

Annex A GNI Quality Report 2018, version 1.2

Report on A-action points resulting from the GNI information visit to the Netherlands on 6-9 December 2016

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1. Introduction and overview

The information visit to Statistics Netherlands in December 2016 was part of Eurostat's evaluation of the application of the European System of Accounts (ESA 2010) in the Dutch national accounts and its impact on GNI used for fourth own resources purposes.

As follow up of to this visit, and as laid down in the GNI-C 371 document, fourteen action points "A" were opened for possible improvement of the methodology and calculations. The following table gives an overview of the areas covered by these points.

Table 1.1 BNI A action points

No.	Issue
A1	Benchmark estimates older than 5 years
A2	Trade margins: exclusion of holding gains and losses
A3	Financial services for which output should be calculated according to ESA 2010 paragraph 3.73
A4	Financial services indirectly measured (FISIM)
A5	Insurance industries
A6	Dwelling services: compensation for the right to use furniture
A7	Dwelling services: imputed rentals
A8	Recreational accommodation services: verification for eventual double counting
A9	Use of cash based data for production subsidies and taxes
A10	Decommissioning costs
A11	Transactions of public stockpiling units
A12	Revaluations made to exclude holding gains and losses from changes inventories
A13	Merchanting: use of international trade in services survey
A14	VAT gap

The purpose of Annex A is to inform the GNI Committee on the work carried out on each of these action points. In addition the report presents estimates and indicates their GNI effects wherever possible. Statistics Netherlands incorporated all improvements following from the

A-action points in the 2015 benchmark revision of the Dutch national accounts as presented in the 2018 GNI Questionnaire.

A preliminary version of this report was submitted to Eurostat on 31 August 2017. The comments received from Eurostat, including those received on Friday 6 July 2018, are accommodated in this updated version.

Summary of results of the A-action point in the benchmark revision

Below the impact of the individual A-action points on GDP and GNI is presented is presented in two stages of processing in the SUT and ISA. Tables 1.1 and 1.2 show the impact of the A-action under ceteris paribus conditions and prior to balancing. This means that the impact of each individual project on the macro variables in the production, expenditure and income approach is shown but without taking account of the counterbalancing consequences elsewhere in the accounts. An impact on GNI for an action point is only shown when all three approaches to GDP result in the same adjustment. When this is not the case, no single effect on GNI can be given for this action point. Therefore these cells are not filled. The starting point for the balancing process is influenced both by the A-action points and changes due to benchmarking estimates on existing, and improved, data sources and methods. Therefore balancing adjustments cannot always be uniquely allocated to A-action points. Tables 1.3 and 1.4 show the impact of the A-action points including balancing adjustments which can be directly allocated to the A-action points. Again, an impact on GNI for an action point is only shown when all three approaches to GDP result in the same adjustment. Generally speaking, the effect on GNI will in these cases be somewhere between the different approaches to GDP.

A rough estimate taking total balancing into accounts, results in an adjustment of GNI of 6.3 billion euros due to the A-action points. To give an impression of the accuracy of this rough estimate: if, in cases when balancing adjustments cannot be allocated uniquely, the expenditure approach is taken as leading an adjustment of GNI of 5.9 billion euros results. Taking, under the same conditions, the production approach as leading would result in an GNI-adjustment of 6.2 billion euros.

For the A-action points with the largest impact on GDP and GNI, table 1.5 shows the impact of on the time series for GDP and GNI.

Table 1.1 Impact of A1-action points prior to balancing

	code	A1.1	A1.2	A1.3	A1.4	A1.5	A1.6	A1.7	A1.8	A1.9
PRODUCTION APPROACH										
1	Output of goods and services	P1	1227	142	-320	692	1.834			
2	Intermediate consumption	P2	1370	23		283	307			
3	Gross value added (at basic prices)	B1G	-143	119	-320	409	1527			
4	Taxes on products	D21								
5	Subsidies on products	D31								
	Gross domestic product		-143	119	-320	409	1527			
EXPENDITURE APPROACH										
6	Total final consumption expenditure	P3					-525			
7	Household final consumption expenditure	P3					-525			
9	General gov final consumption expenditure	P3								
10	Gross capital formation	P5				301	7	-519	7	
11	Gross fixed capital formation	P51g				301	7	-519	7	
12	Changes in inventories	P52								
14	Exports of goods and services	P6				1662				
15	Imports of goods and services	P7				-11				
	Gross domestic product					1449	7	-519	7	
INCOME APPROACH										
16	Compensation of employees	D1								
17	Gross operating surplus and mixed income	B2G+B3G	-143	126	-320	409	1527			
18	Taxes on production and imports	D2								
19	Subsidies	D3								
20	Gross domestic product	B1*G	-143	126	-320	409	1527			
25	Property income received from RoW	D4								888
26	Property income paid to RoW	D4								2669
27	Gross national income¹⁾	B5*G								-1781

Table 1.2 Impact of A2 – A14-action points prior to balancing

	code	A2 & A12	A3	A4	A5	A6	A7	A8A	A8B	A9	A10	A11	A13	A14
PRODUCTION APPROACH														
1	Output of goods and services	P1	346	1912	-503	68	4535	-227						
2	Intermediate consumption	P2	-148	757	-265			-36						-970
3	Gross value added (at basic prices)	B1G	494	1155	-238	68	4535	-191						970
4	Taxes on products	D21												-1618
5	Subsidies on products	D31												
	Gross domestic product		494	1155	-238	0	68	4535	-191	0	0	0	0	-648
EXPENDITURE APPROACH														
6	Total final consumption expenditure	P3		340	-265	68	4535							-484
7	Household final consumption expenditure	P3		340		68	4535							-484
9	General gov final consumption expenditure	P3			-265									
10	Gross capital formation	P5	268								6	-91		-112
11	Gross fixed capital formation	P51g									6			-112
12	Changes in inventories	P52	268									-91		
14	Exports of goods and services	P6		1051										-52
15	Imports of goods and services	P7		673	-27									
	Gross domestic product		268	718	-238	0	68	4535	0	0	0	6	-91	0
INCOME APPROACH														
16	Compensation of employees	D1												
17	Gross operating surplus and mixed income	B2G+B3G	494	1155	-238	68	4535	-191						970
18	Taxes on production and imports	D2												-1618
19	Subsidies	D3												
20	Gross domestic product	B1*G	494	1155	-238	0	68	4535	-191	0	0	0	0	-648
25	Property income received from RoW	D4							1402					
26	Property income paid to RoW	D4			27				328					
27	Gross national income¹⁾	B5*G			-265	0	68	4535		1074	0		0	-648

Table 1.3 Impact of A1-action points including directly assignable balancing adjustments

		code	A1.1	A1.2	A1.3	A1.4	A1.5	A1.6	A1.7	A1.8	A1.9
PRODUCTION APPROACH											
1	Output of goods and services	P1	1217	142	-320	692	1.834				
2	Intermediate consumption	P2	1173	23		283	307				
3	Gross value added (at basic prices)	B1G	44	119	-320	409	1527				
4	Taxes on products	D21									
5	Subsidies on products	D31									
Gross domestic product			44	119	-320	409	1527	0	0	0	0
EXPENDITURE APPROACH											
6	Total final consumption expenditure	P3		142	1	692	-525				
7	Household final consumption expenditure	P3		142	1	692	-525				
9	General gov final consumption expenditure	P3									
10	Gross capital formation	P5					301	28	-447	18	
11	Gross fixed capital formation	P51g					301	28	-447	18	
12	Changes in inventories	P52									
14	Exports of goods and services	P6					1662				
15	Imports of goods and services	P7					-11				
Gross domestic product			0	142	1	692	1449	28	-447	18	0
INCOME APPROACH											
16	Compensation of employees	D1									
17	Gross operating surplus and mixed income	B2G+B3G	44	119	-320	409	1527				
18	Taxes on production and imports	D2									
19	Subsidies	D3									
20	Gross domestic product	B1*G	44	119	-320	409	1527	0	0	0	0
25	Property income received from RoW	D4									888
26	Property income paid to RoW	D4									2669
27	Gross national income¹⁾	B5*G									-1781

Table 1.4 Impact of A2 - A14-action points directly assignable balancing adjustments

		code	A2	A3	A4	A5	A6	A7	A8A	A8B	A9	A10	A11	A13	A14
PRODUCTION APPROACH															
1	Output of goods and services	P1	346	2284	-503		68	4535	-227						
2	Intermediate consumption	P2	-148	1129	-265				-36						-970
3	Gross value added (at basic prices)	B1G	494	1155	-238		68	4535	-191						970
4	Taxes on products	D21													-1618
5	Subsidies on products	D31													
Gross domestic product			494	1155	-238	0	68	4535	-191	0	0	0	0	0	-648
EXPENDITURE APPROACH															
6	Total final consumption expenditure	P3		712	-265		68	4535	-227						-484
7	Household final consumption expenditure	P3		712			68	4535	-227						-484
9	General gov final consumption expenditure	P3			-265										
10	Gross capital formation	P5	268									6	-91		-112
11	Gross fixed capital formation	P51g										6			-112
12	Changes in inventories	P52	268										-91		
14	Exports of goods and services	P6		1051											-52
15	Imports of goods and services	P7		673	-27										
Gross domestic product			268	1090	-238	0	68	4535	-227	0	0	6	-91	0	-648
INCOME APPROACH															
16	Compensation of employees	D1													
17	Gross operating surplus and mixed income	B2G+B3G	494	1155	-238		68	4535	-191						970
18	Taxes on production and imports	D2													-1618
19	Subsidies	D3													
20	Gross domestic product	B1*G	494	1155	-238	0	68	4535	-191	0	0	0	0	0	-648
25	Property income received from RoW	D4								1402					
26	Property income paid to RoW	D4			27					328					
27	Gross national income¹⁾	B5*G			-265	0	68	4535		1074	0			0	-648

Table 1.5 Impact of selected A-action points on the time series of GDP and GNI

			2010	2011	2012	2013	2014	2015	2016
A1.5 & A1.7 & A1.9	Impact on GDP (before balancing) ¹⁾	in mio EUR	P: 747 E: 479	P: 891 E: 607	P: 1009 E: 655	P: 1163 E: 761	P: 1398 E: 959	P: 1527 E: 1002	
	Impact on GDP (after balancing)	in mio EUR							
	Impact on GNI ²⁾	in mio EUR	-/-2244 to -/-2512	-/-2188 to -/-2472	-/-1871 to -/-2225	-/-1446 to -/-1898	-/-578 to -/-1017	-/-254 to -/-779	-1883 ³⁾
A7	Impact on GDP (before balancing)	in mio EUR	3641	3766	3913	4113	4348	4535	4693
	Impact on GDP (after balancing)	in mio EUR	3641	3766	3913	4113	4348	4535	4693
	Impact on GNI	in mio EUR	3641	3766	3913	4113	4348	4535	4693
A8B	Impact on GDP (before balancing)	in mio EUR	0	0	0	0	0	0	0
	Impact on GDP (after balancing)	in mio EUR	0	0	0	0	0	0	0
	Impact on GNI	in mio EUR	779	630	662	832	1023	1074	957
A14	Impact on GDP (before balancing) ¹⁾	in mio EUR	P: -526 E: -647	P: -689 E: -645	P: -690 E: -647	P: -1014 E: -843	P: -554 E: -634	-648	-689
	Impact on GDP (after balancing)	in mio EUR						-648	-689
	Impact on GNI ²⁾	in mio EUR	-/-526 to -/-647	-/-689 to -/-645	-/-690 to -/-647	-/-1014 to -/-843	-/-554 to -/-634	-648	-689

1) P means GDP according to the production approach, E means GDP according to the expenditure approach.

2) When production and expenditure approach to GDP differ, for the impact on GNI estimates following production approach and expenditure approach are both given.

3) Only the effect of action point A1.9 is shown. For A1.5 and A1.7 no explicit values are available for preliminary estimates. The effect of these action points therefore can not be calculated

2. Follow up on action points "A"

2.1 Action point A1 Benchmark estimates older than 5 years

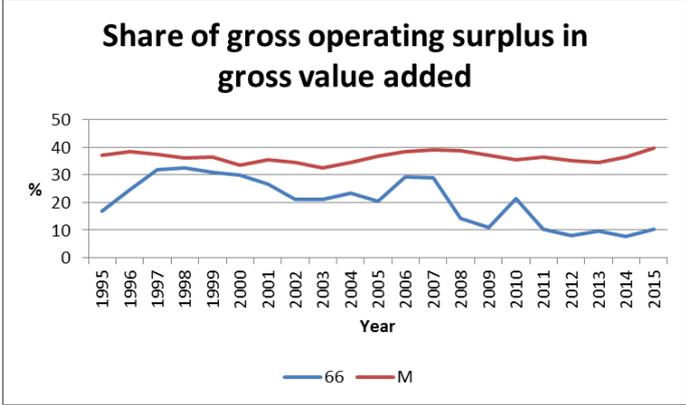
Benchmark estimates older than 5 years must be updated and the representativeness of the indicators used in the extrapolation processes need to be re-assessed. Old benchmarks currently exist in the production approach, in the expenditure approach and for cross-border income flows. Examples of old benchmarks in the production approach are estimates for other financial services (NACE 66), dwelling services from freestanding garages and sheds, house and building cleaning services, community centres (within NACE 88), prostitution, illicit drugs. Examples of old benchmarks in the expenditure approach are the estimates of gross fixed capital formation in the health care industry, in the industry arts, entertainment, recreation, and activities of membership organisations and in private education.

2.1.1 Other financial services

The last benchmark estimate of the NACE 66, Other financial services, was made during benchmark revision of the national accounts of the reporting year 2001. As no directly observed financial data on enterprises in NACE 66 are available, estimates have to be based on indirect methods. In the revised estimation methodology for NACE 66 the cost structure as found in the use table of NACE section M (professional, scientific and technical activities) and labour data serve as the main inputs. Of all NACE industries Section M shows most similarities with the "Other financial services" in terms of intermediate requirements (housing, office supplies, transport, etc) and labour inputs related to output. However not all divisions within section M have been used for the benchmarking. It is obvious that NACE classes 70 activities of head offices, 72 scientific research and development and 75 veterinary activities will have specific input structures and are therefore excluded. Where, for brevity, this section refers to NACE section M, this reference excludes the divisions 70, 72 and 75.

Figure 2.1.1.1 shows the share of gross operating surplus (GOS) in gross value added (GVA) in both NACE division 66 and NACE section M from 1995 onwards. In the pre-revision estimates the extrapolation of the benchmark estimate of 2001 is based on annual reports of large enterprises.

