

Final report

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I Introduction.

At this moment imports and exports of goods are to be valued free-on-board (fob) in the RoW account and BoP, i.e. at the customs frontier of the exporting country, even if the parties involved have agreed upon other delivery terms. Because for imports it is not possible to obtain fob-values for detailed product breakdowns, the supply and use tables that contain a detailed product breakdown on foreign trade, show imports valued at the importer's customs frontier (cif-value). Subsequently a cif-fob adjustment at macro level is necessary to arrive at the required fob-value of imports (see ESA 1.98).

The requirement of a uniform valuation of imports and exports at the border of the exporting country is an unfortunate deviation from the actually observed transaction price as a general valuation principle in 2010 ESA (see for example ESA 1.94). While the 2010 ESA introduces several important improvements, compared to its predecessor with respect to recording of imports and exports at a strict transfer of ownership basis (e.g. goods sent abroad for processing, merchanting; see ESA 1.51f), the required fob recording deviates from this general recording principle. As shown in this report it may require adjustments of import and export of transport services which contrast statistical observation and economic reality.

II Consequences of the current guidelines.

The choice for cif- and fob-valuation of international trade flows irrespective of the delivery terms agreed upon by the parties involved has several consequences which will be explored in this section.

II.1 Data availability and quality

The value of imports and exports entering or leaving the Netherlands through customs (extra-EU trade) is determined by the customs authorities. The value of the intra-EU trade, which does not pass through customs, is obtained by means of a survey.

The value of imports is the cif-value; the value of exports the fob-value. In both cases the value includes, besides the value of the goods, the value of additional costs (mainly insurance and transport costs) up to the Dutch border. Of course, these values may deviate from the actual transaction values agreed upon between the parties involved because different delivery terms may apply¹. Delivery terms may vary from EXW (EX Works) to DDP (Delivered Duty Paid); see also annex 1. In the case of an EXW contract almost all additional costs are borne by the buyer, in case of a DDP contract by the seller. In a large number of cases the actual transaction value and delivery terms as well as the cif- or fob-values - as determined by the customs authorities - are known². In these cases the difference between the actual transaction value and the statistical cif-value can be determined. An decreasing difference between the transaction value from EXW (all additional costs borne by the buyer) to DDP (all additional costs borne by the seller) and the statistical cif-value can be expected. This is shown in table 1 for two recent years.

¹ See for example: <https://en.wikipedia.org/wiki/Incoterms> See also annex 1 for an overview of the most important delivery terms.

² This information is only available for the extra-EU trade.

Table 1
Imports of goods by terms of delivery, 2018 and 2019

Terms of delivery (Incoterms)	Number of records (x 1000)	CIF-value (bln €)	Invoice value (bln €)	CIF -/- Invoice value (bln €)	% difference
EXW <i>Ex works</i>	2721	31386	28952	2434	7,8
FCA <i>Free Carrier</i>	2058	39502	35711	3791	9,6
FAS <i>Free Alongside Ship</i>	7	1563	1467	96	6,1
FOB <i>Free on Board</i>	3359	82567	73764	8802	10,7
CFR <i>Cost And Freight</i>	582	18385	17683	702	3,8
CIF <i>Cost Insurance and Freight</i>	1879	65838	62167	3671	5,6
CPT <i>Carriage Paid To</i>	290	5978	5695	283	4,7
CIP <i>Carriage and Insurance Paid To</i>	408	24045	23310	735	3,1
DAT <i>Delivered at Terminal</i>	97	2095	1756	339	16,2
DEQ <i>Delivered at Quay</i>	0	16	10	6	35,7
DAF <i>Delivered at Land Frontier</i>	0	86	72	15	17,1
DAP <i>Delivered at place</i>	2574	70116	66841	3275	4,7
DDU <i>Delivered Duty Unpaid</i>	335	3352	3261	91	2,7
DES <i>Delivered Ex Ship</i>	1	1746	1592	154	8,8
DDP <i>Delivered Duty Paid</i>	3201	22760	22183	577	2,5
Range EXW - CFR	8725	173402	157578	15824	9,1
Range CPT - DDP	6905	130194	124719	5475	4,2
Totals	17510	369434	344464	24970	6,8

As can be seen the expected pattern (a decreasing difference from top to bottom from positive to negative) between the cif-value and the invoice value cannot be found in table 1. The range from CPT to DDP has a smaller difference than the range EXW to CFR, but the difference is still positive which means that, assuming the invoice values are correct, the quality of the cif-values that are determined by the customs authorities can be questioned.

For exports the number of records with information on the actual terms of delivery is very limited. Besides that, especially for exports there are quite a lot of records with (probable) errors in invoice values, as will be shown later in this report (see par IV.2). A table equivalent to table 1 would not provide meaningful information and is therefore not included here.

Apart from the quality of the statistical cif- and fob-values there are other problems with data availability and -quality. This becomes apparent when an attempt is made to correct the import values from cif (used in the supply and use tables) to fob, as required by international guidelines. For this correction not only the total cif-value of the imports should be known but also the fob-value. On top of that, to make the correct adjustments on the international trade in services it should be known whether the services that make up the difference between the cif- and the fob-value of the

goods imports are delivered by a resident or a nonresident carrier of the importing country. This distinction is important to decide whether the correction on the import value of goods from cif to fob should lead to a correction of the import value of services (cif/fob reclassification; in case of a nonresident carrier, leaving the total value of imports and exports unchanged) or to a correction of the export value of services (cif/fob-correction; in case of a resident carrier, reduces total imports and exports)³.

Of the required information only the cif-value of the imports is available and that figure is, as argued above, probably of poor quality.

II.2 Consistency between international trade in goods and international trade in services.

The revaluation of imports of goods from cif to fob and the reversal on the value of international trade in services as described above has no effect on the total trade balance of goods and services as can be seen in line 7 of scheme 1 presented below, even if the value of the cif/fob-correction and -reclassification is not fully correct, which is likely due to lack of data. Of course, the split of the total values of imports and exports in the value of goods and the value of services may be incorrect in case of wrongly estimated cif/fob-correction and -reclassification.

Scheme 1

Revaluation of imports of goods from cif to fob

	SUT (cif/fob-valuation)	From cif/fob- to fob/fob-valuation	BoP/ROW (fob/fob-valuation)
1	Imports of goods (CIF) $I_{g_{cif}}$	-/- Corr. -/- Reclass.	Imports of goods (FOB) $I_{g_{fob}}$
2	Imports of services I_s	+ Reclass.	Import of services (adjust.) $I_{s_{adjust.}}$
3 (= 1+2)	Total imports $I(g_{cif} + s)$	-/- Corr.	Total imports $I(g_{fob} + s_{adjust.})$
4	Exports of goods (FOB) $E_{g_{fob}}$	---	Exports of goods (FOB) $E_{g_{fob}}$
5	Exports of services E_s	-/- Corr.	Exports of services (adjust.) $E_{s_{adjust.}}$
6 (= 4+5)	Total exports $E(g_{fob} + s)$	-/- Corr.	Total exports $E(g_{fob} + s_{adjust.})$
7 (= 6-3)	Trade balance (g+s) $E(g_{fob} + s) - I(g_{cif} + s)$	0	Trade balance (g+s) $E(g_{fob} + s_{adjust.}) - I(g_{fob} + s_{adjust.})$

However, a more serious problem is that the total values of import, export and trade balance (lines 3, 6 and 7), are probably not correct. This is already the case in the SUT-valuation and the cif/fob revaluation of the imports of goods does not change this. The reason for this is that the valuation of the international good flows (always cif or fob, irrespective of the actual terms of the agreement) is conceptually inconsistent with the valuation of the international services flows (actual transaction values).

Some examples may clarify this. The examples below are based on box 10.3 in BPM6. The examples are elaborated from the viewpoint of the importing country (Country A).

³ See ESA2010 par. 3.175 and further and table 3.4.

Available data:		Situation:	
Value of goods	10000		
FOB-value of goods	10200		
CIF-value of goods	10500		
Transport costs in country B	200		
Transport costs area A/B	300		
Transport costs in country A	100		

Country A imports goods from country B. The cif-value that will be recorded in the imports of goods in country A is 10500. The imports of services that will show up in the international trade of services depends on two things: (1) the residency of the carrier and (2) the actual delivery terms of the agreement.

In practice there can be more than one carrier involved with different nationalities, for example for the transport in country B, area A/B and country A. To keep things simple we assume here that there will be only one carrier involved for the whole route from A to B; this can be either a resident of B or a resident of A.

Example 1: a cif-contract

The simplest case to describe is the situation where the actual agreement is indeed a cif-contract. This means the statistical value from ITG and the actual invoice value are the same, i.e. the cif-value (10500). What services will end up in the ITS as a consequence of the transaction depends on the nationality of the carrier. Two different situation are described here:

(1a) Resident carrier.

The importer in country A will have to pay for the transport costs in country A (100), but he contracts a resident carrier and therefore he will report no import of services. The carrier delivers services to a resident (100, no report in ITS) and to a nonresident (500 to the exporter of country B) which he will report in ITS.

(1b) Nonresident carrier.

The imports of services reported by the importer in country A will be 100 (transport costs in country A, delivered by an nonresident carrier). The remaining part of the transport costs (500) is a transaction between two nonresidents and will not show up in ITS of country A.

The recorded transactions are:

1 cif-contract

<i>1a Resident carrier of country A</i>				<i>1b Non-resident carrier of country A</i>			
	Import	Export	Balance		Import	Export	Balance
Goods (cif)	10500	--	-10500	Goods (cif)	10500	--	-10500
Services	--	500	500	Services	100	--	-100
Total	10500	500	-10000	Total	10600	0	-10600

The trade balance of -10000 in example 1a is correct: only the goods are imported from country B. The transport services, that are, even though they are partly advanced by the exporter, ultimately used by the importer and provided by a resident carrier.

In example 1b the trade balance is -10600 which is also correct: the goods as well as the transport services are delivered from country B to country A.

Example 2: fob-contract

In this case the statistical value from ITG and the actual invoice value are different: 10500 vs 10200.

The recorded transactions are:

2 fob-contract

<i>2a Resident carrier of country A</i>				<i>2b Non-resident carrier of country A</i>			
	Import	Export	Balance		Import	Export	Balance
Goods (cif)	10500	--	-10500	Goods (cif)	10500	--	-10500
Services	--	200	200	Services	400	--	-400
Total	10500	200	-10300	Total	10900	0	-10900

As can be seen, if the actual transaction value deviates from the statistical cif-value, the trade balance is incorrect. In this case the trade balance should be the same as in example 1a and 1b (-10000 and -10600) because the situation is the same: in 2a only the goods are imported and in 2b both the goods and the services are imported. If we would use the actual invoice value (i.e. fob-value), this problem would not exist:

2 fob-contract, actual invoice values

<i>2a Resident carrier of country A</i>				<i>2b Non-resident carrier of country A</i>			
	Import	Export	Balance		Import	Export	Balance
Goods (fob)	10200	--	-10200	Goods (fob)	10200	--	-10200
Services	--	200	200	Services	400	--	-400
Total	10500	200	-10000	Total	10900	0	-10600

In this case both the trade in goods and trade in services are valued at the actual transaction values and are therefore consistent with each other.

Some general remarks following from these examples:

- The results of example 2 where the actual transaction fob-value differs from the statistical cif-value also hold for any other case where the actual terms of delivery differ from the required statistical cif-value.
- The above examples use the valuation in the SUT (i.e. cif for imports, fob for exports). Changing the valuation to fob/fob (the valuation for ROW account and BoP) does not change the outcome; as is shown in scheme 1: the change from cif/fob to fob/fob-valuation does not affect the trade balance.
- These examples are limited to imports of goods. It can be easily shown that the use of the statistical fob-value for exports will also lead to wrong trade balance figures if the actual delivery terms differ from fob.

II.3 Consistency with other transactions in the supply and use tables

The general valuation principle in ESA2010 is the transaction price, i.e. the value at which flows and stocks are in fact, or could be, exchanged for cash. Market prices are, thus, the ESA's reference for valuation (ESA 2010. par. 1.94). In practice this means that the supply table is valued at basic prices and the use table at purchasers' prices (see ESA 2010 par. 3.06 and 3.44). Clearly, the cif- and fob-valuation of imports and exports of goods deviate from this general valuation principle. As a consequence imbalances between supply and demand of goods may arise in the supply and use tables in case the actual terms of delivery differ from the statistical cif- and fob-valuation. Scheme 2 illustrates this, again using the data from box 10.3 from BPM6.

Scheme 2

Overview of supply and use

Transaction	Supply				Use				Supply -/- Use			
	Resident carrier		Non-resident carrier		Resident carrier		Non-resident carrier		Resident carrier		Non-resident carrier	
	Contract		Contract		Contract		Contract		Contract		Contract	
	cif	fob	cif	fob	cif	fob	cif	fob	cif	fob	cif	fob
Intermediate consumption company A (purchasers' prices)												
Goods					10500	10200	10500	10200				
Transport services					100	400	100	400				
Production of resident carriers												
Transport services	600	600	---	---								
Imports												
Goods (cif)	10500	10500	10500	10500								
Transport services	---	---	100	400								
Exports												
Transport services					500	200	---	---				
Total												
Goods	10500	10500	10500	10500	10500	10200	10500	10200	0	300	0	300
Transport services	600	600	100	400	600	600	100	400	0	0	0	0

In this example the imported goods are used as intermediate consumption by a resident company A. The use of (separately invoiced) transport services by this company is also part of intermediate consumption. Again, if the terms of delivery of the trade contract are not cif, the import cif-value of the goods will differ from the value of these goods reported by company (purchasers' value) in SBS and an imbalance will show up. Of course this imbalance is of the same magnitude as the trade imbalance in the examples presented before. Again, the example here is limited to import of goods that are used for intermediate consumption (or any final consumption expenditure category). However, the same results can be obtained for export of domestic production. If the terms of delivery of the export contract are not fob, the value of the production will differ from the export value and an imbalance will arise.