Figure 2.1.1.1- share of GOS in GVA, 1995-2015

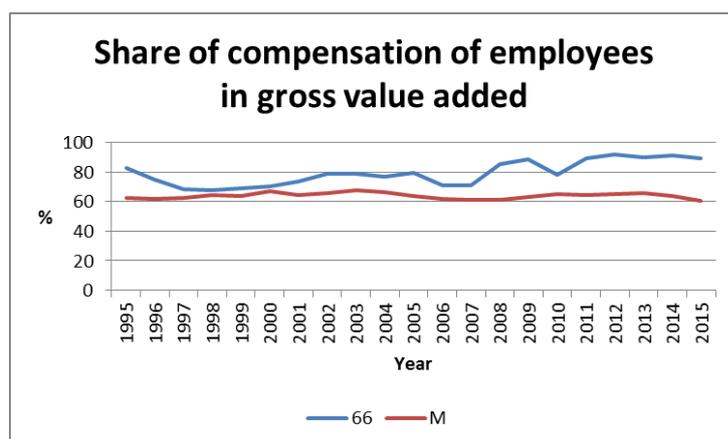


In section M the share of GOS in GVA is relatively stable around an average of 36 per cent. In comparison the share of GOS in GVA for division 66 is much more volatile around a lower level of 20% of GVA. The volatility can be explained by developments in the real estate property and financial asset markets which may have a large impact on financial auxiliaries, particularly the brokers. Given the similarities in the production process, the lower level of GOS in NACE 66 compared to section M does not seem plausible. The negative operating surpluses encountered for a number of successive years led to the conclusion that the pre-revision estimates of GOS and GVA of NACE 66 were too low. In the 2015 benchmark estimate of NACE 66, the share of GOS in GVA is made similar to the long term average of section M. The volatility in the time series, reflecting asset markets conditions, will be maintained in the revised estimates.

Revised estimates of output intermediate consumption and GVA

Labour data for NACE 66 are readily available from the labour accounts. This information is the starting point for the benchmark estimates. For the revised estimate of GVA in NACE 66 the share of compensation of employees in total GVA of section M is also applied to NACE 66. Figure 2 shows these shares from 1995 onwards.

Figure 2.1.1.2- share of COE in GVA, 1995-2015



The share of COE in GVA has been calculated as:

$$\alpha_M^t = \frac{W_M^t}{Y_M^t}$$

Where COE and GVA in year t of section M are W and Y respectively. The average share of COE in GVA of section M is the benchmark which was applied to NACE 66. GVA of NACE 66 is then calculated as:

$$\hat{Y}_{66000}^{2015} = \frac{W_{66000}^{2015}}{\bar{\alpha}_M}$$

Where $\bar{\alpha}_M$ is a long term average over the years 1995-2015; the long term average is used to reduce the impact of volatilities due to the economic cycle.

In the next step the ratio of output to GVA of section M is used to estimate total output of NACE 66. Also for this ratio an average of the years 1995 – 2015 is used. Total intermediate consumption is calculated is a residual item. Table 1 shows the pre-revision and revised estimates for NACE 66 for 2015.

Table 2.1.1.3 Pre-revision and revised estimates for NACE 66 for 2015

	Pre-revision	Post-revision	Adjustment
Production	8240	6413	1827
Intermediate consumption	3543	2173	1370
Value added	4697	4240	457

The production includes a double counting with action point A3. Removing the double counting results in an adjustment of value added of -143 million euros.

2.1.2 Garages and sheds

The pre-revision estimate for free standing garages and sheds is extrapolated from the benchmark revision of 1995. As no direct information on the number, value, floor area, etc. of garages and sheds was available, assumptions had to be made for delineating such structures.

From 2012 onwards Statistics Netherlands has admission to an exhaustive register on addresses and buildings which includes all structures in the Netherlands. From this database a selection is made for structures within the use category recreational dwellings, student homes, homes for elderly, garages, sheds, and other small structures. From this category structures with a capital value of less than 35000 euro and a floor area between 10 and 20 square metres are selected and denoted as garages and sheds. From the aforementioned database additional information is collected on ownership and renting. This selection resulted in 162520 structures.

Based on information from local newspapers and the internet an average monthly rent of 160 euros is estimated.

Total rents for garages and sheds is estimated at:

$$162520 \text{ (number garages and sheds)} * 160 * 12 / 10^6 = 312 \text{ million euros.}$$

Of the garages and sheds 25.5 per cent (79 million euros) is rented by housing corporations and is already included in their estimates based on financial data. Private rentals account for 38.5 per cent (120 million euros) and imputed rents for owner occupiers account for 36 per cent (112 million euros). The latter two (in total 232 million euros) have to be added to the estimates for private renting and imputed rents. This is an increase of 142 million euros compared to the pre-revision estimates. The increase in intermediate consumption is estimated at 23 million euros, leading to an increase in value added of 119 million euros.

2.1.3 House and building cleaning services

The estimates for cleaning houses are based on data for the reporting year 2013 from the report “De markt voor dienstverlening aan huis” (the market for home services) by Panteia published in 2014. Based on this report the share of households consuming cleaning services is estimated to be 13 per cent of the total. The report also states that the informal market for cleaning services consists of 103 million working hours. Combined with an average remuneration of 10.50 euros per hour an estimate of 1081 million euros results. In addition 15 million cleaning hours by 1 person-businesses are added because the coverage of the Panteia report is not exhaustive in this respect. This results in an additional amount 166 million euros, giving a total estimate for cleaning of dwellings of 1247 million euros.

The 2013 estimate is extrapolated to 2015 based on the developments of the number of households and a price index:

$$X_t = X_{t-1} * V_t * P_t$$

Where:

X_t = estimate for year t

V_t = volume indicator for year t

P_t = price indicator for year t

In this extrapolation method the number of households in the Netherlands is used as volume indicator. The consumer price index is used as price indicator.

The resulting estimate for 2015 amounts to 1263 million euros.

Likewise an estimate is made for informal cleaning of buildings of companies. In this case it is assumed that 10 per cent of the small companies (2 – 10 employees) make use of ‘informal’ cleaning. This corresponds to about 287 thousand units. The same price as for house cleaning is used and it is assumed that cleaning requires on average 5 hours a week for 48 weeks per year. This results in an estimate 74 million euros.

Total estimate for exhaustiveness for cleaning houses and dwellings amounts to 1337 million euros. There is no estimate for intermediate consumption because it is assumed that these inputs are bought by the household or enterprise. Value added has been adjusted downward by 320 million euros compared to the pre-revision estimates.

2.1.4 Community centres

In health care not all industries are covered by SBS or other financial statistics. The following two NACE classes are missing in the 2015 statistical program of SN:

- a) NACE 86.929: ‘Organisations cooperating in the area of healthcare and other healthcare support services.’ This SIC comprises ‘Umbrella organisations, cooperation and advisory bodies in the area of healthcare’ (86291) and ‘Other healthcare support services not included elsewhere’ (869299).
- b) NACE 88.999: Other social advice (889991, 889992), community centres (889993), and cooperative bodies in the field of welfare (889994), Other social welfare institutes (889999)

Two NACE-classes (87.9022 Boarding schools, convalescent homes and asylum seekers’ centres, 88.9922 Specific social work) which were not covered in financial statistics at the time of 2010 benchmark revision are nowadays covered in surveys. For these two classes additional estimates are no longer necessary.

The pre-revision estimates for these NACE-classes are based on extrapolation of benchmark data from 1995. In the 2015 benchmark revision a revised method for estimating these NACE-classes is introduced.

The NACE 86.929 and 88.999 are both labour-intensive industries. This implies a direct and stable relationship between output and labour input. Therefore output estimates of these two industries are based on the volume of labour (in full time equivalents) and calculated as follows:

$$\text{Production Value (PV)} = \text{Labour Volume (LV)} * \text{Factor (f)}$$

The factor (f) is estimated using 2015 data of a sample of enterprises in NACE 86929 . The factor (f) will not be estimated for each year separately and is kept constant for 2015 and following years. With the next benchmark revision a re-estimate of this factor will take place

NACE 86929:

Factor (f) is estimated using data on total revenues and the labour volume from annual reports of a number of large enterprises in NACE 86929. Factor (f) is estimated as the average ratio

of production value (PV) / labour volume (LV) for the selected enterprises. According to the 2015 figures, the proportion of labour volume included in the selection represents 70 per cent of labour volume of this NACE-class. The calculation results in a factor of 0.1 for SIC 86929, meaning that on average every full time equivalent contributes 100,000 euros to production.

NACE 88999:

The factor (f) relies on data of NACE 88.992 Social work and NACE 88.993 Local welfare work. These two NACE-classes show many similarities with NACE 88.999. Factor (f) is estimated as the average ratio of Product Value (PV) / Labour Volume (LV) of these two specific NACE-classes. Based on the data for 2015 the estimation results in a factor of 0.07 for NACE 88.999, implying that on the average every full time equivalent contributes 70,000 euros to production. This factor is not estimated for each year separately and is kept constant for 2015 and following years. With the next benchmark revision a re-estimate of the factor will take place.

Data on the volume of labour are available from two statistical sources, labour accounts and health accounts. These two sources show a considerable disparity for these two NACE-classes. The data from labour accounts are substantially higher than those from health accounts. This is caused by misclassification of units in the statistical business register (SBR). While the labour accounts use the SBR for allocation of labour to industries, the health accounts repaired the misclassifications in advance, because of the focus on the activity health and less on the specific industries producing it. As the misclassified units are allocated elsewhere in health industries and those data are used for estimating national accounts, the use of labour accounts for estimating NACE-classes 86929 and 88999 would lead to double counting. Therefore the labour volume of the health accounts is used for estimating total output.

As stated above with the benchmark revision of 2010 additional estimates for NACE-classes 87.9022 and 88.9922 were made. These NACE-classes are nowadays included in surveys covering broader NACE-classes. Therefore the impact of the revised estimates cannot be shown separately. To give an impression of the impact of the revision of these NACE-classes, in the overview below a comparison is made between the survey results of 2010 plus the additional estimates for missing parts as pre-revision data and the survey results of 2015 as post-revision data.

Overview of the pre-revision and revised estimates

NACE	Description	Pre-revision	Post-revision	Adjustment
869291/ 869299	Umbrella organisations, cooperative and advisory bodies in the field of health care (86.9291) and Other healthcare support services not included elsewhere (86.9299)	152	1041	889
879022	Boarding schools, convalescent homes and asylum seekers' centres	1681	1668	-13
889922	Specific social work	686	258	-428
889991	889991 Self-help groups, 889993 Community and neighbourhood centres, 889994 Welfare umbrella organisations, funds and bodies, 889999 Other social welfare institutes	557	801	244
Totaal		3076	3768	692

The adjustment of the estimate of total output is + 692 m. euro for the four SIC's together. Estimates for intermediate consumption for these SIC's are based on the ratio of intermediate consumption / production of similar NACE-classes. Due to higher production estimates, the total adjustment of intermediate consumption is + 283 m. euro. The value added is estimated as a residual item taking production minus the intermediate consumption. The total adjustment of value added amounts to +409 million euro.

2.1.5 Prostitution / Illicit drugs

In the Netherlands separate estimates are made for the production of drugs (cannabis and XTC/amphetamines) and the trafficking of drugs for which no production in the Netherlands takes place (heroin and cocaine). In the estimation methods a combination of demand and supply side based approaches is used. Domestic consumption is estimated by combining the number of users, the average quantity used and street price. The method distinguishes between type of drug (heroin/cocaine, cannabis, XTC/amphetamine), and in case of heroin/cocaine type of user (heavy addicts that have a known long addiction and recreational

users). For imports, exports and domestic consumption of hard drugs (heroin/cocaine), the price information is derived from the World Drug Report (UNODC). In case of cannabis and XTC, price information is obtained from the National Drugs Monitor by the Trimbos Institute.

2.1.5.1 Cannabis

Total volume of domestic use of cannabis is estimated at 58 to 143 tons per year (KLPD, 2012, Nationaal dreigingsbeeld 2012. Georganiseerde Criminaliteit, Zoetermeer, October 2012.). For the national accounts estimate of consumption of households for 2015 a volume of 100 tons is assumed. Of this consumed volume 90 per cent is domestically produced 'nederwiet'(KLPD, 2012).

Production is estimated using seizure rates based on the above mentioned report of the KLPD 2012. Operators of the electricity network estimate that on an annual basis there are 25.000 active plantations. Annually 5000 plantations are dismantled giving a seizure rate of 20 per cent. The seizure rate for imports is assumed to be also 20 per cent.

Next to that the KLPD-report states that the average revenue per crop per plant amounts to 28,2 grams dry cannabis and a plant allows 4 crops per year.

The price for cannabis is set equal to the most used variety (nederwiet), which is annually published in the National Drugs Monitor (Trimbos).

The amount of seizures is published annually by the UN. A three year moving average is used in order to dampen incidental fluctuations in seizures.

Based on the above information estimates for output and use of cannabis are made.

Consumption of households: volume * street price: 100.000.000 (grams) * 9,81 (euros)= 981 million euros.

Imports: seizures / (seizure rate – seizures) * import price: (14.800.000 (grams) / 0,2 - 14.800.000) * 4.70 (euros) = 278 million euros

In order to estimate total domestic production, the volume of confiscated production capacity is estimated based on the number of confiscated plants, the crop per plant and the number of crops.

Confiscated production capacity: 1,46 (million plants) * 28,2 (grams) * 4 (crops) = 165 tons

Domestic production of cannabis is estimated using the confiscated capacity and the above mentioned seizure rate. As confiscation takes place in the course of the year total production half of the confiscated capacity is assumed to be sold prior to confiscation.

Domestic production: $165 \text{ (tons)} / 0.2 - 0,5 * 165 \text{ (tons)} = 744 \text{ tons}$

In order to estimate sales, output has to be reduced by the actual confiscated cannabis. As it is unknown in what stage of the growth process the cannabis plants are when they are confiscated, it is assumed that half of them concerned market-ready cannabis.

Actually confiscated Cannabis: $0.5 * 14,6 \text{ (million plants)} * 28.2 \text{ (grams)} = 21 \text{ tons.}$

Consumption of domestically produced cannabis: $0.9 * 100 \text{ (tons)} = 90 \text{ tons}$

Exports from domestic production: $744 \text{ (production)} - 90 \text{ (domestic consumption)} - 21 \text{ (confiscated cannabis)} = 634 \text{ tons}$

Exports from imports: $14.8 / 0.2 \text{ (imports)} - 14.8 \text{ (confiscated imports)} - 0.1 * 100 \text{ (domestic consumption)} = 49 \text{ tons}$

Value of exports: $(634 + 49) * 4,91 \text{ (euros, export price)} = 3350 \text{ million euros (excluding consumption of non-residents in the Netherlands)}$

Value of output: value of consumption of households + value of export – value of imports:
 $981 + 3350 - 278 = 4054 \text{ million euros (difference due to rounding).}$

The share of costs of production (both intermediate consumption and fixed capital formation) is mainly based on expert estimates as no data sources are available. For cannabis a distinction is made between production of cannabis and retail trade of cannabis through coffee shops. Costs of trade via coffee shops is set at 50 per cent of the trade margin. For other trade channels this percentage is set at 30 per cent. For re-exports a rate of 10 per cent is applied.

Finally costs for production are estimated to be 40 per cent of the cost price. The cost price of production is set at half the street price. Total costs for cannabis are estimated at 1668 million euros, of which 1138 is allocated to intermediate consumption and 530 million euros to GFCF.

Value added has been adjusted by 1639 million euros compared to pre-revision estimates.

2.1.5.2 Heroin and cocaine

For the estimation of transactions concerning heroin and cocaine several data sources are used. The National Drug Monitor from Trimbos Institute provides information on the number of users of heroin/cocaine distinguished between heavy addicts that have a known long addiction and recreational users. For imports, exports and domestic consumption of hard drugs, price information is gathered from the World Drug Report (UNODC). The confiscated amount of hard drugs is based on data from the World Drug report of the UN. A three year moving average is used in the estimation procedure.

As the KLPD report (see above) does not provide information of seizure rates for heroin/cocaine this rate is derived from information from a web article from Dutch broadcasting (NOS) based in information from criminal circles and is estimated at 20 per cent.

Based on the above information estimates are made.

The number of heavy addicts amounts to 14.386 and the number of recreational users to 49.803. Heavy addicts need 0.5 grams of heroin per day while recreational users use 1 gram per week. This leads to a total estimates use of 5.22 million grams.

Volume of consumption = 14386 (heavy addicts) * 0,5 (grams per day) * 365 + 49803 (recreational users) * 1 (gram per week) * 52 = 5,22 million grams.

Value of consumption: 5.22 (million grams) * 52,30 (euros, retail price per gram) = 273 million euros.

The volume of imports is estimated using confiscated drugs in combination with a seizure rate of 20 per cent.

Volume of imports: 11,1 (confiscated tons) / 0.20 (seizure rate) – 11,1 = 44,5 tons.

Value of imports = $44,5 (*1000000) * 28,70$ (euros, wholesale price per gram) = 1276 million euros.

Exports are estimated as a residual item of imports and consumption of households. For the latter an adjustment is made because consumed heroin/ cocaine is less concentrated than the imported drugs in order to reduce the imported cubic volumes (factor: 0.59). Further it is assumed that half of the exported heroin/cocaine concerns (quasi) transit trade and is no part of the Dutch economy.

Volume of exports = $(44,5$ (volume imports) $- 5,2$ (volume of household consumption) $* 0,59$ (adjustment for concentration) $) * 0,5$ (share of transit trade) = 20.7 tons

Value of exports: $20,7 * 44,17$ (euros, export price) = 914 million euros

Value of imports used for domestic use and exports: $(5,2$ (volume of household consumption) $* 0,59$ (adjustment for concentration) $+ 20,7$ (volume of exports)) $* 28,70$ (import price) = 682

The value of output is estimated as a residual item of the value of exports, consumption of households and imports:

Production (trade margins): $914 + 273 - 682 = 505$ million euros.

Intermediate consumption is estimated as 10 per cent of trade margins, separately for domestic consumption and exports and amounts 44 million euros, leaving a value added of 460 million euros.

The adjustment of value added is limited to 10 million euros (upward).

2.1.5.3 XTC

Production is estimated using confiscated XTC and a seizure rate of 20 per cent. As the Netherlands is known as the major producer of XTC imports are expected to be zero.

According to de National Drugs Monitor 2015 the number of users amounts 0,7 per cent of the population between 15 and 65 years of age. The users of amphetamines is estimated to be 0.5 per cent of this population. It is assumed that the users of XTC and amphetamines show an overlap of 60 per cent.

The average number of pills during a night is 1.3.

The street price is published annually in the National Drug Monitor.

Number of users: $(77500 \text{ (XTC)} + 55.300 \text{ (amphetamines)}) * 0.75 = 99600$

Volume of consumption of households: $99600 \text{ (numbers of users)} * 1,3 \text{ (number of pills)} * 52 = 7.41 \text{ million pills.}$

Value of consumption of households: $7.41 \text{ (million pills)} * 4 \text{ (euros, street price)} = 30 \text{ million euros}$

Volume of production = $20.1 \text{ (million confiscated pills)} / 0.2 \text{ (seizure rate)} = 100.1 \text{ million pills.}$

Volume of exports = $100.1 \text{ (production)} - 7.41 \text{ (consumption of households)} - 20.1 \text{ (confiscated pills)} = 72,6 \text{ million pills.}$

Value of exports: $72.6 * 2 \text{ (half of the street price)} = 145 \text{ million euros.}$

Value of production: $30 \text{ (value of consumptions of households)} + 145 \text{ (value of exports)} = 175 \text{ million euros.}$

De production costs of one XTC/ amphetamine pill is estimated at 0.15 euro based on information from a web article of the NOS. Intermediate consumption is estimated at 15 million euro ($100.1 * 0.15$) leaving 160 million euros for value added.

Value added has been adjusted upward by 29 million euros compared to pre-revision estimates.

2.1.5.4 Prostitution

For the estimation of prostitution services a supply-use approach is used. Domestic turnover of prostitution services is estimated by multiplying the number of prostitutes with the number of clients per week, the price per visit and the number of working weeks in a year. The number of prostitutes is based on a research report by Van Wijk et. al, 2014 (van Wijk, A., van Ham, T., Hardeman, M. & Bremmers, B. (2014). Prostitutie in Nederlandse gemeenten: Een onderzoek naar aard en omvang, beleid, toezicht en handhaving in 2014, WODC, Den Haag) The average number of contacts per prostitute per week and average prices are based on a research study by Husen and Van Dijk (Husen, G. & van Dijk, T, 2014. In gesprek met de klant: Een onderzoek naar klanten van prostituees en hun rol bij de aanpak van misstanden. GGD Amsterdam.) stemming from 2014. Based on information from research by Van Wijk (Van Wijk, A., Nieuwenhuis, A., van Tuyn, D., van Ham, T., Kuppens, J., & Ferwerda, H. 2010. Kwetsbaar beroep: een onderzoek naar de prostitutiebranche in Amsterdam, Bureau Beke.), a stratification of prostitution is made.

In the Netherlands part of prostitution is legal. Van Wijk (2014) estimates the number of legal prostitutes on 10.500. On average municipalities estimate that 2/3d of prostitution is legal, bringing the total number of prostitutes on round about 15.750 for 2014. For the extrapolation to 2015 the growth of the male population in the age between 15 and 65 is used, resulting in 15760 prostitutes. The stratification to type of prostitution is based on Van Wijk (2010).

Table 2.1.5.1 Prostitution in the Netherlands

	Number of prostitutes	Price	Number of clients per week	Number of weeks	Turnover (million euros)
Window / street	4.975	50	20	40	199
Clubs	2.650	110	15	40	175
Escort	4.222	150	10	40	253
Home	3.913	50	10	40	78
Totaal	15.760				705

Table 2.1.5.1 shows that total prostitution in the Netherlands is estimated at 705 million euros. It is assumed that half of the output of prostitution is revenue for the ‘management’ and half for the prostitutes themselves.

Many prostitutes in the Netherlands are non-residents. Based on studies by Nijkamp and Daalder (Nijkamp, R., Sijstra, M., Snippe, J. & Bieleman, B. (2014). *Verboden rood in beeld: Onderzoek aard en omvang niet-legale prostitutie in 2014*. IntraVal, (2014, september), Daalder, A.L. (2015). *Prostitutie in Nederland anno 2014. Rapport WODC.*) it is estimated that 55 per cent of prostitutes does not have the Dutch nationality of which half is also non-resident. This implies that 99 million of turnover of prostitution concerns import of services (28 per cent of 353 million euros). Domestic production can then be estimated at $705 - 99 = 607$ million euros (differences due to rounding). This means a downward adjustment of 329 million euros.

Based on several research studies the share of prostitution services consumed by non-residents is estimated at 23 per cent resulting in a amount of 162 million euros of export of services. The consumption of prostitution services by Dutch residents abroad is assumed to be negligible.

Estimates on the share of intermediate consumption stem from earlier work by Statistics Netherlands and were based on expert estimates. Intermediate consumption of prostitutes cover the use of condoms and clothing and, in case of escorts, transportation. Adjustments on consumption of households are made for these expenses by reallocating a part to intermediate consumption. For the managers it is assumed that intermediate consumption is 50 per cent their output. Intermediate consumption has been adjusted downward by 137 million euros. As a consequence value added has been adjusted downward by 192 million euros.

For non-benchmark years extrapolations are made based on the development of the male population aged 15-65. Prices are assumed to increase with the consumer price index.

2.1.5.5 Overview illegal activities

Table 2.1.5.2 shows the combined effect of the presented illegal activities. The total adjustment on value added equals 1486 million euros. To arrive at the GNI-effect however, the adjustment in the double counting must also be taken into account. Parts of the illegal activities are already included in other parts of the economy, especially household consumption. After taking this into account, value added is adjusted with 1527 million euros, whereas household consumption is adjusted downwards.

Table 2.1.5.2 Adjustment illegal activities

	Pre-revision	Post-revision	Adjustment	Adjustment double counting	GNI-effect
Output	3.343	5.341	1.998	-164	1.834
Intermediate consumption	899	1.411	512	-205	307
Value added	2.444	3.930	1.486	41	1.527
Household consumption	1.749	2.076	327	-852	-525
GFCF	229	530	301	0	301
Exports	2.663	4.324	1.661	0	1.661
Imports	1.069	1.059	-10	0	-10

2.1.6 GFCF of Health care industry

For most industries gross fixed capital formation estimates are derived from the annual investment survey. However, this survey does not cover the Dutch health care industry. Pre-revision estimates of gross fixed capital formation (GFCF) in the health care industry (NACE 86-88) are based on extrapolations of the benchmark in 2001. A revised estimation method is described below:

In the NACE-classification the following sub-industries are distinguished:

86 Human health activities

87 Residential care activities

88 Social work activities without accommodation

The benchmark estimate for the reporting year 2015 is mainly based on the health accounts produced by SN which provide information on GFCF for NACE 86-88. The health accounts include both publicly financed and non-publicly financed health institutions and are based on annual reports. The total amount of GFCF derived from the health accounts amounts to 4.2 billion euros (excluding software and R&D).

However, health accounts do not cover the before mentioned industries completely. Excluded are for instance child day-care, social services and health care supporting services such as medical laboratories and working conditions consultancies. For these activities the estimate of GFCF is based on income and corporate tax declarations. The GFCF estimate for these entities is relatively small and amounts 87 million euros based on tax declarations of the reporting year 2013 and extrapolated to 2015. Total GFCF in the health care industry equals

4106 million euros, which implies an upward adjustment of 7 million euros compared to pre-revision estimates.

Software and R&D are not included in the aforementioned estimates. For these assets the general estimation method is used which is applied for all industries. The method for software is based on survey data on labour dedicated to own-account software development, production costs of the IT-industry, and automation costs. The method for R&D is mainly based on the R&D survey.

2.1.7 GFCF arts, entertainment, recreation and membership organisations

The pre-revision estimates of gross fixed capital formation (GFCF) in the industries “Arts, entertainment, recreation” and “Membership organisations” (NACE 90 – 94) are based on extrapolations of a 2001 benchmark estimate. The annual investment survey does not cover the industries arts, entertainment, recreation and membership organisations so a dedicated estimation method is necessary. The revised estimate method based on recent source data is described below.

In the NACE classification system the aforementioned industries are classified as follows:

90 Arts

91 Lending of cultural goods, public archives, museums, botanical and zoological gardens and nature reserves activities

92 Lotteries and betting

93 Sports and recreation

94 World view and political organizations, interest and ideological organizations, hobby clubs

In the new method estimates are made separately for non-financial corporations and other institutional sectors active in each of these NACE categories.

Non-financial corporations

The statistics on finances of corporations (SFO) are used to estimate GFCF of the non-financial corporations (S.11). Large corporations with a balance sheet exceeding 40 million euros will receive an annual survey containing questions on investments in fixed assets. Information on smaller corporations is derived from the corporate tax database administered

by Ministry of Finance. These data do not include investments but contain end-year balances in fixed assets.

The resulting benchmark estimations based on the SFO exclude R&D, software and originals. These investments are estimated separately for all industries using a general method.

For small corporations the SFO provides end-year balances for the total amount of fixed assets. For 2015 the total *sum of change* in end-year balances amounted to minus 38 million euros. To estimate gross fixed capital formation, the ratio of investment to end-year balances of the total economy has been applied. This yields a value of 14 million euros for investment. Since the total GFCF of the small corporations per industry are very small, the allocation to different asset types is limited to computers, machines, telecommunication equipment, and other tangible fixed assets.

Table 2.1.7.1 below provides the estimates in which the investments of small and large corporations are aggregated.

Table 2.1.7.1- Gross fixed capital formation of non-financial corporations for NACE 90 – 94 in 2015

Industry	Buildings	Other structures	Passenger cars	Other road transport equipment	Computers	Telecom munication equip ment	Machinery and installations	Other tangible fixed assets
Arts, lending of cultural goods, public archives, museums, botanical and zoological gardens and nature reserves activities	12	5	3	2	7	1	9	4
Lotteries and betting	4	1	1	1	6	20	3	6
Sports and recreation	41	18	7	4	19	2	69	18
World view and political organizations, interest and ideological organizations, hobby clubs	2	0	10	0	6	1	1	1

Non-S.11 enterprises

Entities outside S.11 are selected from the Statistical Business Register using sector code and industry classification (5-digit). The SBR also contains information on the number of employed persons of individual units which allows to derive the total employment per industry for the non-S.11 corporations. The number of full time equivalents (fte) is determined by assuming that the fte/employed persons ratio in the total industry is also applicable to the non-S.11 enterprises.

Given the number of fte, for each sub-industry, the GFCF per fte for the various asset types is estimated for the non-financial corporations using an expert guess for GFCF per fte with to some extent a diversification on investment patterns per industry. For instance, investment in buildings is limited to industries that are likely to own buildings such as theatres, event halls, libraries and museums. In contrast, for the industry of performing arts it may be expected that investment in buildings is insignificant since it largely consists of self-employed workers.

Investment per industry is estimated by multiplying the number of fte and the GFCF per asset on 5 digit-level. The table below provides an overview of the investment on two digit level:

Table 2.1.7.2- Gross fixed capital formation of non-S.11 enterprises in 2015

Industry	Buildings	Computers	Other tangible fixed assets	Telecom munication equip ment
Arts, lending of cultural goods, public archives, museums, botanical and zoological gardens and nature reserves activities	16	12	27	11
Lotteries and betting	2	0	0	0
Sports and recreation	22	3	13	3
World view and political organizations, interest and ideological organizations, hobby clubs	0	0	1	0

Software, research and development, originals

GFCF in software, research and development and originals is separately estimated. The estimate for software is based on survey data regarding labour dedicated to own-account software development, production costs of the IT-industry, and automation costs. The investments of software and R&D for arts, entertainment, recreation and activities of membership organisations are be adopted in this benchmark.

Total gross fixed capital formation

Total gross fixed capital formation of the industries arts, entertainment, recreation and activities of membership organisations is derived by summing the investments of the non-financial corporations, the non-S.11 corporations and the autonomous estimates of software and R&D.

Table 2.1.7.4- Total gross fixed capital formation of industry arts, entertainment, recreation and activities of membership organisations by asset type in 2015

Industry	Buildings	Other structures	Passenger cars	Other road transport equipment	Computers	Telecom munication equip ment	Machinery and installations	Other tangible fixed assets	Software	Research and development	Other intellectual property products	Total
Arts, lending of cultural goods, public archives, museums, botanical and zoological gardens and nature reserves activities	28	5	3	2	19	12	9	31	101	4	375	589
Lotteries and betting	6	1	1	1	6	20	3	6	20	0	0	64
Sports and recreation	63	18	7	4	22	5	69	31	98	6	0	323
World view and political organizations, interest and ideological organizations, hobby clubs	2	0	10	0	6	1	1	2	44	23	0	89
total	99	24	21	7	53	38	82	70	263	33	375	1065

Table 2.1.7.5-Adjustments compared to pre-revision estimates

	Buildings	Other structures	Passenger cars	Other road transport equipment	Computers	Telecom munication equip ment	Machinery and installations	Other tangible fixed assets	Software	Research and development	Other intellectual property products	Total
Industry												
Arts, lending of cultural goods, public archives, museums, botanical and zoological gardens and nature reserves activities	-52	-12	-21	1	-27	3	-52	-5	-26	3	0	-188
Lotteries and betting	-10	-6	-5	0	-2	19	0	0	5	0	0	1
Sports and recreation	-13	3	-15	2	-25	-9	12	-2	-83	5	0	-125
World view and political organizations, interest and ideological organizations, hobby clubs	-81	0	-16	-8	-86	-10	-42	-60	106	22	0	-387
	-				-				-			
total	156	-15	-57	-5	140	3	-82	-67	210	30	0	-699

This action point concerned the benchmarking of all asset types except software and R&D. The presented result from this action point in table 1.1 is therefore reported as -519 million euros.