II.4 Summary

The use of statistical cif- and fob-values for the import and export of goods leads to different types of problems:

1. The cif- and fob-values for imports and exports can often not be obtained due to lack of data.
2. Even if the cif- and fob-values could be estimated correctly, the total values (of goods and services) for imports, exports and trade balance are incorrect in case the actual delivery terms for imports and exports differ from cif and fob.
3. Imbalances between supply and use may appear due to inconsistent valuation (statistical value for imports and exports, actual transaction values for other transactions)

A possible solution for these problems could be the use of actual transaction values (or invoice values) for international trade in goods. The possibilities and consequences of this will be explored further in section IV. Of course, given the current guidelines, the use of actual transaction values for international trade in goods is not allowed at the moment. For that reason during the 2015 national accounts revision Statistics Netherlands developed a model to adjust the international trade in

services to align the trade in services with the - cif- and fob-valued - international trade in goods. This was done to prevent double counting of services and to assure correct values for the totals (import, export and trade balance) of international trade. This model will be described in the following paragraph.

III Model for adjusting ITS

III.1 Introduction

As explained in the previous section, ITG and ITS are not aligned due to different ways of valuation: statistical cif- and fob-values vs for trade in goods and actual transaction values for trade in services. Only if the actual terms of delivery of import or export of goods are indeed cif or fob (and the statistical value equals the invoice (i.e. transaction) value) ITG and ITS are consistent as was shown earlier. To solve this problem Statistics Netherlands developed a model to adjust ITS. This model is applied since the national accounts benchmark revision of 2015.

The avoid unnecessary complicated explanations, the model below is always described from the perspective of the importing country. Besides that, it will be limited to transport services, although other services are usually involved.

III.2 Description of the model

The idea behind the model is, since ITG imports and exports have to be valued cif and fob according to the current guidelines, to adjust ITS to match the statistical values of ITG.

The first step of the model is to identify the transactions of (mostly) transport and insurance services that should be part of the import and export of services to end up with the correct totals for imports and exports of goods and services. Given the cif-valuation of the goods, part of these services are already included in the import value of goods, even if these services have been provided by a resident transport company. The reasoning below is in line with ESA 2010 par. 3.178-3.179 and table 3.4 and 3.4.

In scheme 2a of annex 2, four different quadrants are distinguished, showing the four possible combinations of carrier (resident vs nonresident) and contractor of the carrier (resident vs nonresident). The transactions that should be part of ITS only depend on the nationality of the carrier but are independent of the nationality of the contractor. This means that the ITS requirements (line I) are the same for the upper two quadrants (both resident carrier) and for the lower two quadrants (both nonresident carrier). For example, in the upper two quadrants the transport costs in the territory of the exporting country and the in-between area are part of the cif import value of goods even though they these services are provided by a resident carrier. The exporter charges the importer for these services, which means that ITS should record these cost as export of services. The transport costs in the territory of the importer should not be measured in ITS; these services delivered by a resident carrier to the resident importer.

In the lower two quadrants the carrier is nonresident. The transport costs in the territory of the exporting country and the in-between area are part of the imports of goods and should therefore not be measured in ITS. The transport costs in the territory of the importer should be measured in ITS; these services delivered by a nonresident carrier to the resident importer.

The second step is to establish what is actually recorded in ITS in all of these quadrants. ITS is based on a survey which means that a transaction will only be measured if a resident and a nonresident

party is involved. In that case either the resident carrier will report the delivery of transport services to the nonresident exporter or the resident importer will report the hiring of a nonresident carrier. In the upper left and lower right quadrant only residents or nonresidents are involved; no transactions will be measured here by the ITS survey. In the other two quadrants all transport services will be measured as imports (nonresident carrier, lower left quadrant) or exports (resident carrier; upper right quadrant). These transactions can be found in line II of scheme 2a.

After we have established the ITS transactions that should be measured and the transactions that are actually measured, it is easy to see the part that should be eliminated from the ITS result and the part that should be added. These necessary corrections on the ITS survey results can be found in line III (eliminations marked red and additions marked green).

This second step is much more challenging: estimating the required values of the corrections that have to be made. In a detailed version of the model information is needed on:

1. The distance the goods travel over the territory of the exporting country, the in-between area and the territory of the importing country,
2. The transport costs price/km for each of the abovementioned territories,
3. The value and nature of the imported goods.
4. The residency of the carrier(s) and the contractor(s).

Ad 1. The transportation costs depend on the distance travelled by the goods. Of course for each load the distances may differ, especially the distances travelled over the territory of the exporting and importing country. The distance travelled over the in-between area is likely to be more constant.

Ad 2. The costs/km may depend on a lot of variables and may differ for all of three areas. Quality of infrastructure, mode of transport and customs legislation are some of the variables that influence the transport costs.

Ad 3. Of course the nature of the goods is important: clearly, the transportation costs of for example high end electronics, perishable goods or bulk goods are all quite different.

In operationalizing the model it appeared soon that the number of variables would be too high, therefore additional assumptions had to be made to reduce this number. It was assumed that:

- For each exporting country one average distance for all transports over the territory of that country and for the in-between area was estimated. One average distance for all transports within the importing country (i.e. the Netherlands) was estimated.
- The transport costs/km for over all three areas are the same.
- The transport costs (as a percentage of the value of the goods) differ between countries, but are the same for all type of goods exported by a specific country.
- The residency of carrier and contractor (see scheme 2a) holds for the whole transport distance.

Despite these restrictions still a lot of additional estimates had to be made as will be shown.

III.3 Estimating the variables needed

Distances.

To estimate the distances the goods have to travel for all the countries distinguished in the ITG, an interactive world map was used⁴. The transport distance within the exporting country was usually

⁴ See: <http://www.transportguiderotterdam.nl/tools/afstand-berekenen-tussen-locaties/>

estimated as the distance between the area of main economic (industrial) activity and the main seaport, airport or largest city. The distance of the in-between area as the distance between this seaport, airport or city and the Rotterdam seaport and the average distance within the Netherlands was set to 120 km. The transport distances for each country in the model can be found in annex 2C.

Price/km.

The transport costs per km used for each country was calculated as a percentage of the value of the goods imported from that country (price/km per mln euro), not for their weight or volume. To calculate this average price, the (estimated) distance of the in-between area C was used, together with information on goods that were imported under a fob-contract. For these goods the fob value (invoice value) as well as the cif value (statistical value) was known. The difference between the cif- and fob-value should reflect the costs made to transport the costs over the in-between area C. The resulting transport costs for each country can also be found in annex 2C.

Residency of carrier and contractor.

Above an estimation for each country was made of the three transportation distances (area of the exporting country, in-between area, area of the importing country) and the price/km per mln euro for imports. The next step is to estimate the residency of the carrier and the contractor. In each quadrant of scheme 2a of annex 2 we can distinguish the three areas mentioned. This gives a total of twelve different situations as follows from figure 1 below.

Figure 1

Possible combinations of residency of contractor and carrier by territory

		Contractor					
		Resident of country A (Code 1)			Non-Resident of country A (Code 2)		
		Territory of exporting country (code B)	In between area (Code C)	Territory of Importing country (Code A)	Territory of exporting country (code B)	In between area (Code C)	Territory of Importing country (Code A)
Carrier	Resident of country A (Code X)	B.1.X	C.1.X	A.1.X	B.2.X	C.2.X	A.2.X
		Export	Export				Export
Carrier	Non-Resident of country A (Code Y)	B.1.Y	C.1.Y	A.1.Y	B.2.Y	C.2.Y	A.2.Y
		Import	Import				Import

For each country holds that in each of these twelve possible combinations of residency of carrier and contractor and territory the required values of ITS (what should be measured) can deviate from the actual measurement (what will be measured) as has been elaborated above and in annex 2a. The required correction on the ITS import and export values are also shown in this figure (green: add, red: delete). The value of these corrections depend on the relative weight of the four quadrants above, i.e. the fraction of resident contractors and resident carriers.

The residency of the contractors is unknown and an expert guess was needed. It was reasoned that, on average, the fraction of resident contractors depends on the terms of delivery. For example, in case of an EXW (Ex works) contract it is likely that the buyer (importer) arranges the transport and in case of an DDP (delivered, duty paid) contract this is done by the seller. Of course, to test the sensitivity of the model for different assumptions several different fractions were tried out. The fraction of resident contractors used can be found in the table 2 below.

Information on the nationality of the carrier is available from the data files received from the customs authority (for the extra-EU trade). Each record contains information on the value of the shipment, the actual delivery terms, the exporting country and the nationality of the carrier.

Table 2**Assumed fractions of residents/nonresidents contractor by term of delivery**

Terms of delivery		Import		Export	
		Resident contractor	Non-resident contractor	Resident contractor	Non-resident contractor
EXW	Ex works	1,0	0,0	0,0	1,0
FCA	Free Carrier	0,8	0,2	0,2	0,8
FAS	Free Alongside Ship	0,8	0,2	0,2	0,8
FOB	Free on Board	0,7	0,3	0,3	0,7
CFR	Cost And Freight	0,3	0,7	0,7	0,3
CIF	Cost Insurance and Freight	0,3	0,7	0,7	0,3
CPT	Carriage Paid To	0,2	0,8	0,8	0,2
CIP	Carriage and Insurance Paid To	0,2	0,8	0,8	0,2
DAT	Delivered at Terminal	0,3	0,7	0,8	0,2
DEQ	Delivered at Quay	0,3	0,7	0,7	0,3
DAF	Delivered at Land Frontier	0,3	0,7	0,7	0,3
DES	Delivered Ex Ship	0,3	0,7	0,7	0,3
DAP	Delivered at place	0,0	1,0	1,0	0,0
DDU	Delivered Duty Unpaid	0,0	1,0	1,0	0,0
DDP	Delivered Duty Paid	0,0	1,0	1,0	0,0
XXX	Not specified	0,5	0,5	0,5	0,5

With the available information and under the assumptions made, it is now possible to calculate the correction needed on ITG. The data needed for each country are shown in scheme 3 below.

Scheme 3**Overview of variables and sources**

Variables	Variable code	Source
The value of imports of goods (cif) by country	VI	ITG
Transport cost over the in-between area C; expressed as percentage of import value	PTC	ITG, available from shipments with fob terms of delivery, (difference between the fob-value and the statistical cif value).
Transport cost, value/km per mln euro.	VTC	Derived from PTC, C and VI
Distance of the three territories A, B and C	A, B, C	Estimated with the help of an online interactive tool
Residency of contractor (fraction resident (1) and non-resident (2))	1, 2	Estimated with the delivery terms (available in ITG) and assumptions on the fraction of resident contractors by delivery term.
Residency of carrier (fraction resident (X) and non-resident (Y))	X,Y	Available in ITG (under the assumption that the residency is the same for the whole transport distance)

This data allows us to calculate the necessary corrections on ITS. Box 1 provides an example of the calculation of the ITS corrections for imports from France.

Box 1

Example of calculation of ITS corrections.

Explanation:

The data used in this example for France can be found in Annex 2C. VI_{FR} is the import value for France (2015) in mln euro. In those cases where the actual terms of delivery was FOB, we have used this FOB value and the CIF value (i.e. the statistical value) to calculate the transport costs per km. This difference between them represent the cost of transportation over the in-between area C. Combined with an estimate of the length of the in-between area C, this allows us to calculate transport cost/km*mln euro ($=VTC_{FR}$). This figure can be used to estimate the transportation cost over the other areas A and B. The part of these transportation costs that should be corrected on ITS depends on the fractions of resident and non-resident carriers (X,Y) and contactors (1,2) and are shown in annex 2a and in figure 1 above.

Calculation:

Data for France (see annex 2)		Formula		Correction on	Value
VI_{FR}	16489 mln euro	B.1.X	$+ VI_{FR} * VTC_{FR} * B_{FR} * 1/X$	Export +	136
PTC_{FR}	2,22 %	C.1.X	$+ VI_{FR} * VTC_{FR} * C_{FR} * 1/X$	Export +	56
VTC_{FR}	0,00014 euro	A.2.X	$- VI_{FR} * VTC_{FR} * A_{FR} * 1/X$	Export -	-44
A	120 Km	Correction on export of transport services			148 +
B_{FR}	378 Km	B.1.Y	$- VI_{FR} * VTC_{FR} * B_{FR} * 1/Y$	Import -	-57
C_{FR}	155 Km	C.1.Y	$- VI_{FR} * VTC_{FR} * C_{FR} * 1/Y$	Import -	-23
1/X	0,15 Combined	A.2.Y	$+ VI_{FR} * VTC_{FR} * A_{FR} * 2/Y$	Import +	178
1/Y	0,06 fractions	Correction on import of transport services			98 +
2/X	0,16 Contrator/Car-	Correction on trade Balance (E - I)			50 -
2/Y	0,63 rier; $\Sigma=1$				

In the same way the necessary ITS corrections on transport services (and transport insurance services) were calculated for all imports of goods from all countries.

The methodology to calculate the ITS corrections for the export of goods (see annex 2b for the necessary corrections on ITS as a consequence of the fob registration of exports of goods) is basically the same as for imports (with the same estimations for distances, transport costs etc.) and is not further elaborated here.

III.4 Results of the model

Table 3 shows the results of the model for 2018 and 2019. These are the ITS corrections necessary to align ITS with the cif-valuated imports of goods and the fob-valuated exports of goods (the latter not further elaborated here).

As can be seen from table 3, the corrections are not only quite substantial on imports and exports of services, but also the trade balance is affected substantially. Especially for transport services the trade surplus more than doubles due to the corrections made.

Implementation of these results during the national accounts revision was quite challenging. The extra demand (net export) of services caused by the corrections was difficult to match with the supply from SBS. Eventually it was not possible to fully implement the corrections due to insufficient supply of transport services.

Table 3**Corrections on ITS values of transport and insurance services, 2018-2019.**

Service category	ITS Survey value	Corrections on ITS survey value due to:			ITS corrected value
		CIF valuation of imports	FOB valuation of exports	Total correction needed	
2018					
Transport services					
Imports	14484	-1246	-2051	-3297	11187
Exports	19486	1543	3090	4633	24119
Balance (E-I)	5003	2789	5141	7929	12932
Insurance services					
Imports	441	-14	-39	-54	387
Exports	710	27	52	79	789
Balance (E-I)	270	41	92	133	403
2019					
Transport services					
Imports	14900	-1268	-1940	-3208	11692
Exports	19931	1487	3022	4508	24439
Balance (E-I)	5030	2754	4962	7716	12747
Insurance services					
Imports	471	-14	-35	-49	422
Exports	660	24	49	73	733
Balance (E-I)	189	39	84	122	312

The method described here was internally reviewed by methodologists⁵. The conclusion of the review was that the method was conceptually sound, but that there were too many assumptions and unknown variables.

The model illustrates the efforts that have to be made align the ITS figures with the prescribed cif- and fob-valuation of imports and exports of ITG.

Further Improvement of the quality of the model outcome requires more data availability and better substantiation of the assumptions made. This would, if possible at all, require substantial extra research capacity. Besides that, in evaluating the model results serious concerns arose about the quality of the available statistical cif and fob values of imports resp. export of ITG, as was earlier mentioned in this report (see for example table 1). The cif and fob values play an important role in the model described here. Besides that, low quality cif and fob data not only means that the results of the model are be unreliable, it also means that the ITG data used in national accounts is of insufficient quality.

The presented model may in theory solve the problem of the conceptual differences in the valuation of ITS and ITG. However, other inconsistencies that arise within the SUT because of the cif and fob valuation of ITG (see the example given in scheme 2 above) are not solved by the model, not even if sufficient model data is available. Besides that, although the prescribed cif and fob valuation of ITG is unchanged by the model, the corrections on ITS data mean that the ITS data used in the SUT are clearly no longer valued according to the actually observed transaction price which would mean a deviation from the general valuation principle in 2010 ESA.

⁵ See: Review FIT-correctiemethode, Statistics Netherlands, Harm Jan Boonstra and Piet Verbiest, June 2016 (only available in Dutch).

The difficulties to obtain the data needed to operate the model and the fact that applying the model does not solve all the drawbacks of using cif and fob valued ITG data led to the exploration of a different approach: the use of actual transaction values for ITG.

IV Using invoice values of ITG in the Supply and Use tables.

Clearly, the use of invoice figures in the national accounts is not permitted following the current international guidelines. Nevertheless there is a growing awareness of the drawbacks of the use of cif and fob data and a plea for the use of actual transaction data⁶. A recent IMF consultation of the members of the Subgroup on Globalization of the Task Force on The SNA Research Agenda showed that, although invoice data are available in many of the responding countries and many respondents believe that using invoice data could improve asymmetries, little empirical research has been done until now.

Besides in this Grant report, Statistics Netherlands also argued several times that using invoice data may, at least theoretical, improve the quality and consistency of national accounts⁷. An actual attempt to calculate the ITG data based on invoice data was however not undertaken yet.

IV.1 Availability of data

The availability of trade data has been explored. Data has been selected for several years (2015-2016 and 2018-2019). The years 2015 and 2016 have been selected because 2015 was the most recent national accounts benchmark revision year in the Netherlands. Not only is the level of the national accounts figures best aligned with the level of the source statistics figures (in subsequent years levels may deviate because of continuity reasons), but also the corrections made on the source statistics - ITG is this case - are best documented in a benchmark revision year. Therefore the results for the year 2015 have been used in this report to analyze the effects of using invoice values instead of statistical values.

IV.2 Macro analysis

Table 4 presents the (unadjusted) selection of ITG data for 2015. In this table the invoice values as well as the statistical values are selected, by nature of transaction (NOTC, see annex 3). Table 5 shows the aggregated process table for 2015. In this table all adaptations made between the statistical ITG source values and the integrated SUT data for the year 2015 are presented⁸.

⁶ See for example the paper "Measuring merchandise and international freight transportation costs in the balance of payments" by Jens Walter (Deutsche Bundesbank). Paper for the Eurostat Balance of Payments Working Group, 29-30 November 2017.

⁷ See for example the paper "CIF/FOB recording of imports and exports in the national accounts and the balance of payments", Leo Hiemstra & Mark de Haan, Paper prepared for the AEG meeting in New York, 5-7 December 2017.

⁸ More details for the ITG process table can be found in the Gross National Income inventory 2015, Statistics Netherlands, section 5.14:

https://www.cbs.nl/-/media/_pdf/2019/07/2019a404-bni-inventory-2015-the-netherlands-web.pdf

Table 4

ITG source data, 2015, mln euro.

Nature of transaction codes (NOTC)	Imports		Exports	
	Invoice value	Statistical value	Invoice value	Statistical value
Intra-EU trade				
1 Straightforward sale or purchase	208278	194906	385397	296947
2 Returned goods	22	1524	40	1518
3 Free-of-charge goods	250	2369	120	2089
4 Goods sent for processing	102	846	47	343
5 Goods returned following processing	809	809	1917	1607
	209461	200454	387521	302505
Extra-EU trade				
1 Straightforward sale or purchase	184185	168049	141818	113912
2 Returned goods	0	56	0	68
3 Free-of-charge goods	0	300	0	514
4 Goods sent for processing	19	2029	0	530
5 Goods returned following processing	1226	1280	2303	1454
	185429	171714	144121	116478
Total trade				
1 Straightforward sale or purchase	392462	362955	527215	410860
2 Returned goods	22	1580	40	1586
3 Free-of-charge goods	250	2669	120	2603
4 Goods sent for processing	121	2875	47	873
5 Goods returned following processing	2034	2089	4220	3061
	394890	372168	531643	418982

Table 5

Process table international trade in goods, 2015, mln euro.

	ITG Source (statistical values)	Merchan-ting	Other global production	Goods sent for processing		Illegal activities	Returned goods	Goods procured in ports by carriers	Online trade	Correction for errors in ITG	SUT before balancing	Balancing corrections	SUT (balanced)
				Active	Passive								
	I	II	III	IV	V	VI	VII	VIII	VIX	X	XI	XII	XIII
Exports of goods	418946	15348	33425	-29487	-2444	4100	-3129	988	404	-17481	420670	-2297	418373
Imports of goods	372206	0	17036	-22892	-3907	919	-3129	3373	873	-9966	354513	4316	358829
Trade balance	46740	15348	16389	-6595	1463	3181	0	-2385	-468	-7515	66158	-6614	59544

A first inspection of table 4 shows that the statistical values selected from the ITG database are almost equal to the starting point of the process table (column I of table 5 below); for exports the difference is -36 mln and for imports 38 mln. This confirms that the correct data, corresponding to the data used for the 2015 national accounts have been selected and the ITG data have not been revised much since. The second observation is that the difference between the total invoice value and the total statistical value is quite large, especially for exports:

Differences between invoice and statistical value, NOTC 1, 2015

	Imports		Exports	
	Abs.	Proc.	Abs.	Proc.
Intra EU trade	13372	6,9%	88450	29,8%
Extra EU trade	16136	9,6%	27905	24,5%
Total trade	29508	8,1%	116355	28,3%

The difference between invoice values and statistical values should reflect the difference between the actual delivery agreements made between the trading partners and the standardized (cif and fob) agreements. It is unlikely that only the differences in the terms of delivery will lead to such large differences between the invoice and the statistical value.

IV.3 Correcting the data

The statistical values are used in the statistical process and published. This means that these values have been analyzed and corrected if necessary, both at the source statistics department and the national accounts department. The invoice values however, are not used or analyzed and may contain errors. It is impossible as part of this Grant research to analyse all individual records and correct them if necessary. Therefore, two different general adjustments methods are applied.

The *first method* (referred to as method 1 in the rest of this report) selected all individual records with NOTC 1 for which the Invoice value was more than 200 percent of lower than 50 percent of the statistical value were selected.

The same procedure was applied in the *second method* (method 2). The only difference is that a smaller range was applied: records with an invoice value of more than 110% or less than 90% of the statistical value were selected.

The invoice values of the selected records were removed and replaced by the statistical values. This means that the influence of these records on the experiment to replace the statistical values by the invoice values was eliminated.

The rationale behind these corrections is that large deviations of the invoice value from the statistical value suggests that the invoice value may be incorrect. Of course, the percentages used are an arbitrary choice.

For both methods holds that only the records with NOTC 1 (= straightforward sale or purchase) were corrected, because for the other records (with NOTC 2, 3, 4 or 5) there is little relation between the invoice and statistical value. These records will be analyzed separately.

Table 6
Imports and exports, NOTC1, Invoice values corrected for outliers, mln euro, 2015.

	Statistical value	Invoice value			Invoice / Stat. value (%)
		Original data	Corrected, method 1	Corrected, method 2	
Imports					
Total value, original data	362955	392462	392462	392462	
<i>Value of corrected records according to:</i>					
Method 1	3807	34072			
Method 2	14810	45569			
Correction (replacement of invoice by stat. value)	--	--	-30265	-30759	
Import values:					
Original data	362955	392462			108,1%
Corrected, method 1			362197		99,8%
Corrected, method 2				361703	99,7%
Exports					
Total value, original data	410860	527215	527215	527215	
<i>Value of corrected records according to:</i>					
Method 1	7109	111850			
Method 2	45986	161421			
Correction (replacement of invoice by stat. value)			-104741	-115435	
Export values:					
Original data	410860	527215			128,3%
Corrected, method 1			422474		102,8%
Corrected, method 2				411780	100,2%
Balance (E-I)					
Original data	47905	134752			281,3%
Corrected, method 1			60276		125,8%
Corrected, method 2				50076	104,5%

Using method 1, the statistical value of records that have been corrected represent 1% of the total statistical value for imports and 1,7% for exports; for method 2 this is 4,1% and 11,2% respectively.

In general, the use of invoice figures leads to an upward revision of the international trade values. The upward revision of the export values seems bigger than of the import values, resulting in a higher trade surplus. This is the case for the original data, as well as for the corrected data.

A higher trade surplus seems plausible. However, one would expect that this would be the result of a lower import value and a higher export value. The statistical value for imports is the cif-value, meaning that all costs up to the Dutch border are included. This means that almost all transport costs are included. It is likely that there are more contracts that cover less transport costs (and thus have a lower invoice value) than contracts that cover more transport costs. For exports a similar reasoning would suggest a higher invoice value. The corrected invoice value indeed show a lower value for imports and a higher value for exports, but for the original invoice values the import value is higher than the statistical value.

IV.4 Further adaptations of the data

A first necessary correction is for the differences in the statistical values derived of the ITG database that were actually used in the 2015 national accounts (the starting point of the process table; see column I of table 5) and the statistical values that were currently selected for this research project (see table 4). As shown in the previous paragraph, these differences are small on macro level (resp. - 36 mln and 38 mln. for exports and imports). In annex 4 (last column) the differences at product group level are presented.

These differences in the total values of imports and exports arise due to the fact that some changes in the ITG database have taken place after the national accounts figures for 2015 were compiled. Some of these changes can be corrected at a detailed product level and some can be ignored because the figures were not used in the compilation of the 2015 national accounts. It concerns the following figures (see also annex 4, column XIV):

Imports

Nr.	Product group	Mln euro	Detailed products (CPA)
1	Transport equipment	-15	30.11.10 Naval ships (3 mln); 30.30.3 Helicopters and aeroplanes (12 mln)
2	Furniture, other manufactured goods	4	58.19.14 Printed unused postage, cheque forms; banknotes, stock, share or bond certificates, etc.
3	Not specified	-26	--- Goods procured in ports by carriers

Exports

Nr.	Product group	Mln euro	Detailed products (CPA)
1	Computer, electronic and optical products	-5	26.30.2 Electrical apparatus for line telephony or line telegraphy; videophones
2	Furniture, other manufactured goods	45	58.19.14 Printed unused postage, cheque forms; banknotes, stock, share or bond certificates, etc.

The differences in statistical value between the original data used for the national accounts estimates and the data selected for this project in line 1 and 2 above (for imports as well as exports) will be corrected to get the same starting values. The statistical value as well as the invoice values will be corrected with the values shown here. Of course, the invoice value may be somewhat different from the statistical value. The difference in line 3 of imports (-26, goods procured in ports by carriers) is not corrected because this figure was not used in the national accounts, but replaced by another (model) estimate. We will use the same model estimate.

Not only some figures for the year 2015 in the ITG database were slightly changed after they were implemented in the national accounts, but also the linking of the CN-codes used in ITG to the commodity codes used in the national accounts was somewhat changed. For the exports this leads to some differences in the values of specific commodities in the national accounts:

Shift between commodities, 2015

		mln euro
28.1	Parts of) general-purpose machinery	48
30.11.10	Naval ships	-26
30.11.2	Ships and similar vessels for the transport of persons or goods	-23
30.11.3	Fishing vessels and other special vessels	-1
30.30.3	Helicopters and aeroplanes	-1
		-3

As can be seen there is also a small effect on the total value (-3 mln). This could be partly due probably due to rounding of figures. Also, some minor changes in the ITG database may have taken place. These shifts in statistical value of commodities have also been corrected (the statistical as well as the invoice values).

After the above corrections have been carried out the result is three sets of invoice values, corresponding with the statistical values used in the 2015 national accounts (table 7):

- 1- The original invoice values.
- 2- The invoice values, corrected for outliers >200% or <50% of the corresponding statistical value (method 2).
- 3- The invoice values, corrected for outliers >110% or <90% of the corresponding statistical value (method 1).