2.1.8 GFCF private education

The estimates of gross fixed capital formation (GFCF) in the private education industry (NACE 85.5) are based on extrapolations of a benchmark of 2001. For most industries gross fixed capital formation estimates are being derived from the annual investment survey. However, this survey does not cover the Dutch private education industry, so a dedicated estimation method is necessary.

A revised estimation method applying recent source data is described below:

In the NACE classification the following sub-industries are distinguished:

- 8551 Sports and recreation education
- 8552 Cultural education

8553 Driving school activities
 8559 Other education n.e.c

The revised estimation method is based on labour accounts which provide information on number of employed workers and full-time equivalents (fte) for the different sub-industries. Given these fte numbers and an estimate of the annual GFCF per fte in 2015 (expert guess), the GFCF for each sub-industry is estimated.

Full-time equivalent jobs

Fte-data on employment include both self-employed workers and employees. Information on the total number of fte of the employees is available at the 5-digit level of NACE(see table 2.1.8.1.). However, for self-employed persons only the number for the total education i.e. at 2-digit level, is available, which includes subsidized education. However self-employed are nonexistent in subsidized education, so they are all allocated to private education. Subsequently, the distribution of employees in small enterprises is used to estimate the number of self employed at the 5-digit level. The results are depicted in table 2.1.8.1 which shows the number of fte per sub-industry:

Table 2.1.8.1 Full-time equivalent jobs private education industry, 2015

Full-time equivalent jobs	total	employees	self-employed Persons
85511 Sailing and surfing instruction	385	215	170
85519 Other sports and recreation education	9213	1017	8195
85521 Dancing schools	1494	165	1329
85522 Artistic education for amateurs (no dancing schools)	6887	1913	4975
8553 Driving schools	8375	2344	6031
85591 Distance education	2180	2086	94
85592 Business education and training	26513	13174	13339
85599 Tutoring and education n.e.c.	13493	4626	8867
Total	68539	25539	43000

Investments per industry

For each sub-industry for the relevant asset types investments in 2015 per fte are estimated. For instance, for the industry ‘Sailing and surfing instruction’ it is estimated that on average one fte requires one instruction boat or surfing board. Prices are estimated for various assets types and allow to differentiate between sub-industries if necessary. It may be expected that buildings in the sailing and surfing instruction industry have a lower value than buildings used for business education as the former are more frequently used as storage space and therefore less luxurious. To estimate the amount of investment for different asset types services lives are assessed based on those generally applied in the PIM. The annual amount of investment is

set equal to the consumption of fixed capital which is computed using a linear depreciation method. As an example, table 2 shows the estimated amount of investment per fte for the various asset types for driving schools.

Table 2.1.8.2 Gross fixed capital formation/fte, driving school, 2015 euros

Gross fixed capital/fte	Price, 1000 euros	Service life, years	Consumption of fixed capital/ investment per year
Computers	1	5	200
Other tangible fixed assets	2	8	250
Telecommunication equipment	1	5	200
Passenger cars	30	9	3333
Motor cycles	8	7	1143
Truck	70	7	10000
Bus	130	7	18571
Buildings other than dwellings	300	41	7317

The estimation of GFCF in buildings requires an adjustment of fte jobs as many self-employed or small firms may not own but rent buildings. Therefore only fte's are included of firms with 10 or more employees. Table 2.1.8.3 shows the number of fte's for driving schools, of which the adjusted fte's for the estimation of GFCF in buildings show up to be 1158. For more detailed estimates of GFCF in other road transport equipment, initially a more detailed breakdown of the fte's is made. The allocation of fte to the various types of vehicles is based on the number of examinations which is available from the Central Bureau of Driving Licenses.

Table 2.1.8.3 number of fte jobs of driving schools, 2015

Driving school	fte
Passenger car	7624
Motor cycle	552
Truck	172
Bus	27
Total	8375
Adjusted fte for buildings	1158

GFCF of a sub-industry is computed by multiplying the number of fte with the estimated GFCF/fte. Table 2.1.8.4 show the results for driving schools.

Table 2.1.8.4 Gross fixed capital formation, driving schools, 2015, million euros

	Buildings	Passenger cars	Other transport equipment	Computers	Other fixed assets	Telecommunication equipment	Total
Driving schools	8	25	3	2	2	2	42

For the investment of software a general estimation method is used which is applied to all industries. This method is based on survey data on the required labour input for own-account software development, production costs of the IT-industry, and automation costs.

Finally, flight academies for airline pilots are excluded from the private education industry. The reason for this is that according to the Dutch Business Register, flight academies are classified in the same industry as their parent company. For instance, the KLM Flight Academy is classified in the industry passenger air transport. Planes of flight academies for non-commercial flights are estimated with international trade data. These data are based on customs information which specifies type of aircraft, weight and value. This enables to select the appropriate planes and flight simulators for the private education.

Total investment of private education

Total gross fixed capital formation in the private education industry is derived by summing the sub-industries. As can be seen in the table 2.1.8.5, this amounts to a total of 326 million euro in 2015. The impact of the new method varies per asset and is largest for buildings. The total impact for the private education industry amounts to 9 million euros.

Table 2.1.8.5 gross fixed capital formation private education 2015, million euros

	Buildings	Passenger cars	Other transport equipment	Ships	Planes	Computers	Other fixed assets	Software	Research and development	Telecommunication equipment	Total
Private education	106	48	3	0	14	14	17	85	0	14	301

Table 2.1.8.6 Impact of the revised estimation method private education industry 2015, million euros

	Buildings	Other structures	Passenger cars	Other transport equipment	Ships	Planes	Computers	Machinery and installations	Other fixed assets	Software	Research and development	Telecommunication equipment	Total
Private education	75	-7	-33	-12	0	11	-9	-22	5	-17	0	-1	-10

This action point concerned the benchmarking of all asset types except software and R&D. The presented result from this action point in table 1.1 is therefore reported as 7 million euros.

2.1.9 Compensation of employees received from RoW

The pre-revision estimates of inward bound compensation of employees (CoE) are based on 2003 data provided by the Dutch Central Bank. Outward bound compensation of employees is based on wage data of those employees in the Tax Register of Dutch Employees which are not registered as a Dutch resident in the Government Resident Administration (GRA) and of which the home country is known. Although the method for estimating outward bound compensation of employees remained unchanged, the recording of those employees of which the home country is unknown has changed. In the past non-identified employees were regarded as residents as not matching was assumed to be due to delays in the GRA. Further research on this group revealed that non-matched employees should be classified as non-residents. As a consequence with the benchmark revision the estimate for outward bound CoE is adjusted upward by 2669 million euros from 5922 to 8591 million euros for the reporting year 2015.

For the inward bound CoE new source data are available. Estimates derived from administrative data on income and property (IIVS, Integrale Inkomens- en vermogensstatistiek) of households for the reporting year 2015. These statistics contain data on labour income received from non-resident employers.

The estimate of inward CoE includes the labour income of employees (1876), directors and shareholders of businesses (24) (to be classified as employees) and other (3), giving a total amount of 1903 million euros, an upward adjustment of 888 million euros compared to the pre-revision estimates for the reporting year 2015. Combining the changes in inbound and

outbound estimates, the impact on GNI compared to the pre-revision estimates amounts to – 2669 + 888 = -1781 million euros.

2.2 Action point A2 & A12-trade margins: exclusion of holding gains and losses and revaluations made to excluded holding gains and losses from changes inventories

The estimated holding gains and losses on inventories of goods for resale must be excluded from the trade margins (output). In the Dutch national accounts the revaluations made to exclude holding gains and losses from the changes in inventories are based on the assumption that opening stocks would be valued at average prices of the previous year (t-1) and closing stocks at the average prices of the current year (t). The validity of this assumption needs to be verified by Statistic Netherlands. It should also be tested for the years 2010-2014 which impacts would result from the alternative assumption that opening stocks and closing stocks would be valued at the prices of the end of years t-1 and t, respectively.

This paragraph describes the work carried out for action points A2 and A12.

Action point A2: The estimated holding gains and losses on inventories of goods for resale must be excluded from the trade margins (output).

Action point A12: In the Dutch national accounts the revaluations made to exclude holding gains and losses from the changes in inventories are based on the assumption that opening stocks would be valued at average prices of the previous year (t-1) and closing stocks at the average prices of the current year (t). The validity of this assumption needs to be verified by Statistic Netherlands. It should also be tested for the years 2010-2014 which impacts would result from the alternative assumption that opening stocks and closing stocks would be valued at the prices of the end of years t-1 and t, respectively.

The work carried out is described in reverse order in this report, thus starting with A12.

Action point A12

The assumption that opening stocks are valued in average prices of the previous year holds if the goods remaining in stock at the end of the previous year were build up at a more or less constant rate in the course of the year. To check the validity of this assumption, average stock

holding periods were calculated in table 2.2.1 for the period 2010-2014 for each type of inventory: finished goods, material and supplies and goods for resale.

Table 2.2.1- Stock holding period per type of inventory for the period 2010-2014

Unit	Finished goods			Materials and supplies			Goods for resale		
	Sales of finished goods	Inventory (end-of-period)	Stock holding period	Purchase of materials	Inventory (end-of-period)	Stock holding period	Goods purchased for resale	Inventory (end-of-period)	Stock holding period
	mln euro	mln euro	number of months	mln euro	mln euro	number of months	mln euro	mln euro	number of months
	a	b	c = b/c x 12						
2010				132990	15700	1,4	457146	52688	1,4
2011	250272	21027	1,0	160989	14432	1,1	523902	57102	1,3
2012	254577	21926	1,0	167161	15340	1,1	539427	59812	1,3
2013	245822	22306	1,1	175414	15327	1,0	521596	58700	1,4
2014	245325	22280	1,1	155871	15310	1,2	500619	58739	1,4
Average 2010-2014*	248999	21885	1,1	158485	15222	1,2	508538	57408	1,4

Note: *For the stock holding period of finished goods, the average is calculated for 2011-2014.

All data used in table 2.2.1 are derived from the annual Dutch structural business statistics (SBS)¹.

The average stock holding period for all three inventory types lies between 1.1 and 1.4 months. This implies the assumption that opening stocks are valued in average prices of the previous year is not valid as goods in stock are on average purchased in the previous month.

As a consequence, the revaluation method per SUT-commodity group is redefined as follows:

$$(1) H_t = S_n - S_o - S_{n/t} + S_{o/t}$$

$$(2) S_{n/t} = \frac{S_n}{p_{t+1}^{5/12}}$$

$$(3) S_{o/t} = S_o \times p_t^{7/12}$$

Where

¹ Includes most NACE industries except agriculture, financial institutions, public administration, healthcare and government financed education.

H_t = Holding gain or loss

S_n = End of period stock, valued at end of the year prices

S_o = Beginning of period stock, valued at begin of the year prices

$S_{n/t}$ = End of period stock at average prices of reporting year (t)

$S_{o/t}$ = Beginning of period stock at average prices of reporting year (t)

p_{t+1} = Average price change between year t + 1 and t

p_t = Average price change between year t and t – 1

The opening stocks (equation 3) and closing stocks (equation 2) are revaluated to average prices of the reporting year (year t), taking into account:

- a. That most resident enterprises use the first-in-first-out principle to value inventory in the Dutch structural business statistics.
- b. A one month stock holding period for all commodity groups and NACE industries, i.e. opening and closing stocks were purchased in November.

Closing stocks are revalued by deflating with 5/12 of the average annual price change between year t+1 and t. Opening stocks are revalued by inflating with 7/12 of the average annual price change between year t and t-1.

The holding gain or loss is derived by subtracting the difference between the revalued opening and closing stocks from the original opening and closing stocks.

This method is based on the assumption that prices increase linearly throughout the period and that the changes in volume of inventories increase or decrease linearly between the opening and closing stocks².

This method differs from the recommendations in the Eurostat guide on inventories³ in that no monthly or quarterly price information is used to calculate deflators, because further research showed that adjustments to changes in inventories resulting from the use of higher frequency price data, are small in comparison to the adjustments made to changes in inventories in the SUT in 2015 based on the aforementioned method. For instance, the difference between opening and closing stocks of goods for resale in SBS was adjusted downwards by 1.5 billion

² See paragraph 2.72 on page 25 of the Eurostat/OECD compilation guide on inventories (2017).

³ See paragraph 5.2 of the guide.

euro's, while a (rough) estimate indicates that using monthly price information to deflate inventories of goods for resale would result in an downward adjustment of changes in inventories of 1.7 billion euro's. Next to that the processing of monthly price data would require an unproportional amount of resources.

Table 2.2.2 shows the revised figures for the period 2010-2015 for inventories of resale goods that were estimated using the formulas shown in paragraph 6.

Table 2.2.2. Inventories of resale goods, in million euros

	Revised figures					Difference with revision 2010	
	Statistical discrepancy ¹	Opening stock	Revaluation	Changes in inventory	Closing stock	Revaluation	Changes in inventory
2010	0	48447	1791	2450	52688	186	-186
2011	1000	53688	1700	1714	57102	-672	672
2012	2227	59329	570	-87	59812	-422	422
2013	-2403	57409	-144	1435	58700	-394	394
2014	-2160	56540	-540	2740	58739	-102	102

Notes: 1) The statistical discrepancy is the difference between the value of the closing stock year in t-1 and the opening stock in year t.

The impact on revaluation of the stocks and changes in inventories of resale goods varies per year. In 2013 the new method causes inventories to be revaluated downwards instead of upwards as was the case with the old method.

Tables 2.2.3 and 2.2.4 present the revised figures for the period 2010-2014 for inventories of finished goods and inventories of materials. Also the impact on current levels of revaluation and changes in inventories are shown.

Table 2.2.3- Inventories of finished goods, in million euro

	Revised figures					Difference with revision 2010	
	Statistical discrepancy	Opening stock	Revaluation	Changes in inventory	Closing stock	Revaluation	Changes in inventory
2010	0	17163	1190	1127	19480	47	-47
2011	0	19480	1050	497	21027	1050	-1050
2012	0	21027	192	733	21952	192	-192
2013	0	21952	-253	633	22332	-253	253
2014	0	22332	-540	514	22306	-540	540

Table 2.2.4- Inventories of materials and supplies, in million euro

	Revised figures					Difference with revision 2010	
	Statistical discrepancy	Opening stock	Revaluation	Changes in inventory	Closing stock	Revaluation	Changes in inventory
2010	0	14490	1216	-6	15700	-30	30
2011	0	15700	873	-2141	14432	873	-873
2012	0	14432	-16	886	15302	-16	16
2013	0	15302	-310	306	15298	-310	310
2014	0	15298	-447	427	15278	-447	447

The stocks of inventories of finished goods and materials and supplies have only been revaluated in the benchmark year of the revision (2010). In other years (2011-2014) no revaluation of the stocks have been made to calculate changes in inventories in the SUT.