All three sets of invoice values presented in table 7 are corrected for the starting differences explained above.

Table 7
Statistical and invoice values form ITG, 2015.

CPA	Imports				Exports			
	Statistical values	Invoice values			Statistical values	Invoice values		
		Original data	Corrected			Original data	Corrected	
		Method 1	Method 2			Method 1	Method 2	
Agriculture, forestry and fishery products	19692	19465	19452	19600	25627	82538	26057	25574
Mining and quarrying	35503	35657	35458	35303	15929	16637	15972	15943
Food products, beverages and tobacco	32622	35626	32327	32169	52390	56139	53433	52055
Textiles, apparel and leather products	17787	17339	17134	17187	14558	14827	14147	14024
Products of wood, paper, paper products, printed matter, related articles	8080	8040	7857	7827	6582	7079	6483	6423
Coke oven products; refined petroleum products	27984	29191	26918	26583	39805	45446	40562	39921
Chemical products and basic pharmaceutical products	49083	57080	48058	47976	75808	82132	76614	74605
Rubber and plastics products, other non-metallic mineral products	13471	13493	13334	13353	12296	16099	12333	12160
Basic metals, fabricated metal products, except machinery and equipment	23169	23040	22531	22528	23571	25851	23817	23495
Computer, electronic and optical products	57122	65261	56176	56267	54170	78031	57608	53908
Electrical equipment, machinery and equipment n.e.c.	40169	42855	39598	39580	48891	53378	50292	49502
Transport equipment	24126	24310	22896	22829	21486	23589	21606	21276
Other industrial products	16410	16065	16038	16046	16783	18079	16829	16453
Furniture, other manufactured goods	5602	5731	5507	5539	7884	8276	8005	7765
Export of second hand fixed assets	1249	1632	1241	1242	1674	2073	1682	1666
Not specified	138	143	138	138	1491	1431	1425	1402
Totals	372206	394928	364664	364167	418946	531605	426865	416170

IV.5 Adjustments of ITG-data to national accounts concepts: the process table.

Table 7 shows three sets of invoice values from ITG. These values are the starting point of the process table in which the figures will be adjusted to comply with the concepts of the national accounts. Also some extra estimates have to be made for exhaustiveness, since ITG does not measure all exports and imports of goods needed in national accounts. In the process table the following adjustments are made:

- **Merchanting.**
The purchase of goods by a resident from a nonresident and the subsequent resale of the goods to another nonresident, without the goods entering the merchant's economy – is not recorded by ITG, since the goods do not physically cross the border. It is however part of imports and exports of goods in national accounts.
- **Global production arrangements**
In global manufacturing arrangements the material inputs can be purchased by the principal from suppliers in the processing country or third countries and shipped directly to the processor. After processing, the finished products are often sent directly to the customers who are usually located abroad. These goods do not cross the border of the country of the principal and are therefore not recorded in ITG. They should however be recorded in national accounts, since the economic ownership of the goods changes from a nonresident to a resident.
- **Goods sent for processing**
Goods sent abroad for processing and goods returning after processing are recorded in ITG because they cross the border of the principal. Since no change of ownership takes place, these flows are not part of international trade in national accounts and must be removed.
- **Illegal activities**
Imports and exports of goods connected to illegal activities that are not always recorded in ITG have to be added (exhaustiveness).
- **Returned goods**
Goods that are returned to the sender after they have been imported or exported have to be removed from ITG.
- **Goods procured in ports by carriers**
Goods procured in ports by carriers (fuel, provisions) are usually not part of ITG, but are part of imports and exports in national accounts.
- **Online trade**
Online trade (internet purchases and sales) is not fully covered in ITG and additional estimates have to be made (exhaustiveness).
- **Correction for errors**
In some cases additional corrections have been made because further analysis of the ITG data revealed errors (double counting, trade mistakenly categorized as re-exports instead of quasi-transit trade, etc.).

The adjustments described here have been made for the standard valuation of ITG data, i.e. the statistical values to arrive at import and export figures that are actually used in the Dutch national accounts for 2015 (see table 5). Changing the valuation of international trade in goods from

statistical values to invoice values will effect some, but not all of the described adjustments. This will be explored in the following section.

IV.6 Adjustments to be made: invoice values

In this section all the necessary adjustments described above to transform ITG data to input for national accounts will be reviewed and additional estimates for the invoice values of these adjustments will be made, if necessary.

Merchanting

The estimates for merchanting need no further adjustment when changing from statistical to invoice values. The merchanting figures are not based on ITG data (ITG does not record merchanting transactions), but are based on extra survey questions which are, for practical reasons, added to the ITS. The values asked are transaction (or invoice) values.

Global production arrangements

In general no extra adjustments are necessary. In the case of global production arrangements values were added to the ITG data for goods for which the economic ownership changes, but that do not cross the border (see explanation above) and are therefore not part of ITG. The values of these flows were estimated using the SBS; SBS is already based on transaction (or invoice) values.

However, for a very limited number of companies a complete new set of data was constructed for production, intermediate consumption, imports and exports of goods and services, using all available sources. Existing figures (statistical values) for these companies in ITG were removed and replaced by the new figures (in fact, the balance of both figures was added). Since the invoice values in ITG are different from the statistical values, the removal of the invoice values from ITG and replacement by the new figures results in somewhat different corrections for global production arrangements for these companies.

Goods sent for processing (inward processing)⁹

The adjustments for inward processing are partly based on the NOTC codes from ITG. For imports NOTC4 concerns goods that are imported for processing in the Netherlands; for exports NOTC 5 concerns goods that are exported from the Netherlands after processing. These goods do not change ownership and have to be removed from international trade for national accounts. The statistical and invoice values are quite different for these flows:

NOTC 4 and 5 values for inward processing.

		Statistical value	Invoice value
Imports	Goods entering NL before processing -NOTC4	2875	121
Exports	Goods leaving NL after processing -NOTC5	3061	4220

For imports the comparison of statistical and invoice values figures seem plausible: The statistical value represents the cif-value of the goods, the invoice value is much lower because the goods do not change ownership and are not bought by the processor.

For exports the figures seem more puzzling: the statistical value is the fob-value of the goods. The corresponding invoice value could reflect the processing fee charged by the processor. One would

⁹ The method for identifying and calculating inward and outward processing transaction in the Dutch national accounts is elaborated in an Eurostat grant report:

Economic ownership as leading principle in ESA 2010: consequences for national accounts, author Stephen Chong, February 2015.

expect this figure to be much lower than the statistical value. In this study the invoice values were removed instead of the statistical values.

The NOTC codes 4 and 5 are of low quality and cover only a modest part of the inward processing flows; most of the flows are probably registered under code 1. For the missing part of the processing flows specific corrections were made for companies involved in inward processing. For these companies import and export invoice values of flows connected with inward processing were deleted. Because of the corrections made earlier on the NOTC 1 invoice values (method 1 and 2; see above), the values for inward processing may vary for the three different sets of invoice values presented in table 7.

Goods sent for processing (outward processing)

The adjustments for outward processing are also partly based on the NOTC codes from ITG. For imports NOTC5 concerns goods that are imported after processing abroad; for exports NOTC4 concerns goods that are exported from the Netherlands to be processed abroad. Again, these goods do not change ownership and have to be removed from the ITG data for use in national accounts. The statistical and invoice values are quite different for these flows:

NOTC 4 and 5 values for outward processing.

		Statistical value	Invoice value
Imports	Goods entering NL after processing -NOTC5	2089	2034
Exports	Goods leaving NL before processing -NOTC4	873	47

The picture for outward processing is more or less the same as for inward processing: the comparison of the statistical and invoice values seem plausible for the goods before processing: The statistical value represents the fob-value of the goods, the invoice value is much lower because the goods do not change ownership and are not bought by the processor.

For imports after processing the figures seem more puzzling: the statistical value is the cif-value of the goods; the corresponding invoice value should not include the value of the goods (no change of ownership); this value could reflect the processing fee charged by the processor. One would expect this figure to be much lower than the statistical value. In this study the invoice values were removed instead of the statistical values.

Again, also for outward processing the NOTC codes 4 and 5 are of low quality and cover only a modest part of the outward processing flows; again, most of the flows are probably registered under code 1. For the missing part of the processing flows corrections were made for companies involved in outward processing. These correction are not made for individual companies as is the case for inward processing, but for industries, using information from SBS. SBS values are already transaction values, so for this part the original corrections made in national accounts were used since no further corrections were needed.

Illegal activities

Imports and exports caused by illegal activities not measured in ITG were estimated using different sources (see: Gross National Income inventory 2015, Statistics Netherlands, section 7.2.3.2). The transaction values of missing imports and exports were estimated, meaning that no extra corrections are needed here.

Returned goods

Returned goods are part of ITG under NOTC2 and should be removed for national accounts purposes. A problem is that only the return shipment is administrated under NOTC2; the original

shipment is probably administrated under NOTC1 and cannot separately be identified from other shipments. In the standard national accounts (i.e. using statistical values) the import and export values with NOTC2 are added and the sum is subtracted from both the imports and exports of goods. This is a reasonable estimate of the missing values; only a small error is made (the cif-fob differences; see the left side of the scheme below).

This procedure cannot be used to correct the invoice values of returned goods. The invoice value of the returned goods is very low and represents probably only some administrative costs or transport costs, but not the value of the goods. The unknown value of the original shipment is probably much higher, because the value of the goods is included. This means that the values of the return shipments cannot be used for estimating the missing values of the original shipments. The following procedure is followed (see the right side of the scheme below).

As approximate value for the unknown exports value X (see below) the statistical value of the corresponding return flow (1b) is used (1580 mln). As approximate value for the unknown imports Y the statistical value of the corresponding return flow (2b) is used (1586 mln). Of course, the error made in this case is the difference between the statistical and the invoice values of the original shipments.

The estimated invoice values corrections are:

Exports (1a+2b): $1580 + 40 = 1620$ mln.

Imports (1b+2a): $22 + 1586 = 1608$ mln.

Statistical values		Invoice values	
NL	RoW	NL	RoW
(1a) Exports (NOTC 1)  Unknown FOB value X		(1a) Exports (NOTC 1)  Unknown invoice value X	
(1b)  Imports (NOTC 2) CIF value 1580 mln		(1b)  Imports (NOTC 2) Invoice value 22 mln	
(2a)  Imports (NOTC 1) Unknown CIF value Y		(2a)  Imports (NOTC 1) Unknown invoice value Y	
(2b) Exports (NOTC 2)  FOB value 1586 mln		(2b) Exports (NOTC 1)  Invoice value 40 mln	
1a Estimate unknown value X = 1580 mln Error: difference between FOB and CIF value		1a Estimate unknown value X = 1580 mln Error: difference between Invoice and Statistical value	
2a Estimate unknown value Y = 1586 mln Error: difference between CIF and FOB value		2a Estimate unknown value Y = 1586 mln Error: difference between Invoice and Statistical value	

Goods procured in ports by carriers

These goods are only partially recorded in ITG (only part of the exports), but do belong to international trade according to ESA 2010. Besides fuel it concerns catering for airplane passengers and victualing supplies for ships, etc. The partial registration in ITG is removed and replaced by new estimates based on several sources. Since transaction values were estimated, no additional estimates are needed here. However, because here the invoice values were removed from ITG

instead of the statistical values in the original national accounts estimates, the resulting corrections differ slightly from those in the original process table.

Online trade

Part of online trade (internet sales and purchases) is missing in ITG. The missing transactions are estimated with various sources. Again, the transactions values are estimated so no further corrections are needed here.

Correction for errors

During the compilation process of the national accounts some errors were detected for specific companies. A number of statistical values were corrected or sometimes deleted (details can be found in the GNI-inventory, section 5.14.4). In this Grant the same corrections have been made using the corresponding invoice values.

IV.7 Results

In this section the results will be presented. Before showing the results it is useful to repeat briefly the corrections and adjustments made until now.

First, for all individual records of ITG the statistical and invoice values were selected for 2015 (the most recent national accounts benchmark revision year), by commodity type, flow (import / export) and NOTC code.

Because the invoice values have not been analyzed before in the statistical process there may be errors in these figures. Three sets of invoice values were compiled:

- A set with uncorrected invoice values
- A first set of data with corrected NOTC1 values. In this set all record with NOTC1 were selected for which holds that: invoice value > 200% of the statistical value or the invoice value < 50% of the statistical value (method 1). For these records the invoice value was replaced by the statistical value.
- A second set of data with corrected NOTC1 values. In this set all record with NOTC1 were selected for which holds that: invoice value > 110% of the statistical value or the invoice value < 90% of the statistical value (method 2). For these records the invoice value was replaced by the statistical value.

For all three sets no specific adjustments were made for NOTC 2 to 5.

Some minor changes in the ITG database have taken place since the database was used for the 2015 national accounts compilation. As a result, the total statistical value of imports and exports for 2015 selected from the current ITG database is 38 mln lower (imports) and 36 mln higher (exports) than at the time of the national accounts compilation. The commodities involved were corrected to eliminate this difference (see section IV.4 and annex 4).

Also, there since the national accounts for 2015 were compiled some small changes in the linking of the CN-commodity codes used in ITG and the commodity classification used in national accounts have taken place. Although these changes do not affect the totals for imports and exports, they do create unwanted differences at commodity level in the disaggregated process tables. Therefore these changes were reversed in this study (see section IV.4).

After these corrections and adjustments the starting columns for the process tables were available (see table 7). Next step was the transformation of these data to national accounts concepts

according to ESA 2010. These steps are described in the previous section. The resulting process tables are presented here in an aggregated form with 16 commodity groups (annex 5); the detailed process table has about 390 commodity groups.

The differences between the statistical values and the(three sets of) invoice values are shown in a very condensed form in table 8.