The size of the revaluations can in large part be attributed to price movements of crude oil and petroleum products. In 2010 and 2011 the price of crude oil increased by more than 30%. In 2014 the crude oil price decreased by more than 10%. The prices of petroleum and chemical products are closely correlated with the crude oil price.

Table 2.2.5 contains revaluations of inventories for the benchmark year 2015 and shows the differences with the pre-revision estimates for the reporting year 2015. It must be kept in mind that these differences are not only caused by use of a different revaluation method. The opening and closing stocks have also been benchmarked to SBS.

	Revised figures				Difference with 2015 before revision	
	Opening stock	Revaluation	Changes in inventory	Closing stock	Revaluation	Changes in inventory
Goods for resale	56175	-18	2829	58986	275	249
Finished goods	17177	-328	430	17279	-328	247
Materials and supplies	11917	-148	494	12263	-148	-228

From the expenditure point of view the impact on the changes of inventories amounts to 268 million euros. The impact on production and intermediate consumption are listed under action point A2.

Action point A2: Removing holding gains and losses from production of goods and trade margins and from intermediate consumption.

In the last revision of the Dutch national accounts, the holding gains and losses on inventories were erroneously not removed from production or intermediate consumption. Table 2.2.6 shows the impact on production, intermediate consumption and gross value added in 2015 when holding gains and losses are removed.

Table 2.2.6: Impact on GNI in 2015 (in million euro)

Effect on production	346
Revaluation of inventory of resale goods	18
Revaluation of inventory of finished goods	328
Effect on intermediate consumption	-148
Revaluation of inventory of materials and supplies	-148
Effect on gross value added	494

2.3 Action point A3 Financial services for which output should be calculated according to ESA 2010 paragraph 3.73

Statistics Netherlands should carry out investigation in the availability of data needed to estimate financial services for which output should be calculated according to ESA 2010 paragraph 3.73 (i.e. by margins between selling and buying prices realised on securities, investment fund shares and foreign currency exchange).

On 6 July 2018 Eurostat indicated that further clarification on the implementation of the above referred to ESA guidance was still pending.

Introduction

In many financial markets there are market makers providing liquidity to the market. Characteristic of these traders is that they obtain a margin between their purchase and sales prices. Through this margin of trade, they implicitly impose on buyers and sellers an amount as compensation for the liquidity granted. Both ESR2010 and BPM6 require that this trade margin be included in national accounts. In the pre-revision estimates these trade margins were not directly measured either in the national accounts (sector accounts and SUT) or the balance of payments⁴.

The following three subsector contain traders in financial assets: Banks (S.122), Other financial intermediaries (S.125) and Financial auxiliaries (S.126). Trade margins those of traders in the latter two subsectors are implicitly included in value added based on a generic ‘all inclusive’ output measurement method (see GNI Inventory 2010, 3.1.17). Please be aware that data sources from the Dutch Central Bank (DNB) do not cover the subsectors S.125 and S.126 by any means.

This section outlines how margins between selling and buying prices realised on securities, investment fund shares and foreign currency exchange obtained by banks are being estimated. This is the only subsector for which as supplemented estimate is being required from an exhaustiveness perspective as these earnings are included either in FISIM or services provided and charged to customers. With the 2015 benchmark revision, an estimate for these trade margins were included in the national accounts and the balance of payments⁵.

Estimation method

The general principle is that total output, as the sum of trade margins, is estimated as the product of the total volume of relevant asset sales and purchases and the relevant margin or spread.

An accurate estimate along this line requires information on purchase / selling prices and the volumes of all transactions performed by Dutch market makers in the banking sector and foreign market makers in the relevant period as well as the sector and country of origin of the

⁴ However, DNB has made estimates for the import and export trade margin since the reference period 2014Q1, used by IHD in the service statistics. The results were compared and on balance they were reasonably similar.

⁵ Service statistics will also be linked to this renewed estimate

buyers and sellers involved.

In the case of the Netherlands the required information is only partially available. This implies that a full-fledged estimation of margins as recommended by ESA2010 – par. 3.73 is infeasible. As a second best alternative the following method is used.

From the balance of payments survey (DNB, source DRA), the total purchase and sales transactions of the households, investment institutions, pension funds, insurers and non-financial institutions are obtained on a regular basis. This gives us information on the volume of all carried transactions performed in an accounting period.

The estimation of the margins or spreads requires a number of additional assumptions;

1 Nationality Market Makers

The available transactions in securities do not contain information on the nationality of the relevant market makers. It is assumed that the nationality of the market makers is in accordance with the nationality of the issuer of the traded instrument. Under this assumption, the export of services determines the buying and selling of foreign investors in Dutch titles and for the import of services the purchase and sale of Dutch investors in foreign titles.

The nationality of relevant market makers is initially important in determining whether there is a cross-border service but also for geographical breakdown. ECB and Eurostat query on quarterly basis "Explicitly charged and other financial services" with breakdown to euro / non-euro and Union / non-Union (Geo3). The item is part of "Financial services", for which a more detailed breakdown is requested (Geo4). DNB provides this further breakdown.

2 No primary market

Increases in securities positions may arise from the purchase of newly issued securities as well as from transactions on the secondary market. Only the latter transactions are accompanied by trade margins. They usually also form the majority of transactions. We assume that all purchase transactions, purchases are on the secondary market.

3 Consumption of trade margins S.124, S.128 and S.129

It is assumed that the institutional investors (Investment Companies (S.124), the Insurers (S.128) and the Pension Funds (S.129)) deal with a quantum discount or explicitly pay a commission on over-the-counter transactions. Therefore, the percentage of transactions taken

by institutional investors in this spread calculation is set as expert guess at 50%. This percentage has been judged by DNB. For a general directive, they found the percentage acceptable. At present no data are available to improve this percentage.

4 Estimating the average trade margin

The spreads are estimated as a percentage of the mid-price at which purchases and sales are recorded in the financial transaction. These percentages are based on an expert guesses. In liquid markets the spreads tend to be smaller while on illiquid markets spreads are relatively larger. Improvements can still be achieved by basing the spreads on market information on bid and late prices. At present, no data are available to improve the average trading margins in the model. After analysis on the stock exchange it could not be concluded that there are investment categories that have on average a higher spread than other investment categories. For this reason, the average spread for all investment categories in the model is equal and estimated at 0.2%.

Consultation with DNB colleagues led to the conclusion that these average percentages are acceptable.

However, an average spread remains difficult to determine. Increasing competition between market makers may make result into decreasing spreads, while increasing volatility may led to increasing spreads.

5 Estimating producing sector of the trade margin

In the DRA data, for both the buying and selling transactions it is not clear in which sector the market maker is classified. However, market makers may only belong to monetary financial institutions (S.122) and other financial intermediaries (S.125) according to the European Security and Markets Authority (ESMA). A number of units of the other financial intermediaries in the Netherlands are large parties. It is assumed that the banks in the Netherlands therefore do not play a dominant role as market makers. As an expert guess, the production ratio between these sectors is determined at 50/50. This implies that half of the total sum of margins is being produced by the subsectors S.125 and S.126. For these sectors the all-inclusive output estimates already include the revenues from financial asset trading. DNB was asked to comment on this 50/50 assumption. As a general directive, they found this ratio sufficiently acceptable.

Adjustments in the National Accounts

Registration of the trading margin in securities trading has implications for:

- The output of banking sectors (S.122)
- The intermediate consumption of S.11 and S.12 sectors

- The consumption of the households sector S.14
- Import of financial services: Total trade margin on resident transactions through a non-resident market maker (by type of instrument and country breakdown)
- Export of financial services: Total trade margin on non-resident transactions through a resident market maker (by type of instrument and country)

Related transactions by the government sector S.13 are negligible.

The inclusion of the trade margins in national statistics will have impact on the financial results of the relevant sectors through the SUT-transactions shown in figure 2.3.3, 2.3.4 and 2.3.5.

Figure 2.3.3 Implications for the current account

Million euros						
Year	2010	2011	2012	2013	2014	2015
period	Y	Y	Y	Y	Y	Y
Total production	1.243	1.203	1.033	1.025	917	1.199
of which S.122	621	601	517	513	459	600
of which S.125 & S.126	621	601	517	513	459	600
export	1.100	1.058	894	889	777	1.051
Total (intermediate) consumption	953	839	721	708	754	821
of which intermediate consumption S.11	27	12	15	18	21	23
of which intermediate consumption S.124	520	423	319	318	340	372
of which intermediate consumption S.129	226	231	223	204	220	277
of which intermediate consumption S.128	106	102	114	114	109	84
of which consumption S.14	74	72	50	54	64	63
import	811	695	582	572	613	673
export - import	289	363	312	317	163	378

Figure 2.3.4 Implications for the financial account

	Ex. S.122	Ex. S.14
FT	+ margins	- margins
OM	- margins	+ margins
LR	+ margins	- margins

Figure 2.3.5 Implications for the supply and use (SUT) tables

Million euros						
Year	2010	2011	2012	2013	2014	2015
period	Y	Y	Y	Y	Y	Y
production						
64199 & 66000	1.243	1.203	1.033	1.025	917	1.199
P72 import	811	695	582	572	613	673
total production	2.053	1.898	1.615	1.598	1.531	1.872
(intermediate) consumption						
P62 export	1.100	1.058	894	889	777	1.051
regkol 70100 (S.11)	27	12	15	18	21	23
regkol 64199 (S.124)	520	423	319	318	340	372
65000 (S.128 + S.129)	332	333	337	318	329	362
P31A2 (S.14)	74	72	50	54	64	63
total (intermediate) consumption	2.053	1.898	1.615	1.598	1.531	1.872

The trade margins in the securities trading of non-financial institutions (S.11) are attributed to the industry 70100 Holdings and Concerns.

As production of S124, S129 and part of S128 is estimated as sum of costs, output in 2015 increases with a further 712 million euros. As a consequence by definition consumption of households increases with 277 million euros because of the increased output of pension funds (S129).

2.4 Action point A4 Financial services indirectly measured (FISIM)

Investigations should be made to improve the estimates for financial services indirectly measured (FISIM):

- a. The availability of data and methods to make the estimates for FISIM more sector specific should be investigated. In particular specific interest rates should be used for the general government sector (S.13) instead of using the interest rates for non-financial corporations for S.13.
- b. The internal reference rate used for FISIM should not be based on published rates but be calculated using information on stocks of interbank loans and deposits and related interest flows between and within S122 and S125 (see ESA 2010 para 14.09). Investigations into the availability of these data should be made.
- c. Also the external reference data should not be based on published rates but be calculated using information on relevant interest flows and stocks (see ESA 2010, para 14.10).

Action point 4a

The availability of data and methods necessary for sector specific FISIM calculations was investigated. The focus has been on those sectors affecting GNI: households and government. The Dutch Central Bank (DNB) publishes interest rates on deposits and loans of households and non-financial corporations (NFC). The interest rates for households were already implemented in the calculation of FISIM consumption of households with the benchmark revision of 2010. Consequently for households the FISIM calculation remains unchanged, but for government a new method to determine the interest rates is implemented with the 2015 benchmark revision. There was no reason to assume that the government sector receives other interest rates on deposits than non-financial corporations. Pre-revision interest rates of NFCs have been used to determine FISIM government consumption. For the government sector, a new statistical source has become available from 2015 onward. This so-called 'SE 9008' data (collected by the central bank) gives the profit-and-loss account of banks and provides the amount of interest payments on government loans to monetary financial institutions (MFI). In 2015, the central government subsector paid 0,04 percent on short term loans and 1,22 percent on long term loans. These interest percentages are much lower than the interest rates of NFC, which are respectively 1.85 and 3.13 percent. So, central government could lend at a 'discount' of 1.81 percent on short term loans and 1.91 on long term loans. No discount has been applied to the interest margins on government deposits. This government discount has been applied to the interest margin of all FISIM producers (S.122, S.125, S.2).

Using source interest rates, total government intermediate consumption is 265 million euros lower than using market interest rates of NFCs. Because government production is measured as sum of costs government output (and consumption) is reduced by 265 million euros. Intermediate consumption of government can be split in intermediate consumption from production (-238 million euros) and from import (-27 million euros). For the total economy results a reduction of production of -503 million euros. As only the revision of intermediate consumption from domestic production has effect on GDP, the effect of using other interest rates on loans for central government lowers GDP with 238 million euros in 2015. The impact

on GNI is -265 million euros in 2015, as the adjustment on import of FISIM leads to an increase of 27 on property income paid to the rest of the world.

Action point 4b and c

The FISIM task force elaborated on the reference rate underlying FISIM. In 2012, FISIM by maturity was tested using: a) two reference rates (one each for short-term and long-term deposits and loans using EURIBOR and ISDAFIX, respectively); and b) single weighted average rate of EURIBOR and ISDAFIX. The research paper of Antonio Colangelo (ECB 2012) Measuring FISIM in the euro area under various choices of reference rate(s) describes the reference rate as “a pure market rate which is free of all elements of charges for services provided by financial intermediaries.” The ECB paper compares bank interest rates to the Euribor for short-term operations, and to the interest rate swap rate for long-term operations, where “several task force members proposed to use the government bond yield as the relevant reference rate for long term operations.” These are all market rates, most common (in literature and National Accounts practice) to use as the reference rates.

The GNI Committee proposes the use of observed data on interest flows between financial intermediaries. It has been investigated if source data on interest flows between and with sectors S.122 and S.125 and S.2 are available. This is unfortunately not the case. The only possible source would be the ‘Direct Report’ (DRA) collected by the Central Bank which has data on accrued interest between S.125 and S.2. However, the quality of the allocation to instrument (and maturity) is not high enough to use in the estimation of FISIM. Since every instrument has its own interest margin (interest rate minus reference rate), it has been agreed in the FISIM task force that FISIM needs to be calculated per instrument. As can be seen in table 2, almost the entire amount of interest on deposits and loans is reported on long term loans (AF.42D) and interest received on short term loans to abroad is even zero.

Table 2.3.2- Interest flows between sectors S.125 and S.2

Assets	Liabilities	Instrument	Average balance sheet (million euro)	Interest Q1	Interest Q2	Interest Q3	Interest Q4	Interest Year (million euro)	Interest Year %
S.125	S.2	AF.22A	1,494	3	1	1	1	6	0.40
S.125	S.2	AF.22B	478	0	1	1	1	3	0.63
S.125	S.2	AF.29BA	349	1	2	0	1	4	1.15
S.125	S.2	AF.29BB	65	2	4	4	5	15	23.26
S.125	S.2	AF.41C	18,036	0	0	0	0	0	0.00
S.125	S.2	AF.42BA	1,783	29	22	17	15	83	4.66
S.125	S.2	AF.42D	35,113	413	402	388	428	1631	4.65
S.2	S.125	AF.41C	16,206	6	8	7	36	57	0.35
S.2	S.125	AF.42D	20,807	139	182	179	292	792	3.81
Three-month Euribor									-0.02
Latest ten-year government bonds									0.69

For interbank interest flows between and with sector S.122 there are no source data available. The few data on interbank interest, which is on loans and deposits together, represents only 25

percent of the total banking population. As there is no plausible distinction of interbank interest flows between all the different instruments, market interest rates are used. For determining the reference rate, Statistics Netherlands uses, amongst others, the three-month Euribor (short-term) and ten-year government bonds (long-term). The Dutch GNI inventory provides a detailed description of all the market rates that are used for determining the internal and external reference rates. According to our view, using market interest rates as the reference rates is the best practice available given the lack of plausible data. Moreover, it is most common in literature and National Accounts practice, which has the benefit of good international comparability.