Table 8
Comparison of aggregated process table for statistical and invoice values, 2015

	ITG source statistic	Merchan- ting +	Global produc- tion +	Processing		Illegal activi- ties +	Return ship- ments -	Bunke- ring +	Online trade +	Unspeci- fied goods +	Correc- tion ITG errors +	NA level before balancing =
				In- ward -	Out- ward -							
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
A - Values:												
EXPORTS												
Statistical values	418946	15348	33425	29487	2444	4100	3129	988	404	0	-17481	420670
Invoice values, original data	475124 (*)	15348	18687	30940	1618	4100	1620	1037	404	0	-18814	461708
Invoice values, correction method 1	426865	15348	30391	30940	1618	4100	1620	1047	404	0	-18811	425165
Invoice values, correction method 2	416170	15348	33426	30665	1618	4100	1620	1067	404	0	-17202	419410
IMPORTS												
Statistical values	372206	0	17036	22892	3907	919	3129	3373	873	0	-9966	354513
Invoice values, original data	394928	0	17419	20568	3852	919	1608	3373	873	0	-9230	382254
Invoice values, correction method 1	364664	0	17470	20568	3852	919	1608	3373	873	0	-9231	352039
Invoice values, correction method 2	364167	0	17040	19998	3852	919	1608	3373	873	0	-8939	351973
EXPORTS -/- IMPORTS												
Statistical values	46740	15348	16389	6595	-1463	3181	0	-2385	-468	0	-7515	66158
Invoice values, original data	80196	15348	1268	10372	-2234	3181	13	-2335	-468	0	-9584	79455
Invoice values, correction method 1	62201	15348	12921	10372	-2234	3181	13	-2326	-468	0	-9580	73126
Invoice values, correction method 2	52004	15348	16386	10667	-2234	3181	13	-2306	-468	0	-8262	67437
B - Differences with Statistical values:												
EXPORTS												
Invoice values, original data	56178	0	-14738	1453	-826	0	-1509	49	0	0	-1333	41038
Invoice values, correction method 1	7919	0	-3034	1453	-826	0	-1509	58	0	0	-1330	4494
Invoice values, correction method 2	-2776	0	1	1178	-826	0	-1509	79	0	0	279	-1260
IMPORTS												
Invoice values, original data	22722	0	383	-2324	-55	0	-1521	0	0	0	736	27741
Invoice values, correction method 1	-7542	0	434	-2324	-55	0	-1521	0	0	0	735	-2474
Invoice values, correction method 2	-8039	0	4	-2894	-55	0	-1521	0	0	0	1026	-2539
EXPORTS -/- IMPORTS												
Invoice values, original data	33456	0	-15121	3777	-771	0	13	49	0	0	-2069	13297
Invoice values, correction method 1	15461	0	-3468	3777	-771	0	13	59	0	0	-2065	6968
Invoice values, correction method 2	5264	0	-3	4072	-771	0	13	79	0	0	-747	1279

(*) For agriculture, forestry and fishery products the original uncorrected ITG invoice value for exports is replaced by the figure according to method 1. The original figure for agriculture was very high, caused by only a few records. This would make the analysis difficult (see annex 5B)

This table shows the absolute values and the differences with the statistical values. Some observations:

- When using the invoice values instead of statistical values one would expect an upward revision of the exports and a downward revision of imports, resulting in a higher trade balance. Although the trade balance is indeed higher in all three data sets, the direction of the corrections on imports and exports is not in all cases what would be expected. Perhaps the dataset with only corrections for very large errors (method 1) shows the effects of the

use of invoice values best. This database clearly shows the expected effects, as well for the original ITG data (column I) and the data adapted for national accounts (column XII).

- The use of invoice values has only limited impact on most of the corrections and adjustments made in column II to IX. For some of these adjustments the statistical cif- and fob valuation has no meaning because the goods do not cross the border of the Netherlands (for example in the case of merchanting, column II, and the estimates made for global production arrangements, column III). Although the values estimated made for global production arrangements are the same, the corrections in column III differ, because in this column the additional value added to the original data in ITG is shown. The statistical value and the invoice value in ITG differ, hence the correction differs to end up with the same resulting figure. In some other cases the estimates made in the original national accounts estimates were in fact invoice values, for example for illegal activities, bunkering and online trade (column VI, VIII and IX).

The use of invoice values does have an upward effect on the trade balance. Of course, it is also interesting to explore the effects on different commodity groups. This is shown in table 9.

Table 9
Invoice values minus Statistical values by commodity group, 2015

Commodity group	Imports			Exports			Balance E-I		
	Original data	Corrected		Original data	Corrected		Original data	Corrected	
		Meth. 1	Meth. 2		Meth. 1	Meth. 2		Meth. 1	Meth. 2
Agriculture, forestry and fishery products	-203	-216	-19	503 (*)	503	20	706	719	40
Mining and quarrying	183	-16	-172	712	47	17	529	63	189
Food products, beverages and tobacco	2866	-433	-363	3903	1197	-182	1037	1629	181
Textiles, apparel and leather products	-358	-563	-510	488	-192	-315	846	370	195
Products of wood, Paper and paper products, printed matter and related art.	4	-179	-209	560	-37	-97	556	143	113
Coke oven products; refined petroleum products	3519	1241	942	4530	-354	113	1011	-1595	-829
Chemical products and basic pharmaceutical products	7895	-1128	-661	6600	1082	-216	-1294	2210	445
Rubber and plastics products, other non-metallic mineral products	36	-123	-104	3883	116	-55	3847	239	49
Basic metals, fabricated metal products, except machinery and equipment	373	-136	-139	2339	304	12	1966	440	152
Computer, electronic and optical products	9024	-10	-344	9458	739	-125	434	750	219
Electrical equipment, machinery and equipment n.e.c.	2962	-295	-319	3529	444	-188	567	739	131
Transport equipment	1489	-317	-381	2248	236	-20	759	552	362
Other industrial products	-206	-233	-225	1386	136	-239	1592	369	-14
Other manufactured goods	158	-66	-34	514	243	22	356	309	55
Export of second hand fixed assets	0	0	0	383	23	-8	383	23	-8
Not specified (incl. merchanting)	0	0	0	2	7	0	2	7	0
Total	27741	-2474	-2539	41038	4494	-1260	13297	6968	1279

(*) For agriculture, forestry and fishery products the original uncorrected invoice value is replaced by the figure according to method 1.

Again, for imports and exports separately the picture is not unambiguous, but the trade balance shows a clearer picture; for most commodity groups there is an upwards effect. Looking at the corrected figures (method 1), only for one commodity group (coke oven products, refined petroleum products) there is a downwards effect of the use of invoice values; for all other commodity groups the effect is upwards.

It is difficult to establish what would have been the effect on the balancing process and the resulting SUT if the invoice values presented here were used in the compilation process. Repeating the whole balancing procedure with invoice values is the only way to really find out the effects. This is, of course not possible within the scope of this grant. Therefore, it may provide some insight to look at

the revisions of import- and export figures due to the shift to invoice values and to compare these revisions with the balancing adjustments made during the national accounts compilation process.

In table 10 the effects of the use of invoice values (correction method 1) on the trade balance of commodities is compared with the balancing corrections made on these trade balances during the 2015 national accounts compilation. In 39% of the number of commodities with 45% of the (absolute) value of the balancing corrections made, the revision would improve or at least not worsen the balancing problem. At the same time in 61% of the cases with 55% of the value of the balancing corrections made, a balancing problem would emerge or existing balancing problem would worsen.

Table 10

Balancing correction on the trade balance (E-I), vs revisions of the trade balance

Direction of		Number of commodities	Balancing corrections made in NA	Revisions caused by using invoice values	Percentage of:	
Balancing correction	Revision				Number of comm.	Balancing corrections (*)
Down	Down	27	-2451	-2483	31%	41%
Up	Up	91	9832	2910		
Zero	Zero	11	0	0	8%	4%
Down	Zero	13	-1102	0		
Up	Zero	7	226	0		
Zero	Down	4	0	-59	8%	0%
Zero	Up	28	0	306		
Down	Up	189	-14958	7443	53%	55%
Up	Down	14	1380	-1156		
Totals		384	-7073	6961	100%	100%

(*) percentage of absolute values.

Table 11 shows the effects of the use of invoice values on CPA commodity groups. The 384 commodities are grouped in 14 CPA commodity groups. As table 10 showed, overall in about 40 percent of the commodities the revisions improve or do not worsen the balancing problem (green columns) and in about 60 percent a balancing problem arises or the existing balancing problem worsens if invoice values are used. A 2-digit CPA level shows more or less the same picture.

Table 11

Balancing corrections on trade balance (E-I) vs revisions of the trade balance by CPA group

CPA	CPA Name	Balancing correction: Revision:		Down	Up	Zero	Down	Up	Zero	Down	Up	Sum			Percentage	
		I	II	III	IV	V	VI	VII	VIII	IX	I-V	VI-IX	I-IX	I-V	VI-IX	
01-03	Agriculture, forestry and fishery products	2	6	2	3	1	0	5	25	1	14	31	45	31%	69%	
05-09	Mining and quarrying	1	0	0	2	0	0	0	11	0	3	11	14	21%	79%	
10-12	Food products, beverages and tobacco	2	21	1	0	1	1	7	30	2	25	40	65	38%	62%	
13-15	Textiles, apparel and leather products	0	6	0	0	0	1	1	5	0	6	7	13	46%	54%	
16-18	Products of wood, Paper and paper products, printed matter, etc	5	2	0	2	0	0	1	10	0	9	11	20	45%	55%	
19	Coke oven products; refined petroleum products	5	2	0	0	0	0	1	3	1	7	5	12	58%	42%	
20-21	Chemical products, basic pharmaceutical products	2	17	1	0	0	0	2	24	4	20	30	50	40%	60%	
22-23	Rubber and plastics products, other non-metallic mineral products	1	8	0	0	1	0	1	10	0	10	11	21	48%	52%	
24-25	Basic metals, fabricated metal products, except machinery and equipment	1	11	0	0	0	0	0	16	1	12	17	29	41%	59%	
26	Computer, electronic and optical products	2	4	0	0	0	0	1	6	2	6	9	15	40%	60%	
27-28	Electrical equipment, machinery and equipment n.e.c.	2	8	0	0	0	0	1	14	0	10	15	25	40%	60%	
29-30	Transport equipment	2	1	0	0	2	0	0	12	1	5	13	18	28%	72%	
31-32	Other industrial products	0	0	0	1	1	0	1	12	0	2	13	15	13%	87%	
35, 38, 58-59, 71, 74, 90, 91	Furniture, other manufactured goods	2	5	2	4	1	1	3	11	2	14	17	31	45%	55%	
---	Export of second hand fixed assets, goods not specified	0	0	5	1	0	1	4	0	0	6	5	11	55%	45%	
		27	91	11	13	7	4	28	189	14	149	235	384	39%	61%	

Clearly, from this analysis it cannot be concluded that the use of invoice value will diminish the balancing problems in the supply and use tables.

IV.8 Results for individual companies.

Lastly, some individual companies involved in industrial processing were researched. These are inward processors active in different NACE groups. These domestic processors process inputs for a foreign principal. They are not the economic owners of the inputs and finished products, but provide an industrial service to the principal. Usually the inputs are supplied by the principal and the finished products after processing return to the principal.

Table 12 shows the reported figures of these companies in ITS and SBS (both delivered/exported industrial services) and the imports and exports of goods as reported in ITG (both the statistical and the invoice values).

Table 12
Data for inward processors from ITS, SBS and ITG, 2015

NACE -Description	Export of industrial services		ITG								
			Statistical values			Invoice values			Statistical -/- Invoice values		
	ITG	SBS	Import	Export	Balance	Import	Export	Balance	Import	Export	Balance
Manufacture of other organic basis chemicals	162	157	827	849	22	854	849	-5	-27	0	27
Led, zinc en tin production	0	122	365	235	-130	365	236	-129	0	-1	-1
Forging, pressing, stamping and roll-forming of metal, powder metallurgy	27	28	1169	1141	-28	1166	1151	-15	4	-9	-13
Manufacture of refined petroleum products	305	295	4562	2397	-2165	4562	2398	-2164	0	-1	-1
Manufacture of cocoa, chocolate and sugar confectionery/ oils and fats	65	65	2040	1779	-261	1979	1773	-206	61	6	-54
	558	667	8963	6402	-2561	8926	6407	-2519	38	-5	-42

As can be seen in all cases but one, the reported value of industrial services in SBS and ITS are comparable. In an ideal situation were all inputs would be imported and all finished (processed)

goods would be exported one would expect that this value would also show up in the difference between the trade balance of the statistical values and the invoice values. This is, however, not the case. Of course, the situation will not always be the ideal one, but a link between the export value of industrial services and the difference in trade balance seems plausible. To find out why this link is not present in these cases, a detailed investigation of these companies and their reported data is necessary.

V Summary and conclusion

This report consists of three main parts. The first part is a short introduction and an exploration of the consequences of the current guidelines for the valuation of international trade in goods (section I and II). The second part is the description of the model developed by Statistics Netherlands to align the ITS data used in national accounts with the required cif- and fob-valuation of imports and exports of goods (section III). The last part describes the experiment to use invoice values for international trade in goods instead of statistical values (section IV).

Section II showed that the current cif- and fob-registration of ITG in national accounts has serious drawbacks. The available data is probably of poor quality and is not aligned with the ITS-data. This leads to double counting or omissions in ITS figures. Because of the inconstancy with other transactions in the SUT that are valued at transaction prices (production, intermediate consumption, final expenditures) balancing problems emerge.