In an email from February 2 Eurostat made the following request:

- In case of unavailability of adequate data for calculating the reference rates implicitly: please provide proof that SNS contacted the Dutch Central Bank to request these data and proof of the answer from the Dutch Central Bank.

The resulted in the following email correspondence with DNB:

Dear Jo,

Thank you for your question regarding FISIM. Please be advised that we do have some of the information you ask for, but this is by no means complete. We, for example, have information for the items you ask for under your first bullet point, but mainly for sector S122. We do not have much information for S125, only for some subsectors. Regarding the information you ask at your second bullet point, for S122 we have some information on interest on deposits and loans. But this information cannot easily be split between the two items. Furthermore, only a selection of our reporting population of sector S122 report on this item. With respect to your third bullet point, we only have information for S2 and not split into different sectors on S2.

As far as we can oversee, due to the many data gaps and the need to use information from various types of reporting templates, we think that it would be quite challenging to improve the estimates of FISIM at this point.

Best wishes,

Hugo

De Nederlandsche Bank N.V.

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From: Haynes, J. (Joseph) [mailto:j.haynes@cbs.nl]

Sent: donderdag 18 mei 2017 17:28

To: Smid, H. (Hugo) (STAT_MBS) <h.smid@dnb.nl>

Cc: Haan, M. de (Mark) <mark.dehaan@cbs.nl>; Nootenboom, L.B. (Leslie) <lb.nootenboom@cbs.nl>

Subject: Eurostat GNI inventory FISIM questions [Decrypted using DNB TLS]

Hi Hugo,

As part of the GNI inventory Statistics Netherlands has received a number of questions from Eurostat seeking further clarification on possible improvements to the estimates of FISIM, particularly the reference rate. The questions are included below.

At this moment CBS uses published market rates for certain financial instruments as proxies for the reference rate. In order to improve these estimates Eurostat have asked investigation be made to the use of information on the stock of interbank loans and deposits and the related interest flows within and between S.122 and S.125 in order to calculate the internal reference rate. Similarly, Eurostat have asked that the external reference rate be calculated using information on loans and deposits between resident and non-resident financial intermediaries. These relate to questions b and c below.

We are therefore looking for a data source that includes the following:

- For both subsector S.122 and S.125 data is needed on the stock of deposits (transferable AF.22 and non-transferable AF.29) and loans (short-term AF.41 and long-term AF.42) as well as the corresponding accrued interest.

- Additionally, it needs to be possible to break this information down so as to differentiate between loans and deposits which are interbank (i.e. within S.122 or S.125) and which are undertaken with other institutional sectors: S.11, other sectors of S.12 but not the central bank, S.13, S.14 and S.15.

- For the external reference rate we need data on the loans and deposits with non-resident financial intermediaries and with other non-residents.

What possible data sources does DNB have available? DRA?

As we may need to include this mail exchange in our answer to Eurostat it would be useful to keep it in English.

Groeten

Jo

2.5 Action point A5 Insurance industries

Statistics Netherlands should make investigations with a view to improve the estimates for the insurance industries:

- a. The availability of data on the life insurance business should be explored with a view to replace the currently used sum of costs approach for output by the preferred output calculation approach using data on premiums earned, premium supplements, benefits due and increases (plus decreases) in life insurance technical reserves (see ESA 2010 paragraph 3.74(b)). The Netherlands were obliged to implement "Council Directive 91/674/EEC of 19 December 1991 on the annual accounts and consolidated accounts of insurance undertakings" which deals inter alia with the rules for the preparation of profit and loss accounts for insurance companies (Article 34). In case that adequate data for the preferred output calculation approach are not yet available evidence should be provided that potential data providers (in particular also the supervisory authority for insurance) have been contacted for this purpose.
- b. As part of the output estimates for the insurance businesses (ESA 2010 paragraph 3.74) the net operating surplus from secondary activities of insurance companies into which they have invested the technical reserves (e.g. the letting of dwellings or offices) should be included in the income earned from the investment of the insurance technical reserves (premium supplements) instead of gross income on rentals.

A5a Investigate possibilities replacement sum of costs approach by ESA preferred method

One element of the 2010 Benchmark Revision was investigating the method for calculation of the life insurance output. Unfortunately the conclusion was that the preferred method as described in the ESA2010 - using data on premiums earned, premium supplements, benefits due and increases (plus decreases) in life insurance technical reserves - did not lead to plausible results. Main reason was that increase/decrease in technical reserves was not reported in accordance with the NA-definitions in the source data and no further information was available for funded adjustments. Alternatively sum of costs approach was used, as described in ESA2010 (paragraph 3.74b and 16.53).

The GNI visit December 2016 resulted in an action point stating that the preferred calculation method for life insurance output has to be investigated and if possible replace the current sum of costs approach. In addition the estimation of output for pension services was also investigated as for these services the sum of costs approach is used as well.

Table 2.5.1 shows the results of the preferred calculation method in the period 2011-2015 for life insurance, using our main source DRA for all components as provided by the Dutch Central Bank each quarter. D.44 transactions are not directly reported, but are estimated from D.4 transactions as reported in DRA.

The resulting output figures show a very volatile and implausible time series, with even large negative values. Especially the reporting year 2014 shows a large increase in the technical reserves, while the premiums earned, benefits due and premium supplements do not differ very much from other years/quarters, resulting in large negative output values.

From this it was concluded that the reported increase/decrease in technical reserves (financial transaction) contains more items than necessary and it doesn't match the NA-definitions. For sure the increase/decrease of the technical reserve contains (collective) transfers between life insurers and pension funds, but probably also redemption of insurance policies.

Table 2.5.2 shows the pre-revision output values for life insurance, to compare both approaches. The data used for this sum of costs approach are all derived from quarterly DRA data. As can be seen the output values show a much smoother and more plausible time series.

On a yearly basis the calculated D.44 transactions can be substituted by values for 'Required interest credit to technical provisions' as derived from the actuarial report in the supervisory data from the Dutch Central Bank. This report is only provided on a yearly basis and is only available for the final year estimates. Therefore the preliminary annual estimates, which are compiled as the sum of four quarterly estimates, cannot be compiled with this type of data .

Table 2.5.3 shows the results of the output with the premium supplements replaced with the supervisory data. These figures still show very volatile and implausible time series. The required interest credit probably contains also more items than necessary for NA purposes,

because there are some large differences between the required interest credit of individual and collective life insurance policies where they are not expected.

Finally the complete yearly actuarial report of life insurance companies as published by the Dutch Central Bank can be used, but for various items in these reports it is unclear whether to register those as financial transaction or as some kind of other changes in liabilities (holding gains/losses, volume changes, ...).

For pension funds exactly the same problems arise as for life insurance companies. Using DRA data the resulting output is in table 2.5.4, with the current figures according to the sum of costs method as a comparison.

In the main data source (DRA) more detail on a quarterly basis is not available and will not be available in the future too, as was told by the colleagues of the Dutch Central Bank.

The conclusion of the additional research is that the current sum of costs approach is the only suitable and practically feasible method to compile life insurance and pension output on a quarterly and on an annual basis as quarterly and annual data sources fail to support such an approach.

A5b Net operating surplus instead of gross income on rentals

In the pre-revision method for calculating the insurance output, accidentally gross income on rentals was used instead of net income. This mistake is adjusted in the 2015 benchmark revision and the time series.

The impact on the GDP will nonetheless be zero or near to zero, because for life insurance and pension output the sum of costs method is used, which doesn't use the income on rentals in the calculation. For non-life insurance (reinsurance, health insurance and other non-life insurance) the income on rentals is used, but Dutch non-life insurers do not invest their technical reserves directly in real estate (only via investment funds). So here the impact is zero as well.

The replacement of gross income by net income on rentals also has effect on the estimation of D.441/442 (investment income attributed to insurance policy holders / pension entitlements), but only with life insurance companies and pension funds, as they do invest directly in real estate.

However the impact on GNI is negligible, because the liabilities to policy holders and pension participants abroad are very small. Combined with the relatively small amount of direct investment in real estate, the impact is not larger than 10-15 mln. euro's on a yearly basis.

Table 2.5.1- Life insurance output, preferred approach

	2011	2011	2011	2011	2011	2012	2012	2012	2012	2012	2012	2013	2013	2013	2013	2013	2014	2014	2014	2014	2014	2015	2015	2015	2015	2015
DRA	Y	1	2	3	4	Y	1	2	3	4	Y	1	2	3	4	Y	1	2	3	4	Y	1	2	3	4	
Premiums	21.215	8.066	4.556	4.578	4.015	17.894	7.312	3.924	3.181	3.477	15.435	6.151	3.203	3.055	3.026	14.829	5.914	2.998	2.765	3.152	13.224	5.045	2.706	2.611	2.862	
D.441 (direct)	4.657	1.060	1.289	956	1.351	4.879	1.210	1.277	917	1.475	5.010	1.269	1.648	828	1.265	4.317	1.184	1.335	724	1.074	4.610	1.104	1.468	881	1.156	
D.442	3.209	731	889	659	931	3.636	902	952	683	1.099	4.608	1.167	1.515	762	1.164	4.480	1.228	1.385	752	1.114	4.094	981	1.304	782	1.027	
Benefits	23.735	6.620	5.614	5.064	6.437	25.041	6.739	5.910	5.405	6.987	23.638	6.334	5.778	5.506	6.020	21.134	5.477	5.137	4.823	5.697	21.372	5.496	5.230	4.787	5.859	
Δ F.62	-338	-1.589	286	2.124	-1.159	-3.503	-824	-404	-167	-2.108	-6.341	-1.380	-2.539	-896	-1.526	5.801	995	1.700	881	2.225	-5.559	3.991	-5.543	-2.241	-1.766	
Δ F.63	3.625	695	-605	2.167	1.368	4.659	3.399	32	361	867	3.474	1.975	-371	786	1.084	15.608	1.931	2.682	4.150	6.845	3.105	5.573	-3.785	-468	1.785	
Output	2.059	4.131	1.439	-3.163	-348	212	110	615	-817	305	4.282	1.658	3.498	-751	-123	-18.917	-77	-3.800	-5.613	-9.427	3.010	-7.930	9.576	2.196	-833	

Table 2.5.2- Life insurance output, sum of costs (current approach)

	2011	2011	2011	2011	2011	2012	2012	2012	2012	2012	2012	2013	2013	2013	2013	2013	2014	2014	2014	2014	2014	2015	2015	2015	2015	2015
Current = sum of costs	Y	1	2	3	4	Y	1	2	3	4	Y	1	2	3	4	Y	1	2	3	4	Y	1	2	3	4	
Output	6.740	1.649	1.640	1.649	1.802	6.002	1.533	1.547	1.391	1.532	5.597	1.547	1.533	1.247	1.269	5.838	1.482	1.578	1.341	1.436	4.962	1.113	1.361	1.175	1.312	

Table 2.5.3- Life insurance output, D44 supervisory data

D44 supervisory data		2011	2012	2013	2014	2015
Required interest credit	individual	2.709	8.112	7.386	8.063	5.363
	collective	4.387	7.515	4.289	8.057	4.894
Output		1.289	7.324	6.339	-11.594	4.563

Table 2.5.4- Pension output

	2011	2011	2011	2011	2011	2012	2012	2012	2012	2012	2013	2013	2013	2013	2013	2014	2014	2014	2014	2014	2015	2015	2015	2015	2015
DRA	Y	1	2	3	4	Y	1	2	3	4	Y	1	2	3	4	Y	1	2	3	4	Y	1	2	3	4
Premiums	29.761	7.013	7.391	7.318	8.039	31.784	8.285	7.629	7.599	8.271	32.932	8.592	8.039	8.230	8.071	31.006	8.913	7.490	7.263	7.340	28.896	7.715	6.925	7.085	7.171
D.442	18.551	4.089	4.966	5.057	4.438	22.517	4.915	5.543	5.687	6.371	23.537	5.211	6.705	6.241	5.379	24.854	5.294	7.199	6.668	5.693	27.249	6.356	7.265	7.538	6.089
Benefits	24.978	6.122	6.233	6.252	6.371	25.920	6.364	6.505	6.448	6.603	26.427	6.544	6.696	6.534	6.653	27.019	6.642	6.806	6.776	6.795	27.860	6.849	6.983	6.991	7.037
Δ F.63	6.469	-117	2.074	2.587	1.925	20.807	7.847	5.730	2.802	4.428	7.060	2.856	1.691	260	2.253	6.808	1.240	686	1.514	3.368	5.866	3.694	-823	2.962	33
Output	16.865	5.097	4.050	3.536	4.181	7.574	-1.011	937	4.036	3.611	22.982	4.403	6.357	7.677	4.544	22.033	6.325	7.197	5.641	2.870	22.419	3.528	8.030	4.670	6.190
Current = sum of costs																									
Output	3.595	836	940	873	946	3.346	777	814	863	892	3.417	813	710	936	958	3.423	762	829	923	909	3.578	853	892	886	947

2.6 Action point A6 Dwelling services: compensation for the right to use furniture

Statistics Netherlands should investigate whether the "basic rents" used to estimate dwelling services provided to tenants (see GNI inventory, Tables 3.18.2, 3.18.4 and 3.18.5) adequately cover the compensation for the right to use furniture.

Dwelling services including the right to use furniture are not very common in the Netherlands and are only applicable to private rentals. This implies that all dwelling rented out by housing corporations are excluded. No directly observed information on the number of furnished rented dwellings nor on the additional payments is available. Therefore the estimate is necessarily based on assumptions.

It is estimated that in case of furnished rentals in 2015 an 'investment' of 5000 euros is made on furniture and 5000 euros on appliances. Information from an Expert Centre on renting of dwellings (De woonbond) states that additional annual rents because of furnishing are on the average 20% of the value of furniture and 10% of the value of appliances. Together with the estimated 'investments' this gives an additional annual rent of 1500 euros per furnished dwelling.

It is assumed that a maximum of 5% of the private rentals concern furnished rentals of dwellings. The private market for dwelling services consists of round about 890.000 dwellings in 2015, leading to a number of ca. 45.000 for furnished rentals. Each having an additional rent of 1500 euros per year gives an additional estimate of 68 million euros.

A plausibility check on the assumption of 5%: the number of expats, who are probably the main users of furnished dwellings, in the Netherlands amounts to 60.000 which seems in conformity with the 45.000 furnished dwellings.

The method of estimating of private rentals has been changed with the 2015 benchmark revision. In the revised estimation method renting of furnished dwellings is implicitly taken into account as the starting point are the gross rents (including additional costs, if applicable, for energy, cleaning, furniture, etc.) received by the landlords. Nevertheless a new method for estimate private rentals is used, The impact of this action point in table 1.1 is set at 68 million euros.

'Private' rental of dwellings

In the Netherlands the market for rental dwellings consist of two parts. The strongly regulated rental of dwellings by housing corporations aimed a (relatively) low-income tenants and a 'private' landlords operating in the competitive part of market. For housing corporations financial information is available. 'Private' rental of dwellings is partly observed in SBS (SIC

68) and as side activity in other industries. However SBS of SIC 68 covers the population only partly and therefore cannot be used for exhaustively estimating private rentals.

An alternative for estimating private rentals is applying the stratification model similar to imputed rents based on a combination the rental survey (using gross rents as dependent variable) and the BAG.

Tables 2.6.1 and 2.6.2 present the results for the estimation of the stratification model with the monthly T-1 and T gross rents as dependent variable. See action point A7 for more details on the stratification applied in this method.

Table 2.6.1 Regression coefficients stratification model using monthly T-1 gross rents.

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1216,914	2,555		476,213	0,000
Noord	-143,441	0,850	-0,170	-168,686	0,000
Zuid	-73,499	0,720	-0,110	-102,060	0,000
Midden	-73,439	0,675	-0,112	-108,737	0,000
50	-488,482	2,620	-0,453	-186,461	0,000
50_100	-330,971	2,471	-0,583	-133,923	0,000
100_150	-188,306	2,489	-0,313	-75,643	0,000
150_200	46,579	2,757	0,033	16,898	0,000
1950	-262,584	0,783	-0,388	-335,541	0,000
1950_1970	-217,766	0,796	-0,305	-273,603	0,000
1970_1990	-162,509	0,692	-0,268	-234,796	0,000

a. Dependent Variable: VORIGE_BRUTO_HUUR

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,579 ^a	0,335	0,335	230,43748

Table 2.6.2 Regression coefficients stratification model using monthly T gross rents.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1229,584	2,530		485,958	0,000
	Noord	-142,858	0,849	-0,170	-168,336	0,000
	Zuid	-75,584	0,723	-0,113	-104,472	0,000
	Midden	-76,846	0,679	-0,117	-113,233	0,000
	50	-491,143	2,595	-0,453	-189,246	0,000
	50_100	-327,311	2,444	-0,575	-133,920	0,000
	100_150	-184,152	2,462	-0,306	-74,789	0,000
	150_200	46,140	2,735	0,032	16,873	0,000
	1950	-260,368	0,784	-0,384	-332,061	0,000
	1950_1970	-217,387	0,800	-0,303	-271,801	0,000
	1970_1990	-158,733	0,695	-0,261	-228,234	0,000

a. Dependent Variable: BRUTO_HUUR

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,577 ^a	0,333	0,333	231,57547

Similar to owner occupied dwellings a distinction of is made by type of dwelling for allocating gross rents. Residential dwellings fully used for 'housing' are also fully allocated to gross rents. Dwellings with a practice are taken into account for 90 per cent, farms for 75 per cent and non-residential reals estate partly used as dwelling for 30 per cent.

Next to that for residential dwellings an adjustment is made for vacancies of 3.1 per cent, based on statistics on the use of real estate published by Statistics Netherlands. Table 2.6.3 shows the results for the estimate of the renting of dwellings.

Table 2.6.3 Private rentals using the stratification model.

	a. Rental survey 2015 rent 2014 BAG 2015			b. Rental survey 2015 rent 2015 BAG 2015			Average of a and b
	Model	Adjustment for partly dwelling /vacancy	Estimate	Model	Adjustment for partly dwelling /vacancy	Estimate	Estimate NA
100% residence	7252	0,969	7027	7634	0,969	7398	7213
Residence and practice room	56	0,9	50	60	0,9	54	52
Farm	62	0,75	46	62	0,75	46	46
Non-residential partly in use as dwell	96	0,3	29	95	0,3	28	29
Total	7466		7153	7850		7526	7339

In order to avoid double counting with side activities of other (not SIC 68) industries an adjustment is made of 1079 million euros as shown in the SUT, resulting in an estimate for production of 6260 million euros.

In the BAG the delineation of dwellings excludes multi-person apartments for students in private rentals. Based on a publication on housing of students (Landelijke monitor studentenhuisvesting, 2015) it is estimated that 34 per cent of the students lives in this type of dwelling. With an average monthly rent of 360 euros (from the same publication) the additional estimate for students housing amounts to:

$$0.34 * 362000 \text{ (number of students in 2015)} * 360 * 12 / 10^6 = 532 \text{ million euros.}$$

2.7 Action point A7 Dwelling services: imputed rentals

Statistics Netherlands should investigate to seek evidence that the estimates for imputed dwelling services (owner-occupied dwellings) meet ESA requirements. In particular it needs to be shown that the actually applied estimates for imputed rentals based on a regression using capital values as independent variable are at least as accurate and exhaustive as estimates would be using a stratification model based on actual rentals. Given that the correlation coefficients between the capital value and the rentals are mostly far below 70% it needs to be demonstrated that the estimation results provide a reasonable estimate of imputed dwelling services. Beside the analysis of standards test statistics this may be demonstrated by simulating actual rents using the estimated parameters of the regression and comparing the simulation results with observed actual rentals.

For the reporting year 2010 no data are (readily) available for estimating imputed rents for owner occupied dwellings applying a stratification method. This implies that it is not possible

to show the accuracy of the estimates using the capital values compared to a stratification method.

A second option to show the accuracy is to simulate rents using the parameters of regression and compare these with observed actual rents. Exhaustive observed rents only exists for housing corporations. However the rents of housing corporations are not 'market' rents as their rents are under government regulation leading to maximum allowable rent raises and rent levels. Besides, policies of the housing corporations are not necessarily 'market-oriented' but also 'socially-oriented'.

Applying the regression presented in the GNI-inventory:

$$\text{Monthly rent} = 0,0103108 * \text{capital value} + 4634$$

With an average capital value of dwellings owned by housing corporations of 179.000 euros and 2350 thousand dwellings the regression results in an estimate of 15.100 million euros. The actual rent receipts of housing corporation in 2010 amount to 12.492 million euros, a gap of almost 21 %. Whether this difference is an acceptable gap between 'market' rentals and 'regulated' rentals is difficult to judge.

Benchmark revision 2015

Imputed rents for owner occupied dwellings

Next to actually received rents by housing corporations and 'private' landlords, dwelling services consist of imputed rents for owner occupied dwellings. The latter requires by definition a model approach for which an EU-regulation exists prescribing the requirements for admitted estimation methods.

From 2012 onwards administrative data on buildings and dwellings are available (Basisregistratie adressen en gebouwen, BAG, see box 2.7.1) providing an overview on the population of real estate in the Netherlands, including characteristics like year of construction, municipality, floor area, capital value, rental and owner occupied.

For the benchmark year 2015 the BAG in combination with the rental survey is the basis for estimating imputed rents of owner occupied dwellings applying the so called stratification model.

In the Netherlands annual (price) change of rents takes place on the first of July. The rental survey is conducted in July of the reporting year and contains both rental data before and after the (price) adjustment. This implies that for the first half of 2015 the rents of 'T-1' and for the second half the actual rents of 2015 have been used.

The reference date of the BAG is the first of January of the reporting year. In order to get the best possible estimate a kind of average between the BAGs of 2015 and 2016 has been calculated.

Given the characteristics of the of the rental survey and the BAG imputed rents for owner occupied dwellings are estimated as follows:

- First half of 2015: BAG 2015 and T-1 rents from the rental survey of 2015
- Second half of 2015: BAG 2016 and T-rents from the rental survey of 2015

This implies that the stratification model will be estimated using both T-1 and T rents.

In the Netherlands the market for rental dwellings consist of two parts. The strongly regulated rental of dwellings by housing corporations aimed at (relatively) low-income tenants and a ‘private’ landlords operating in the competitive part of market. The latter are selected from the rental survey and used for estimating the stratification model.

Box 2.7.1 Information on the BAG (The Register Adresses and Buildings

Name of survey:	Register adresses and buildings
Link to surveys undertaken at the European level:	INSPIRE
Reporting units:	Smallest area for working or living, located within a building. Provides also areas assigned for berth or stand. All objects provide one or more addresses.
Periodicity:	Continuously
Time of availability of results:	Changes will be updated by the community in the register within five days after they took place. The register is used and delivered each month to Statistics Netherlands.
Sampling frame:	No sampling, total population
Survey is compulsory or voluntary?	Compulsory for communities to update the register. Compulsory for Statistics Netherlands to use the register.

Main features of survey methodology:	-
Population size:	Approximately 10 million objects/addresses and 12 million buildings.
Sample size:	Not applicable, is a register.
Survey response rate:	Not applicable, is a register.
Method used to impute for missing data:	Not applicable, is a register.
Variable used for grossing-up to the population:	Total population is provided
Sample coverage, as % in terms of variable used for grossing-up:	Total population, is a register
Main variables collected:	The database contains information from the moment of concession until the moment a building cease to exist. Main variables: Location of object, berth, stand and building, address, main purpose for use (i.e. residential or other use), useful living area, construction year.
Further adjustments made to the survey data:	Derivation whether it's a new object or a changed object. Correction for anomalies in the objects history of existence or main purpose of use.

Stratification model

For estimating imputed rents a stratification of dwellings is made in 80 classes:

Regional classification

- * North, Noord (Friesland, Groningen, Drenthe, Overijssel)
- * Middle, Midden: Gelderland, Flevoland, Utrecht (exclusief Utrecht-stad), Noord Holland (excluding Amsterdam), Zuid Holland (excluding Rotterdam en Den Haag)
- * Big cities, Steden: Amsterdam Rotterdam, Den Haag en Utrecht (stad)
- * South, Zuid: Zeeland, Noord Brabant en Limburg

Floor area

- * < 50 m²
- * 50 - <100 m²
- * 100 – 150 m²
- * 150 – 200 m²
- * > 200 m²

Year of construction

- * < 1950
- * 1950 - < 1970
- * 1970 - < 1990
- * >= 1990

In the regression these characteristics are represented by dummy variables as independent variables. As depended variable the net rent is used., i.e. the rent exclusive of all kinds of additional costs when renting a dwelling which must not be included in the estimates on imputed rents of owner occupied dwellings.

The equation to be estimated using ordinary least squares:

$$\text{Net rent} = a + b_1 * \text{D-Regio-Noord} + b_2 * \text{D-Regio-Zuid} + b_3 * \text{D-Regio-Midden} + b_4 * \text{D-opp-} < 50 + b_5 * \text{D-opp-50-} < 100 + b_6 * \text{D-opp-100-} < 150 + b_7 * \text{D-opp-150-} < 200 + b_8 * \text{D-Bj-} < 1950 + b_9 * \text{D-Bj-1950 -} < 1970 + b_{10} * \text{D-Bj-1970-} < 1990$$

in which:

D-regio: dummies for region ('Steden' is default)

D-opp: dummies for floor area (> 200m² is default)

D-Bj: dummies for year of construction (>1990 is default)

Tables 2.7.1 and 2.7.2 present the results for the estimation of the stratification model with the monthly T-1 and T net rents as dependent variable.

Table 2.7.1 Regression coefficients stratification model using monthly T-1 net rents.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1184,718	2,350		504,230	0,000
	Noord	-126,380	0,788	-0,156	-160,370	0,000
	Zuid	-61,336	0,672	-0,095	-91,297	0,000
	Midden	-62,411	0,630	-0,099	-99,035	0,000
	50	-523,532	2,410	-0,501	-217,238	0,000
	50_100	-350,388	2,270	-0,639	-154,386	0,000
	100_150	-185,611	2,286	-0,320	-81,178	0,000
	150_200	38,554	2,539	0,028	15,183	0,000
	1950	-237,435	0,728	-0,363	-326,098	0,000
	1950_1970	-226,882	0,743	-0,328	-305,486	0,000
	1970_1990	-162,158	0,646	-0,277	-251,087	0,000

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,617 ^a	0,381	0,381	215,04006

Table 2.7.2 Regression coefficients stratification model using monthly T net rents.

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1206,400	2,359		511,487	0,000
	Noord	-129,269	0,791	-0,159	-163,406	0,000
	Zuid	-65,224	0,674	-0,101	-96,713	0,000
	Midden	-67,098	0,633	-0,106	-106,063	0,000
	50	-535,284	2,419	-0,512	-221,261	0,000
	50_100	-356,661	2,278	-0,649	-156,547	0,000
	100_150	-191,963	2,295	-0,330	-83,633	0,000
	150_200	30,409	2,549	0,022	11,929	0,000
	1950	-235,121	0,731	-0,359	-321,680	0,000
	1950_1970	-224,250	0,746	-0,324	-300,783	0,000
	1970_1990	-156,588	0,648	-0,267	-241,530	0,000

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,616 ^a	0,379	0,379	215,86878

In the BAG a distinction is made by type of dwelling:

- Residential dwellings
- Dwellings with a practice
- Farms
- Non-residential real estate being partly used as dwelling

Residential dwelling are fully used for ‘housing’ while the other three have partially a business function which should not be allocated to imputed rent of owner occupied dwellings. Dwellings with a practice are taken into account for 90 per cent, farms for 75 per cent and non-residential real estate partly used as dwelling for 30 per cent.

Next to that for residential dwellings an adjustment is made for vacancies of 3.4 per cent, based on statistics on the use of real estate published by SN. Table 2.7.3 shows the results for the estimate of owner occupier dwellings.

Table 2.7.3 Imputed rents of owner occupied dwellings using the stratification model.

	a. Rental survey 2015 rent 2014 BAG 2015			b. Rental survey 2015 rent 2015 BAG 2015			Average of a and b
	Model	Adjustment for partly dwelling /vacancy	Estimate	Model	Adjustment for partly dwelling /vacancy	Estimate	Estimate NA
100% residence	40215	0,966	38848	41289	0,966	39885	39366
Residence and practice room	199	0,900	179	211	0,900	190	185
Farm	420	0,750	315	422	0,750	316	316
Non-residential partly in use as dwelling	217	0,300	65	212	0,300	64	64
Total	41051	0,000	39407	42134	0,000	40455	39931

Next to real estate additional estimates have to be made for houseboats and caravans (used for permanent housing). For both categories it is assumed that all houseboats and caravans are occupied by the owner, implying that there is no rental market.

The number of houseboats in the Netherlands amounts to 12.000. Based on a capital value model (dependent variable: net rent; independent variable: capital value of dwellings) and an assumed average capital value of a houseboat of 100.000 euros an estimate for the monthly imputed rent amounts to 549 euros. The annual imputed rents is then estimated at 79 million euros.

A similar approach applied for caravans. With a populations of 8.500 caravans and an average capital value of 75.000 euros (monthly imputed rent: 501 euros) the annual imputed rent amounts to 51 million euros. In the time series the estimates of the 2015 benchmark revision will be extrapolated backwards to 1995 based on existing volume and price changes.

An estimate of 624 million euros is made for imputed rents of owner occupied holiday homes. See action point A8 for details.

Table 2.7.4. gives an overview of imputed rents excluding garages (see action point A1.2). This results in an adjustment of 4466 million euros compared to pre-revision estimates. This includes an adjustment for double counting with action point A8 of 69 million euros. The impact of this action point therefore amounts to 4535 million euros.

Table 2.7.4 Imputed rents

	Output
Owner occupied dwellings	39931
Caravans	51
Houseboats	79
Owner occupied holiday homes	624
Total (excl. garages)	40685

2.8 Action point A8 Recreational accommodation services: verification for eventual double counting

Statistics Netherlands should verify that there is no significant double counting for recreational accommodation services in NACE sections I and L.

For the reporting year 2015 the revenues of recreational accommodation is estimated at 2039million euros. Information from the annual reports of the largest corporations operating holiday parks concerning the year 2015 indicates that expert guess of 10% ownership by entities classified in NACE 55 (holiday parks) seems plausible. This implies an amount of 227 million euros which is covered by SBS data on NACE 55. Intermediate consumption associated with this output is estimated at 36 million euros.