Main conclusion from section III was that the model, though conceptually sound, needs too many assumptions and unknown variables. Better substantiation of the assumptions made and collecting more information on missing variables would, if possible at all, require substantial extra research capacity. It is likely that some improvement is possible in the short term, but many necessary assumptions will remain due to lack of data. Besides that, there are serious concerns about the quality of the available statistical cif- and fob-values of imports resp. export of ITG, as was concluded in section II.1. The cif- and fob-values play an important role in the model. A more thorough analysis and possible correction of the individual records used to establish the transport costs in the model (i.e. the records with both a cif- and a fob-value) may improve the quality of the model results.

In section IV the invoice values from the ITG data were selected to compile the input for the SUT for 2015. The main finding on the process are:

- Invoice values are available in the ITG data and could be used in the national accounts compilation.
- Because invoice values are currently not used in the statistical process they are not analyzed and corrected by the ITG source department. There are large errors in the data on invoice values that hamper the use in the statistical process.
- To work with the data it was necessary to correct the data. In this study errors were corrected in a rather crude way.
- To use the data on invoice values in the national accounts on a regular basis it is imperative that these data are analyzed and corrected in the same way as is currently done with data on statistical values. Since the data on invoice values (for the extra EU trade) are obtained from the customs authorities, the expertise of the customs authorities could be called upon.
- A switch from statistical values to invoice values in national accounts would require the same switch in the ITG Statistics. Using statistical values for ITG Statistics and invoice values for national accounts would require an unrealistic amount capacity from the source department.

Some conclusions on the results are:

- Switching to invoice data leads to a higher trade balance as could be expected (section IV.7). This is the case for all three datasets. However, one would expect that the higher trade balance would be the result of a lower import value and a higher export value. This is not the case for all of the three datasets. It is true for the dataset in which only corrections are made for very large outliers (correction method 1). Using this dataset the trade balance (before balancing the SUT) rises by 10,5%.
- At the level of commodity groups the same conclusions can be drawn.
- Generally, using invoice value does not solve or diminish the balancing differences. In about 40% of the number of commodities with 45% of the (absolute) value of the balancing corrections the use of invoice values would improve (or not worsen) the balancing difference; in about 60% / 55% of the number of commodities / value of balancing corrections the use of invoice values would worsen the balancing difference.
- The data from different statistical sources (ITS, ITG and SBS) were compared for some individual inward processing companies (section IV.8). In an ideal situation were all inputs are imported and all processed good exported one would expect the difference in trade balance between the statistical values and the invoice values to reflect the industrial services reported in ITS and SBS. This was not the case. Whether this is caused by a deviation from the ideal situation or errors in the invoice data could not be established within the scope of this study.

The use of invoice values is certainly not a panacea for solving inconsistencies in the national account or for detecting or solving globalization issues. Clearly the quality of data on invoice values needs to be improved before definite conclusions can be drawn. Given the vast amount of data in ITG, this is not an easy task. Analyzing and correcting all individual records is not a very realistic option at this moment. Advice and expertise of the customs authorities could be asked and used to improve the quality of data on invoice values in a generic way. Also case studies of individual companies (comparing data from all available sources) could be performed to investigate how the quality of invoice values can be improved.

Annex 1: Overview of incoterms

Allocation of costs to buyer / seller according to Incoterms 2010

Incoterm		Export customs declaration	Carriage to port of export	Unloading of truck in port of export	Loading on vessel/airplane in port of export	Carriage (Sea/Air) to port of import	Insurance	Unloading in port of import	Loading on truck in port of import	Carriage to place of destination	Import customs clearance	Import duties and taxes
EXW	Ex works	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer
FCA	Free Carrier	Buyer	Seller	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer
FAS	Free Alongside Ship	Seller	Seller	Seller	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer
FOB	Free on Board	Seller	Seller	Seller	Seller	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer	Buyer
CPT	Carriage Paid To	Seller	Seller	Seller	Seller	Seller	Buyer	Seller	Buyer/Seller	Seller	Buyer	Buyer
CFR	Cost And Freight	Seller	Seller	Seller	Seller	Seller	Buyer	Buyer/Seller	Buyer	Buyer	Buyer	Buyer
CIF	Cost Insurance and Freight	Seller	Seller	Seller	Seller	Seller	Seller	Buyer/Seller	Buyer	Buyer	Buyer	Buyer
CIP	Carriage and Insurance Paid To	Seller	Seller	Seller	Seller	Seller	Seller	Seller	Buyer/Seller	Seller	Buyer	Buyer
DAT	Delivered at Terminal	Seller	Seller	Seller	Seller	Seller	Seller/Buyer	Seller	Buyer	Buyer	Buyer	Buyer
DAP	Delivered at place	Seller	Seller	Seller	Seller	Seller	Seller/Buyer	Seller	Seller	Seller	Buyer	Buyer
DDP	Delivered Duty Paid	Seller	Seller	Seller	Seller	Seller	Seller/Buyer	Seller	Seller	Seller	Seller	Seller

Annex 2: ITS correction model.

2A - Transport services in case of import of goods (cif); transactions of importing country A

Area:			Contractor					
			Resident of country A			Non-resident of country A		
			Exporting country B	In between area C	Importing country A	Exporting country B	In between area C	Importing country A
Carrier	Resident of country A	I - Transport services should be part of:						
		Imports services	No	No	No	No	No	No
		Exports services	Yes	Yes	No	Yes	Yes	No
		II - Transport services are part of ITS:						
		Imports	No	No	No	No	No	No
		Exports	No	No	No	Yes	Yes	Yes
	non-resident of country A	III - Correction needed on ITS:						
		Imports	No	No	No	No	No	No
		Exports	Yes	Yes	No	No	No	Yes
		I - Transport services should be part of:						
		Imports services	No	No	Yes	No	No	Yes
		Exports services	No	No	No	No	No	No
	non-resident of country A	II - Transport services are part of ITS:						
		Imports	Yes	Yes	Yes	No	No	No
		Exports	No	No	No	No	No	No
		III - Correction needed on ITS:						
		Imports	Yes	Yes	No	No	No	Yes
		Exports	No	No	No	No	No	No

 = services should be added to the ITS results

 = services should be deleted from the ITS results

Explanation of table 2A:

Imports of goods are valued cif, meaning that the transport services in country B and the in-between area C are part of import value of goods and paid for by the nonresident exporter.

Line I:

Line I shows the transport services that *should be* reported in ITS.

If the carrier is resident (upper two quadrants) the transport services in country B and area C that are part of the cif-value of the imports of goods and paid for by the nonresident exporter and should be exported by the resident carrier. Transport services in country A are paid for by the resident importer and should therefore not be part of import or export of services.

If the carrier is nonresident (lower two quadrants) all transport services are imported. The transport services in country B and area C are already part of the cif-import value of the goods. The transport costs in country A should be part of import of services.

Line II:

Line II shows the transport services that *will be* reported in the ITS survey. The upper-left and lower right quadrant concern transactions between residents or between nonresidents. In both cases nothing will be reported in ITS. The lower left quadrant concerns services delivered by a nonresident carrier to a resident client (=imports). The upper right quadrant concerns services delivered by a resident carrier to a nonresident client (= exports).

Line III:

This is the difference between line I and line II and shows the items that have to be added (marked green) or deleted (marked red).

2B – Transport services in case of export of goods (fob); transactions of exporting country A

Area:		Contractor					
		Resident of country A			Non-resident of country A		
		Exporting country A	In between area C	Importing country B	Exporting country A	In between area C	Importing country B
Carrier	Resident of country A	I - Transport services should be part of:					
		Imports services					
		No	No	No	No	No	No
		Exports services					
		No	Yes	Yes	No	Yes	Yes
		II - Transport services are part of ITS:					
		Imports					
		No	No	No	No	No	No
		Exports					
		No	No	No	Yes	Yes	Yes
		III - Correction needed on ITS:					
		Imports					
		No	No	No	No	No	No
		Exports					
		No	Yes	Yes	Yes	No	No
non-resident of country A	Resident of country A	I - Transport services should be part of:					
		Imports services					
		Yes	No	No	Yes	No	No
		Exports services					
		No	No	No	No	No	No
		II - Transport services are part of ITS:					
		Imports					
		Yes	Yes	Yes	No	No	No
		Exports					
		No	No	No	No	No	No
		III - Correction needed on ITS:					
		Imports					
		No	Yes	Yes	Yes	No	No
		Exports					
		No	No	No	No	No	No

 = services should be added to the ITS results

 = services should be deleted from the ITS results

Explanation of table 2B:

Exports of goods are valued fob, meaning that the transport services in country A are part of export of goods and paid for by the resident exporter.

Line I:

Line I shows the transport services that *should be* reported in ITS.

If the carrier is resident (upper two quadrants) all transport services are exported (a service delivery from a resident transporter to a nonresident importer). The transport services in country A are

already part of the fob-export value of the goods. The transport costs in in-between area C and country B should be part of export of services.

If the carrier is nonresident (lower two quadrants) the transport services in country A that are part of the fob-value of the exports of goods should be imported by the resident exporter. Transport services in area C and country B are paid for by the nonresident importer and should therefore not be part of import or export of services.

Line II:

Line II shows the transport services that *will be* reported in the ITS survey. The upper-left and lower right quadrant concern transactions between residents or between nonresidents. In both cases nothing will be reported in ITS. The lower left quadrant concerns services delivered by a nonresident carrier to a resident client (=imports). The upper right quadrant concerns services delivered by a resident carrier to a nonresident client (= exports).

Line III:

This is the difference between line I and line II and shows the items that have to be added (marked green) or deleted (marked red).

2C: Distances and transport costs used in the correction model

Country/Region	Import value of goods, 2015 (cif, mln euro)	Average transport distance (KM)			Transport price /100 km and mln euro
		Partner country B	In-between area C	Country A (=NL)	
France	16.489	378	155	120	0,014
Germany	65.915	330	0	120	0,006
Italy	8.994	430	629	120	0,006
United Kingdom	21.263	370	250	120	0,009
Ireland	5.496	130	750	120	0,005
Denmark	3.758	170	406	120	0,008
Greece	457	360	1800	120	0,003
Portugal	1.882	258	1400	120	0,003
Spain	7.111	426	1030	120	0,004
Belgium	38.127	80	0	120	0,014
Luxembourg	793	50	175	120	0,009
Norway	11.859	230	950	120	0,004
Sweden	6.339	450	1130	120	0,004
Finland	3.670	560	1507	120	0,003
Austria	2.189	200	600	120	0,006
Switzerland	2.300	95	460	120	0,009
Malta	45	10	1810	120	0,003
Turkey	2.529	860	1890	120	0,002
Estonia	283	140	1450	120	0,003
Latvia	376	190	1330	120	0,003
Lithuania	1.016	320	1130	120	0,004
Poland	7.507	320	560	120	0,006
Czech Republic	5.165	225	440	120	0,007
Slovakia	1.204	165	875	120	0,004
Hungary	2.060	220	870	120	0,004
Romania	1.467	340	1220	120	0,004
Bulgaria	561	240	1500	120	0,003
Russia	13.982	500	1625	120	0,003
Slovenia	392	110	775	120	0,005
Algeria	1.174	1000	1625	120	0,002
Nigeria	3.359	530	4200	120	0,001
South Africa	1.212	450	9700	120	0,000
USA	32.575	2100	5900	120	0,001
Canada	1.598	3000	5400	120	0,001
Brazil	4.352	2100	9300	120	0,001
Argentina	1.140	950	11300	120	0,001
Cyprus	63	50	2820	120	0,003
Iran	31	1100	3375	120	0,001
Israel	1.804	90	3190	120	0,001
Saudi Arabia	1.357	1150	3500	120	0,001
Kuwait	1.886	80	4150	120	0,001
India	3.002	1000	5900	120	0,001
Thailand	2.311	380	9225	120	0,000
Indonesia	2.503	850	10725	120	0,000
Malaysia	6.707	150	10000	120	0,000
Singapore	3.748	20	10400	120	0,000
China	34.662	1950	9180	120	0,000
South Korea	2.679	180	8550	120	0,001
Japan	8.319	600	9300	120	0,000
Taiwan	2.610	180	9375	120	0,000
Hong Kong	3.913	20	9180	120	0,000
Australia	990	1750	16480	120	0,000
Other parts of Northern Africa	1.479	600	2621	120	0,001
Other parts of Western Africa	1.892	410	4200	120	0,001
Central, East and other Southern Africa	2.549	492	6415	120	0,001
Other parts of Northern America	1	1000	2850	120	0,002
Other parts of Middle and South America	6.479	570	1000	120	0,009
Arab Gulf States	3.203	246	5050	120	0,001
Other parts of Asia	6.934	378	7971	120	0,001
Oceania and other parts of Australia	440	271	15685	120	0,000
Other intra EU	405	289	290	120	0,008
Other extra EU	1.679	289	290	120	0,008
Other parts of Western Europe	1.567	395	1298	120	0,004
Other Near and Middle East	126	155	2707	120	0,002
Other parts of Eastern Europe	1.213	395	1298	120	0,004

Annex 3: List of abbreviations

BoP	Balance of payment
BPM6	Balance of Payments and International Investment Position Manual – Sixth edition
ESA2010	European System of Accounts 2010
ITG	International trade in Goods
ITS	International trade in Services
RoW	Rest of the world account
SBS	Structural Business Survey
SUT	Supply and Use tables
NOTC	Nature of transaction code
	NOTC 1 – Straightforward sale or purchase
	NOTC 2 – Returned shipments
	NOTC 3 – Free of charge goods
	NOTC 4 – Goods sent for processing
	NOTC 5 – Goods returned following processing

Terms of delivery (incoterms):

CFR	Cost And Freight
CIF	Cost Insurance and Freight
CIP	Carriage and Insurance Paid To
CPT	Carriage Paid To
DAF	Delivered at Land Frontier
DAP	Delivered at place
DAT	Delivered at Terminal
DDP	Delivered Duty Paid
DDU	Delivered Duty Unpaid
DEQ	Delivered at Quay
DES	Delivered Ex Ship
EXW	Ex works
FAS	Free Alongside Ship
FCA	Free Carrier
FOB	Free on Board

Annex 4 Statistical and invoice values by NOTC and starting difference, 2015

Imports, 2015, mln euro

CPA	NOTC												Column I of process table (see table 5)	Difference (XII - XIII)
	1		2		3		4		5		1-5			
	Invoice	Statistical	Invoice	Statistical	Invoice	Statistical	Invoice	Statistical	Invoice	Statistical	Invoice	Statistical		
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV
Agriculture, forestry and fishery products	19447	19637	0	9	5	10	5	28	7	7	19465	19691	19692	-1
Mining and quarrying	35656	35267	0	0	1	231	0	4	1	1	35657	35503	35503	0
Food products, beverages and tobacco	35451	32113	0	48	51	317	22	41	102	103	35626	32622	32622	0
Textiles, apparel and leather products	17225	17311	4	92	21	291	4	4	86	90	17339	17787	17787	0
Products of wood, Paper and paper products, printed matter and related articles	7874	7670	0	2	4	200	11	58	150	150	8040	8080	8080	0
Coke oven products; refined petroleum products	28663	26010	0	43	0	117	0	1286	527	527	29191	27984	27984	0
Chemical products and basic pharmaceutical products	56896	47842	5	106	53	755	5	259	120	121	57079	49083	49083	0
Rubber and plastics products, other non-metallic mineral products	13475	13403	0	12	9	45	5	8	3	3	13493	13471	13471	0
Basic metals, fabricated metal products, except machinery and equipment	22567	22101	0	16	18	70	36	558	418	423	23040	23168	23169	0
Computer, electronic and optical products	65143	56421	1	336	11	90	12	163	95	112	65261	57122	57122	0
Electrical equipment, machinery and equipment n.e.c.	42696	39662	8	99	49	123	16	185	86	101	42855	40169	40169	0
Transport equipment	23871	22473	2	680	10	297	2	240	410	422	24295	24112	24126	-15
Other industrial products	16038	16153	1	135	4	92	0	7	23	23	16065	16410	16410	0
Furniture, other manufactured goods	5721	5545	0	2	7	23	1	30	6	6	5735	5606	5602	4
Export of second hand fixed assets	1622	1235	0	1	7	7	1	4	1	1	1632	1248	1249	0
Not specified	116	111	0	0	0	0	0	0	0	0	116	112	138	-26
Total	392462	362955	22	1580	249	2669	121	2875	2034	2089	394889	372167	372206	-38

Exports, 2015, mln euro

CPA	NOTC												Column I of process table (see table 5)	Difference (XII - XIII)
	1		2		3		4		5		1-5			
	Invoice	Statistical	Invoice	Statistical	Invoice	Statistical	Invoice	Statistical	Invoice	Statistical	Invoice	Statistical		
	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV
Agriculture, forestry and fishery products	82480	25444	20	51	27	78	10	54	1	1	82538	25627	25627	0
Mining and quarrying	16635	15925	0	1	0	0	0	1	2	2	16637	15929	15929	0
Food products, beverages and tobacco	55800	51612	0	170	10	199	4	90	324	319	56139	52390	52390	0
Textiles, apparel and leather products	14790	14109	2	187	6	197	10	45	20	20	14827	14558	14558	0
Products of wood, Paper and paper products, printed matter and related articles	6822	6147	2	50	2	116	0	16	253	253	7079	6582	6582	0
Coke oven products; refined petroleum products	45429	39783	0	5	1	1	0	0	16	16	45446	39805	39805	0
Chemical products and basic pharmaceutical products	81080	73173	0	595	21	954	13	120	1018	967	82132	75807	75808	0
Rubber and plastics products, other non-metallic mineral products	16074	12132	1	79	4	61	0	4	20	20	16099	12296	12296	0
Basic metals, fabricated metal products, except machinery and equipment	25428	23034	1	72	7	35	0	35	416	395	25851	23571	23571	0
Computer, electronic and optical products	77971	53749	7	86	6	230	2	80	40	21	78026	54166	54170	-5
Electrical equipment, machinery and equipment n.e.c.	52106	48119	7	130	23	319	7	164	1282	205	53425	48938	48891	47
Transport equipment	22775	20411	0	53	4	68	0	130	759	774	23538	21435	21486	-51
Other industrial products	18067	16449	1	90	6	233	0	5	5	5	18079	16783	16783	0
Furniture, other manufactured goods	8260	7715	0	15	3	12	0	130	58	57	8321	7929	7884	45
Export of second hand fixed assets	2067	1661	0	0	1	7	0	0	5	5	2073	1674	1674	0
Not specified	1430	1396	1	3	0	92	0	0	0	0	1431	1491	1491	0
Total	527215	410860	40	1586	120	2603	47	873	4220	3061	531642	418982	418946	36

Annex 5: process tables, 2015 mln euro.

5a: Statistical values (original process table used for the national accounts).

Exports	ITG source statistic	Merchan- ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro- cured in ports by carriers	Online trade	Unspeci- fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	25627	0	0	1	53	0	56	48	31	13	-3	25606
Mining and quarrying	15929	0	0	-60	0	0	0	4	0	9	-3	15999
Food products, beverages and tobacco	52390	0	3169	4777	202	3123	209	270	62	25	3	53854
Textiles, apparel and leather products	14558	0	2	272	209	0	277	19	6	8	0	13835
Products of wood, Paper and paper products, printed matter and related articles	6582	0	1223	693	112	0	49	12	0	3	-1	6966
Coke oven products; refined petroleum products	39805	0	153	3423	26	0	47	871	0	16	-6059	31290
Chemical products and basic pharmaceutical products	75808	0	4397	11694	972	977	694	263	88	35	-10736	57471
Rubber and plastics products, other non-metallic mineral products	12296	0	4	726	146	0	89	26	45	6	0	11417
Basic metals, fabricated metal products, except machinery and equipment	23571	0	-5	3166	140	0	88	57	0	12	-617	19624
Computer, electronic and optical products	54170	0	20890	21	79	0	422	147	44	27	-99	74657
Electrical equipment, machinery and equipment n.e.c.	48891	0	-89	689	197	0	229	265	48	18	17	48034
Transport equipment	21486	0	2833	3792	150	0	728	111	0	8	-102	19666
Other industrial products	16783	0	0	24	7	0	223	63	14	7	1	16614
Other manufactured goods	7884	0	848	264	151	0	15	28	66	4	102	8502
Export of second hand fixed assets	1674	0	0	5	0	0	0	8	0	1	109	1787
Not specified (incl. merchanting)	1491	15348	0	0	0	0	3	-1204	0	-192	-92	15348
Total	418946	15348	33425	29487	2444	4100	3129	988	404	0	-17481	420670

Imports	ITG source statistic	Merchan- ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro- cured in ports by carriers	Online trade	Unspeci- fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	19692	0	1273	1599	98	0	56	10	0	4	-4	19222
Mining and quarrying	35503	0	862	3378	158	0	0	0	0	3	-2	32829
Food products, beverages and tobacco	32622	0	1227	1168	188	298	209	199	0	10	294	33085
Textiles, apparel and leather products	17787	0	0	151	201	0	277	0	151	4	1	17314
Products of wood, Paper and paper products, printed matter and related articles	8080	0	499	910	307	0	49	0	0	3	2	7318
Coke oven products; refined petroleum products	27984	0	133	2836	549	0	47	3197	0	7	-5351	22538
Chemical products and basic pharmaceutical products	49083	0	3039	5090	814	621	694	2	58	15	-4226	41994
Rubber and plastics products, other non-metallic mineral products	13471	0	338	564	118	0	89	0	0	4	-2	13041
Basic metals, fabricated metal products, except machinery and equipment	23169	0	745	3389	547	0	88	1	0	7	-2	19895
Computer, electronic and optical products	57122	0	7537	205	116	0	422	1	479	8	-985	63419
Electrical equipment, machinery and equipment n.e.c.	40169	0	701	607	178	0	229	1	46	10	46	39960
Transport equipment	24126	0	602	2638	422	0	728	1	0	8	1331	22280
Other industrial products	16410	0	15	10	25	0	223	0	71	4	0	16242
Other manufactured goods	5602	0	65	342	185	0	15	0	68	2	181	5376
Export of second hand fixed assets	1249	0	0	5	1	0	0	0	0	1	-1243	0
Not specified	138	0	0	0	0	0	3	-40	0	-89	-5	0
Total	372206	0	17036	22892	3907	919	3129	3373	873	0	-9966	354513

Balance (E-I)	ITG source statistic	Merchan- ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro- cured in ports by carriers	Online trade	Unspeci- fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	5935	0	-1273	-1598	-45	0	0	37	31	9	1	6384
Mining and quarrying	-19574	0	-862	-3438	-158	0	0	4	0	7	-1	-16830
Food products, beverages and tobacco	19768	0	1942	3609	14	2825	0	70	62	15	-290	20769
Textiles, apparel and leather products	-3229	0	2	121	8	0	0	19	-145	4	-1	-3479
Products of wood, Paper and paper products, printed matter and related articles	-1497	0	724	-217	-195	0	0	12	0	1	-3	-352
Coke oven products; refined petroleum products	11821	0	20	587	-523	0	0	-2326	0	8	-708	8752
Chemical products and basic pharmaceutical products	26724	0	1358	6604	158	356	0	261	30	20	-6510	15477
Rubber and plastics products, other non-metallic mineral products	-1175	0	-334	162	28	0	0	26	45	2	2	-1624
Basic metals, fabricated metal products, except machinery and equipment	402	0	-750	-223	-407	0	0	56	0	5	-615	-271
Computer, electronic and optical products	-2952	0	13353	-184	-37	0	0	146	-435	19	885	11238
Electrical equipment, machinery and equipment n.e.c.	8721	0	-790	82	19	0	0	264	2	8	-30	8074
Transport equipment	-2640	0	2231	1154	-272	0	0	110	0	0	-1433	-2614
Other industrial products	373	0	-15	14	-18	0	0	62	-57	4	1	372
Other manufactured goods	2282	0	783	-78	-34	0	0	28	-2	2	-79	3126
Export of second hand fixed assets	426	0	0	0	-1	0	0	8	0	0	1352	1787
Not specified	1353	15348	0	0	0	0	0	-1164	0	-103	-87	15348
Total	46740	15348	16389	6595	-1463	3181	0	-2385	-468	0	-7515	66158

5b: Invoice values uncorrected(*), 2015

Exports	ITG source statistic	Merchan-ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro-cured in ports by carriers	Online trade	Unspeci-fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	26057 (*)	0	0	1	10	0	28	48	31	13	0	26109
Mining and quarrying	16637	0	0	-60	0	0	0	4	0	9	0	16711
Food products, beverages and tobacco	56139	0	3169	4866	116	3123	48	270	62	24	0	57757
Textiles, apparel and leather products	14827	0	2	272	174	0	93	19	6	8	0	14323
Products of wood, Paper and paper products, printed matter and related articles	7079	0	1223	693	96	0	3	12	0	3	0	7526
Coke oven products; refined petroleum products	45446	0	153	3424	26	0	43	871	0	16	-7172	35820
Chemical products and basic pharmaceutical products	18232	0	4395	11877	865	977	107	263	88	35	-10970	64072
Rubber and plastics products, other non-metallic mineral products	16099	0	3	726	142	0	13	26	45	6	0	15300
Basic metals, fabricated metal products, except machinery and equipment	25851	0	-23	3199	105	0	17	57	0	12	-614	21963
Computer, electronic and optical products	78031	0	6352	41	1	0	343	147	44	27	-101	84115
Electrical equipment, machinery and equipment n.e.c.	53378	0	-249	1766	40	0	105	265	48	18	15	51563
Transport equipment	23589	0	2833	3841	20	0	680	111	0	8	-86	21914
Other industrial products	18079	0	-1	24	2	0	136	63	14	7	0	18000
Other manufactured goods	8276	0	830	265	21	0	3	28	66	4	102	9017
Export of second hand fixed assets	2073	0	0	5	0	0	1	8	0	1	93	2170
Not specified (incl. merchanting)	1431	15348	0	0	0	0	1	-1155	0	-192	-81	15350
Total	475124	15348	18687	30940	1618	4100	1620	1037	404	0	-18814	461708

(*) For agriculture, forestry and fishery products the original uncorrected invoice value is replaced by the figure according to method 1. The original figure is extremely high (82538 mln) due to only a few records, making the analysys difficult.

Imports	ITG source statistic	Merchan-ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro-cured in ports by carriers	Online trade	Unspeci-fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	19465	0	1273	1584	98	0	51	10	0	4	0	19019
Mining and quarrying	35657	0	862	3351	158	0	1	0	0	3	0	33012
Food products, beverages and tobacco	35626	0	1227	1349	187	298	171	200	0	10	297	35951
Textiles, apparel and leather products	17339	0	0	151	197	0	191	0	151	4	0	16956
Products of wood, Paper and paper products, printed matter and related articles	8040	0	499	863	307	0	50	0	0	3	0	7322
Coke oven products; refined petroleum products	29191	0	133	1552	549	0	5	3202	0	7	-4370	26057
Chemical products and basic pharmaceutical products	57080	0	3039	5031	814	621	599	2	58	15	-4481	49889
Rubber and plastics products, other non-metallic mineral products	13493	0	338	562	118	0	79	0	0	4	0	13077
Basic metals, fabricated metal products, except machinery and equipment	23040	0	745	2910	542	0	72	1	0	7	0	20268
Computer, electronic and optical products	65261	0	7916	53	99	0	87	1	479	8	-983	72443
Electrical equipment, machinery and equipment n.e.c.	42855	0	707	442	163	0	138	1	46	10	46	42922
Transport equipment	24310	0	602	2400	410	0	54	1	0	8	1713	23769
Other industrial products	16065	0	14	3	25	0	91	0	71	4	0	16035
Other manufactured goods	5731	0	64	314	185	0	16	0	68	2	183	5534
Export of second hand fixed assets	1632	0	0	2	1	0	0	0	0	1	-1630	0
Not specified	143	0	0	0	0	0	3	-46	0	-89	-5	0
Total	394928	0	17419	20568	3852	919	1608	3373	873	0	-9230	382254

Balance (E-I)	ITG source statistic	Merchan-ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro-cured in ports by carriers	Online trade	Unspeci-fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	6592	0	-1273	-1583	-88	0	-23	37	31	9	0	7090
Mining and quarrying	-19020	0	-862	-3411	-158	0	0	4	0	7	0	-16301
Food products, beverages and tobacco	20514	0	1942	3517	-70	2825	-122	70	62	15	-297	21806
Textiles, apparel and leather products	-2512	0	2	121	-23	0	-98	19	-145	4	0	-2633
Products of wood, Paper and paper products, printed matter and related articles	-960	0	724	-170	-211	0	-46	12	0	1	0	204
Coke oven products; refined petroleum products	16255	0	20	1872	-523	0	39	-2331	0	8	-2802	9763
Chemical products and basic pharmaceutical products	25052	0	1356	6846	51	356	-493	261	30	20	-6489	14183
Rubber and plastics products, other non-metallic mineral products	2606	0	-335	164	24	0	-66	26	45	2	0	2223
Basic metals, fabricated metal products, except machinery and equipment	2812	0	-768	289	-437	0	-56	56	0	5	-614	1695
Computer, electronic and optical products	12769	0	-1564	-13	-98	0	255	146	-435	19	882	11672
Electrical equipment, machinery and equipment n.e.c.	10522	0	-955	1324	-123	0	-32	264	2	8	-31	8641
Transport equipment	-721	0	2231	1442	-390	0	625	110	0	0	-1799	-1855
Other industrial products	2014	0	-16	21	-23	0	45	62	-57	4	0	1965
Other manufactured goods	2545	0	765	-49	-164	0	-13	28	-2	2	-81	3482
Export of second hand fixed assets	441	0	0	3	-1	0	0	8	0	0	1723	2170
Not specified	1287	15348	0	0	0	0	-2	-1109	0	-103	-76	15350
Total	80196	15348	1268	10372	-2234	3181	13	-2335	-468	0	-9584	79455

5c: Invoice values, corrected for invoice values > 200% or < 50% of the statistical value (method 1), 2015

Exports	ITG source statistic	Merchan-ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro-cured in ports by carriers	Online trade	Unspeci-fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	26057	0	0	1	10	0	28	48	31	13	0	26109
Mining and quarrying	15972	0	0	-60	0	0	0	4	0	9	0	16046
Food products, beverages and tobacco	53433	0	3169	4866	116	3123	48	270	62	24	0	55051
Textiles, apparel and leather products	14147	0	2	272	174	0	93	19	6	8	0	13643
Products of wood, Paper and paper products, printed matter and related articles	6483	0	1223	693	96	0	3	12	0	3	0	6929
Coke oven products; refined petroleum products	40562	0	153	3424	26	0	43	871	0	16	-7172	30936
Chemical products and basic pharmaceutical products	76614	0	4395	11877	865	977	107	263	88	35	-10970	58553
Rubber and plastics products, other non-metallic mineral products	12333	0	3	726	142	0	13	26	45	6	0	11533
Basic metals, fabricated metal products, except machinery and equipment	23817	0	-23	3199	105	0	17	57	0	12	-614	19928
Computer, electronic and optical products	57608	0	18055	41	1	0	343	147	44	27	-101	75396
Electrical equipment, machinery and equipment n.e.c.	50292	0	-249	1766	40	0	105	265	48	18	16	48478
Transport equipment	21606	0	2833	3841	20	0	680	111	0	8	-116	19902
Other industrial products	16829	0	-1	24	2	0	136	63	14	7	0	16749
Other manufactured goods	8005	0	830	265	21	0	3	28	66	4	102	8746
Export of second hand fixed assets	1682	0	0	5	0	0	1	8	0	1	124	1810
Not specified (incl. merchanting)	1425	15348	0	0	0	0	1	-1146	0	-192	-80	15355
Total	426865	15348	30391	30940	1618	4100	1620	1047	404	0	-18811	425165

Imports	ITG source statistic	Merchan-ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro-cured in ports by carriers	Online trade	Unspeci-fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	19452	0	1273	1584	98	0	51	10	0	4	0	19006
Mining and quarrying	35458	0	862	3351	158	0	1	0	0	3	0	32813
Food products, beverages and tobacco	32327	0	1227	1349	187	298	171	200	0	10	297	32652
Textiles, apparel and leather products	17134	0	0	151	197	0	191	0	151	4	0	16752
Products of wood, Paper and paper products, printed matter and related articles	7857	0	499	863	307	0	50	0	0	3	0	7139
Coke oven products; refined petroleum products	26918	0	133	1552	549	0	5	3196	0	7	-4370	23779
Chemical products and basic pharmaceutical products	48058	0	3039	5031	814	621	599	2	58	15	-4481	40866
Rubber and plastics products, other non-metallic mineral products	13334	0	338	562	118	0	79	0	0	4	0	12918
Basic metals, fabricated metal products, except machinery and equipment	22531	0	745	2910	542	0	72	1	0	7	0	19759
Computer, electronic and optical products	56176	0	7967	53	99	0	87	1	479	8	-983	63409
Electrical equipment, machinery and equipment n.e.c.	39598	0	707	442	163	0	138	1	46	10	46	39664
Transport equipment	22896	0	602	2400	410	0	54	1	0	8	1321	21963
Other industrial products	16038	0	14	3	25	0	91	0	71	4	0	16008
Other manufactured goods	5507	0	64	314	185	0	16	0	68	2	183	5310
Export of second hand fixed assets	1241	0	0	2	1	0	0	0	0	1	-1239	0
Not specified	138	0	0	0	0	0	3	-40	0	-89	-5	0
Total	364664	0	17470	20568	3852	919	1608	3373	873	0	-9231	352039

Balance (E-I)	ITG source statistic	Merchan-ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro-cured in ports by carriers	Online trade	Unspeci-fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	6605	0	-1273	-1583	-88	0	-23	37	31	9	0	7103
Mining and quarrying	-19486	0	-862	-3411	-158	0	0	4	0	7	0	-16767
Food products, beverages and tobacco	21106	0	1942	3517	-70	2825	-122	70	62	15	-297	22399
Textiles, apparel and leather products	-2988	0	2	121	-23	0	-98	19	-145	4	0	-3109
Products of wood, Paper and paper products, printed matter and related articles	-1374	0	724	-170	-211	0	-46	12	0	1	0	-209
Coke oven products; refined petroleum products	13644	0	20	1872	-523	0	39	-2325	0	8	-2802	7157
Chemical products and basic pharmaceutical products	28556	0	1356	6846	51	356	-493	261	30	20	-6489	17687
Rubber and plastics products, other non-metallic mineral products	-1001	0	-335	164	24	0	-66	26	45	2	0	-1385
Basic metals, fabricated metal products, except machinery and equipment	1286	0	-768	289	-437	0	-56	56	0	5	-614	169
Computer, electronic and optical products	1432	0	10088	-13	-98	0	255	146	-435	19	882	11987
Electrical equipment, machinery and equipment n.e.c.	10694	0	-955	1324	-123	0	-32	264	2	8	-30	8813
Transport equipment	-1289	0	2231	1442	-390	0	625	110	0	0	-1437	-2062
Other industrial products	791	0	-16	21	-23	0	45	62	-57	4	0	741
Other manufactured goods	2498	0	765	-49	-164	0	-13	28	-2	2	-81	3436
Export of second hand fixed assets	442	0	0	3	-1	0	0	8	0	0	1363	1810
Not specified	1287	15348	0	0	0	0	-2	-1105	0	-103	-75	15355
Total	62201	15348	12921	10372	-2234	3181	13	-2326	-468	0	-9580	73126

5d: Invoice values, corrected for invoice values > 110% or < 90% of the statistical value (method 2), 2015

Exports	ITG source statistic	Merchan- ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro- cured in ports by carriers	Online trade	Unspeci- fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	25574	0	0	1	10	0	28	48	31	13	0	25626
Mining and quarrying	15943	0	0	-60	0	0	0	4	0	9	0	16016
Food products, beverages and tobacco	52055	0	3169	4866	116	3123	48	270	62	24	0	53672
Textiles, apparel and leather products	14024	0	2	272	174	0	93	19	6	8	0	13520
Products of wood, Paper and paper products, printed matter and related articles	6423	0	1223	693	96	0	3	12	0	3	0	6869
Coke oven products; refined petroleum products	39921	0	153	3424	26	0	43	871	0	16	-6064	31403
Chemical products and basic pharmaceutical products	74605	0	4396	11676	865	977	107	263	88	35	-10460	57255
Rubber and plastics products, other non-metallic mineral products	12160	0	4	726	142	0	13	26	45	6	0	11362
Basic metals, fabricated metal products, except machinery and equipment	23495	0	-6	3187	105	0	17	57	0	12	-614	19636
Computer, electronic and optical products	53908	0	20891	41	1	0	343	147	44	27	-101	74531
Electrical equipment, machinery and equipment n.e.c.	49502	0	-89	1766	40	0	105	265	48	18	14	47846
Transport equipment	21276	0	2833	3780	20	0	680	111	0	8	-103	19646
Other industrial products	16453	0	0	24	2	0	136	63	14	7	0	16375
Other manufactured goods	7765	0	848	265	21	0	3	28	66	4	102	8524
Export of second hand fixed assets	1666	0	0	5	0	0	1	8	0	1	109	1779
Not specified (incl. merchanting)	1402	15348	0	0	0	0	1	-1125	0	-192	-85	15348
Total	416170	15348	33426	30665	1618	4100	1620	1067	404	0	-17202	419410

Imports	ITG source statistic	Merchan- ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro- cured in ports by carriers	Online trade	Unspeci- fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	19600	0	1273	1535	98	0	51	10	0	4	0	19203
Mining and quarrying	35303	0	862	3351	158	0	1	0	0	3	0	32657
Food products, beverages and tobacco	32169	0	1227	1121	187	298	171	199	0	10	297	32722
Textiles, apparel and leather products	17187	0	0	151	197	0	191	0	151	4	0	16805
Products of wood, Paper and paper products, printed matter and related articles	7827	0	499	863	307	0	50	0	0	3	0	7109
Coke oven products; refined petroleum products	26583	0	133	1516	549	0	5	3197	0	7	-4370	23480
Chemical products and basic pharmaceutical products	47976	0	3039	4774	814	621	599	2	58	15	-4190	41333
Rubber and plastics products, other non-metallic mineral products	13353	0	338	562	118	0	79	0	0	4	0	12937
Basic metals, fabricated metal products, except machinery and equipment	22528	0	745	2910	542	0	72	1	0	7	0	19756
Computer, electronic and optical products	56267	0	7542	53	99	0	87	1	479	8	-983	63075
Electrical equipment, machinery and equipment n.e.c.	39580	0	701	442	163	0	138	1	46	10	46	39641
Transport equipment	22829	0	602	2400	410	0	54	1	0	8	1323	21899
Other industrial products	16046	0	14	3	25	0	91	0	71	4	0	16016
Other manufactured goods	5539	0	64	314	185	0	16	0	68	2	183	5342
Export of second hand fixed assets	1242	0	0	2	1	0	0	0	0	1	-1240	0
Not specified	138	0	0	0	0	0	3	-40	0	-89	-5	0
Total	364167	0	17040	19998	3852	919	1608	3373	873	0	-8939	351973

Balance (E-I)	ITG source statistic	Merchan- ting	Production abroad	Processing		Illegal activities	Return shipments	Goods pro- cured in ports by carriers	Online trade	Unspeci- fied goods	Correction ITG errors	NA level before balancing
				Inward	Outward							
		+	+	-	-	+	-	+	+	+	+	=
Agriculture, forestry and fishery products	5974	0	-1273	-1534	-88	0	-23	37	31	9	0	6424
Mining and quarrying	-19360	0	-862	-3411	-158	0	0	4	0	7	0	-16641
Food products, beverages and tobacco	19885	0	1942	3745	-70	2825	-122	70	62	15	-297	20950
Textiles, apparel and leather products	-3163	0	2	121	-23	0	-98	19	-145	4	0	-3284
Products of wood, Paper and paper products, printed matter and related articles	-1404	0	724	-170	-211	0	-46	12	0	1	0	-239
Coke oven products; refined petroleum products	13338	0	20	1908	-523	0	39	-2326	0	8	-1694	7923
Chemical products and basic pharmaceutical products	26628	0	1357	6902	51	356	-493	261	30	20	-6270	15922
Rubber and plastics products, other non-metallic mineral products	-1192	0	-334	164	24	0	-66	26	45	2	0	-1575
Basic metals, fabricated metal products, except machinery and equipment	968	0	-750	276	-437	0	-56	56	0	5	-614	-119
Computer, electronic and optical products	-2359	0	13349	-13	-98	0	255	146	-435	19	882	11456
Electrical equipment, machinery and equipment n.e.c.	9922	0	-789	1324	-123	0	-32	264	2	8	-32	8206
Transport equipment	-1553	0	2231	1380	-390	0	625	110	0	0	-1426	-2252
Other industrial products	406	0	-14	21	-23	0	45	62	-57	4	0	359
Other manufactured goods	2226	0	784	-49	-164	0	-13	28	-2	2	-81	3182
Export of second hand fixed assets	424	0	0	3	-1	0	0	8	0	0	1349	1779
Not specified	1264	15348	0	0	0	0	-2	-1085	0	-103	-79	15348
Total	52004	15348	16386	10667	-2234	3181	13	-2306	-468	0	-8262	67437