In the 2015 benchmark estimate for holiday homes, this amount was deducted from the initial estimate total imputed rents of holiday homes in the Netherlands (see below for more details)

2.9 Action point A8b Holiday homes

For the estimates of imputed rents of holiday homes on the economic territory of the Netherlands owned by non-residents and holiday homes in the ROW owned by residents a number of data source is available:

- Data from the tax department
- Data from Kadaster (Cadastre, land registry and mapping agency))
- Statistics Overnight accommodation
- Survey on weekly rent on accommodations in 25 countries (Hometogo)

Data from the tax department

The tax department provides information on the number of holiday homes in the ROW owned by residents and the value and a split by country.

Data from Kadaster (Cadastre, land registry and mapping agency)

Kadaster provides information on the number of holiday homes on the economic territory of the Netherlands owned by non-residents and the value and a split by nationality of the owner.

Overnight accommodation; guests, overnight stays, occupancy, key figures

These statistics present an overview of the occupancy of accommodations, the number of guests and their overnight stays in the Netherlands in hotels, motels, boarding houses, apartments with hotel services, youth accommodation and bed & breakfasts with at least 5 sleeping places, campsites with at least 4 pitches and holiday parks and group accommodation with at least 10 sleeping places. The data are broken down by type of accommodation. Data are available from 2012 onwards.

Survey HomeToGo

Search machine HomeToGo combines worldwide more than 150 accommodation-sites. This results in an analysis on weekly rent for holiday homes in 25 countries differentiated by season. The results of this survey are used to calculate a weighted average.

According to ESA 2010 art 4.60 costs should be deducted:

4.60 Withdrawals from the income of quasi-corporations include the net operating surplus received by residents as owners of land and buildings in the rest of the world, or by non-residents as owners of land or buildings on the economic territory concerned. In respect of transactions in land and buildings carried out on the economic territory of a country by non-resident units, notional resident units are created, in which the non-resident owners own the equity.

These annual maintenance costs are estimated to be 20 per cent of total rents (imputed and actual) of the holiday homes.

Population of holiday homes

The total number of holiday homes in the Netherlands amount to 125400 of which 10% is estimated to be owned by enterprises. Based on the above data sources it is estimated that of the privately owned holiday homes 35000 are owned by non-residents.

Table 2.9.1- Population of holiday homes

	Number
Total	125400
Owned by enterprises	12540
Privately owned	112860
of which	
Resident owner	77860
Non-resident owner	35000

Total rents of holiday homes in the Netherlands is estimated at 2039 million euros of which 624 million euros accounts for imputed rents.

Holiday homes in the Netherlands owned by non-residents

The number of holiday homes in the Netherlands owned by non-residents amounts to 35000. Using data from the BAG an annual imputed rent is estimated at 286 million euros using a stratification method (region, floor area, year of construction).

Based on statistics on overnight stays, the occupancy by the owner is estimated at 65 per cent, implying an actual imputed rent of 186 million euros.

The remaining 35 per cent of time the holiday homes are rented to third parties for an average weekly rent of 674 euro's. This rent is a weighted average of quarterly data with the occupancy as weights. This results in an amount of 431 million euros of actual received rents.

Total 'output' amounts to 617 million euros.

The costs for maintenance of holiday homes is estimated at 2 per cent of total rents (imputed and received) and amounts to 114 million euros. Keeping account of consumption of fixed capital of 171 million euros (3 per cent of the value of the capital stock), leaves an amount of 328 million euros for property income (D422).

Holiday homes abroad owned by residents

Based on data from tax declarations the number of holiday homes in the Netherlands owned by non-residents amounts to 157.600. As only the capital value of the holiday homes is available, the estimate for imputed rents is based on the capital value method giving an estimate of imputed rents for holiday homes abroad of 968 million euros.

It is assumed that the statistics on overnight stays giving an occupancy by the owner of 65 per cent is also applicable to holiday homes abroad, implying an actual imputed rent of 629 million euros.

The remaining 35 per cent of time the holiday homes are rented to third parties for an average weekly rent of 594 euro's. This rent is a weighted average of quarterly data with the occupancy as weights. This results in an amount of 1743 million euros of actual received rents.

Total 'output' amounts to 2372 million euros.

The costs for maintenance of holiday homes is estimated at 4 per cent of the value of the total capital stock⁶ and amounts to 503 million euros. Keeping account of consumption of fixed capital of 377 million euros (3 per cent of the value of the capital stock), leaves 1492 million euros for property income (D422).

The contribution to GNI of holiday homes amounts to 1164 million euros, which implies an adjustment of 1074 million euros.

Action point A9-Use of cash based data for production subsidies and taxes
Statistics Netherlands should investigate whether the eventual use of cash based State accounts for production subsidies and taxes has a material impact on the GNI estimates.

Table 2.10.1 shows the pre-revision recording of D.31 in 2015.

Table 2.10.1- D.31 in State Accounts 2015 (pre-revision) (mln. euro)

D.31	2015
Culture, sport and recreation	115
Renewable energy	692
Other subsidies	129

⁶ It is assumed that maintenance costs are related to the value of the dwelling excluding land. The value of land in the Netherlands is substantially higher than in surrounding countries (on average).

However, with the benchmark revision of 2015 the subsidies for *Culture, sport and recreation* and *Other subsidies* will be recorded as other subsidies on production (D.39):

Culture, sport and recreation: further research in cooperation with the ministry of Education, Culture and Science showed that the involved organisations (mainly cultural institutions like theatres) do not receive a subsidy per unit of produced good or service. Instead, these organisations receive a subsidy based on their activities or purpose in general. Therefore, with the benchmark revision 2015 these subsidies will be recorded as other subsidies on production (D.39). In this case recording cash or accrual will not influence GDP and GNI because it only leads to a shift between other subsidies on production and operating surplus.

Other subsidies: the category *other subsidies* consists, besides several small regulations, of subsidies for scientific research related to military defence. Research in cooperation with the Ministry of Defence showed that these subsidies are not paid per research project, since the involved organisations receive mainly lump sum contributions. Therefore, with the benchmark revision 2015 these subsidies will be recorded as other subsidies on production (D.39). In this case recording cash or accrual will not influence GDP and GNI because it only leads to a shift between other subsidies on production and operating surplus.

This means after revision 2015 there will be one subsidy on products (D.31) left in the State accounts (S.1311A), concerning a subsidy for the production of renewable energy. Producers can receive financial compensation for the renewable energy they generate. Since the subsidy is paid per unit of produced renewable energy, the subsidy is regarded as a subsidy on products. The subsidy for the production of renewable energy consists mainly of two separate regulations, MEP and SDE. Since these two regulations have different ways of payments, they will be discussed separately.

1. MEP (Milieukwaliteit van de Elektriciteitsproductie, subsidy for renewable electricity production)

Producers could apply for this subsidy from July 2003 till August 2006. Since 2009 the payments of the State only consists of the completion of on-going subsidies. Therefore, the total amount of subsidies received by producers is decreasing rapidly and will be marginal from 2018 onwards.

Producers receive the subsidy on a monthly basis, with a delay of one month. For example, in February producers receive subsidies related to their realized output in January.

Data

Since producers receive the subsidy with a delay of one month, the accrual registration can be calculated by using the one-month adjusted cash method. Statistics Netherlands has monthly cash data available since January 2015. Therefore the difference between cash and accrual recording can be calculated for 2015 and 2016.

Table 2.10.2-Cash and accrual recording of MEP (mln. euro)

	Cash	Accrual	Difference
2015	363	364	-1
2016	288	253	35

2. SDE (Stimulerend Duurzame Energie, subsidy for renewable energy production)

Green energy producers can apply for this subsidy since April 2008. Subsidies are granted for the periods of 8, 12 or 15 years. Producers receive a provisional contribution every month. This provisional contribution is calculated as 80 percent of the estimated total subsidy entitlement. The estimated subsidy is based on the expected production and development of the energy prices for the related year. The subsidy is fully determined in the calendar year following the year of production, followed by an adjustment based on advance sums already received. The adjustments are normally paid off in the period April-June.

Data

Composition of accrual recording is more complex, since producers receive a provisional contribution. However, the accrual based amounts for year t can be calculated as:

$$\text{Cash year } t - (\text{adjustments year } t-1 \text{ paid in year } t) + (\text{adjustments year } t \text{ paid in year } t+1) + (\text{deducted contribution year } t-1 \text{ compensated in year } t) - (\text{deducted contribution year } t \text{ compensated in year } t+1)$$

Statistics Netherlands does not have access to these data. Therefore, on request the Netherlands Enterprise Agency carries out these calculations. The Netherlands Enterprise Agency is responsible for implementation of this green energy subsidy regulation and therefore has the required data available:

Table 2.10.3- Cash and accrual recording of SDE (mln. euro)

	Cash	Accrual	Difference
2012	108	119	-11
2013	169	171	-2
2014	235	268	-33
2015	323	355	-32
2016	631	645	-13

Conclusion

After implementation of revision 2015 the recording of subsidies on products (D.31) will be limited to subsidies on renewable energy. The subsidies on renewable energy consist of two separate regulations, which both are subject to differences in cash- and transaction registration. However, these differences are relatively small and have no material impact on the level of GNI and GDP. Because of these small discrepancies, for simplicity reasons in reporting years not subject to benchmark revisions these subsidies will be based on cash recording instead of a transaction based recording.

2.10 Action point A10-Decommissioning costs

Statistics Netherlands reported on decommissioning costs for landfills of 328 mio. EUR and that there would be another three projects planned with unknown costs and start date. Statistics Netherlands should investigate whether there is in the meantime any additional information on further projects that could give rise to estimating decommissioning costs and to their inclusion in the estimate of gross fixed capital formation.

Introduction

ESA 2010 recommends to treat large decommissioning costs as gross fixed capital formation. This paragraph provides an outline on how Statistics Netherlands estimates these costs. The paragraph builds upon the outcomes of the 2015 Eurostat survey on decommissioning costs.

Decommissioning costs involve the expenses required to dismantle and to clean up a productive site so it can be used for any other purpose. These costs may involve for example dismantling nuclear power stations, oil rigs, mines and the clean-up of landfill sites. In the Netherlands the most relevant cases of decommissioning costs include landfill sites, nuclear power stations and oil rigs.

Landfill sites

The decommissioning of landfill sites is financed by provisions held by provincial government entities. These so-called 'nazorgfondsen' collect funds from (former) operators and are legally responsible to manage the funds and to cover the required expenses for decommissioning. Data of the amount of funds can be acquired from the annual reports of the provinces. In 2015 the total of funds held by the nazorgfondsen amounted to 363 mln. euros.

The reported costs for cleaning up landfill sites in 2015 are 5 mln. euros and will be recorded as gross fixed capital formation.

Nuclear facilities

In the Netherlands the role of nuclear power is relatively modest. Only six nuclear facilities exists of which one a nuclear power plant that is in operation. The table below provides an overview of these facilities⁷.

Table 2.11.1 Nuclear facilities in the Netherlands

Name	Type of facility	Status
Nuclear power plant Dodewaard	Nuclear power plant	Shut down
Nuclear power plant Borssele	Nuclear power plant	In operation
High flux reactor Petten	Research facility	In operation
Low flux reactor Petten	Research facility	Shut down
HOR-RID Technical University Delft	Research facility	In operation
Urenco Almelo	Enrichment facility	In operation

Operators of nuclear facilities are legally required to provide decommissioning plans to the Authority for Nuclear Safety and Radiation Protection⁸ (ANSR) which is a regulatory body within the responsibility of the minister of Infrastructure and Environment. These plans are updated each five years and re-evaluated by the authority on technical feasibility and financial soundness given the current legal and financial conditions. Although the plans provide detailed information, operators are not legally required to share these reports with the general public. Only occasionally more detailed reports are publicly available. In most cases general information regarding the reassessment is released by the ANSR or the individual operators.

For the nuclear power plant of Dodewaard little information is available regarding decommissioning costs. The plant has been out of operation since 1997 when it was closed by its legal owner Gemeenschappelijke Kernenergiecentrale Nederland (GKN) due to unprofitability. In 2002 the operations for decommissioning started that continued until 2005. The plant has been partly dismantled and put in a state of 'safe enclosure'. Further

⁷ Further details of individual facilities are provided in the updated survey on decommissioning costs.

⁸ In Dutch: Autoriteit Nucleaire Veiligheid en Stralingsbescherming (ANVS)

dismantling of the complete site is planned to recommence in 2045 when the level of radioactivity has significantly decreased. Operations will last for a period of 10 years and should result in a site with a greenfield status. The costs for the remaining dismantling activities are estimated by GKN to amount to 180 mln euro.

The second nuclear power plant in the Netherlands is situated in Borssele. This plant will be operational until 2034 after which dismantling will immediately start. It is planned that dismantling activities will span a period of 14 years until 2048. The plant is owned by two energy companies; Delta and RWE, and exploited by EPZ. Projected decommissioning costs released by EPZ have been adjusted upwardly over the years. Its latest estimation from 2016 amounts to 600 mln euro.

In Petten two nuclear research facilities reside, a high and a low flux reactor. These reactors were taken in production in the early 1960s and primarily designed for training, research and the production of medical isotopes. The low flux reactor (LFR) is owned by the Nuclear Research and Consultancy Group (NRG) and was in operation until 2011. Decommissioning started in 2014 and is still ongoing. Dismantling of the LFR itself is likely to be finished in 2017, however no concrete time schedule has been yet released for the remaining reactor building⁹. According to the decommissioning plan released by NRG in 2013, the costs of dismantling the LFR are projected at 2.5 mln euros. The high flux reactor (HFR) is owned by the European Commission but operated by the NRG. Currently, it is unknown when decommissioning of the HFR will start since no decision has been taken yet until when the HFR remains in production. However, according to ANSR shutdown of the current facilities is likely to be beyond 2030.

Another nuclear research facility is operated by the Technical University in Delft. The ‘HOR-RID’ (‘Hoger Onderwijs Reactor-Reactor Institute Delft’) is envisaged to remain operational until 2050 after which the process of shutting down and decommissioning will start immediately. Decommissioning of the site is planned to take 7 years in order to reach the greenfield status. In 2016 the decommissioning plan HOR-RID was approved by ANSR. However, the report the commission cost was not released to the public.

⁹ See ‘Besluit plan van aanpak afvoer radioactief afval NRG Petten, p.12’ on the website of ANSR.

Finally, a nuclear enrichment facility is operated by Urenco in Almelo. Its newest plant is built in 2000 and its core business includes the production of low enriched uranium and stable isotopes. Urenco is jointly owned by the Dutch government, the British government and the German electricity companies E.ON and RWE. In the past Urenco has decommissioned three plants in the Netherlands. However, information on costs is not made publicly available¹⁰.

Oil rigs

Currently the estimation of gross fixed capital formation is largely based on the outcomes of the investment survey. Decommissioning costs are no explicit part of this survey. In order to estimate the decommissioning costs of oil rigs, Statistics Netherlands will monitor large mining companies more closely (annual reports and individual correspondence). Also other potential data sources will be investigated in the future.

Proceedings for estimation

- 1) Landfill sites: decommissioning costs can be obtained from the annual reports of the 'nazorgfondsen'. For 2015 these costs were equal to 5 mln.
- 2) Nuclear power stations. For most nuclear power plants investment in decommissioning activities will occur in the far future. For these projects, Statistics Netherlands will keep a close eye on new information on projected costs, start date and the projected time schedule of decommissioning. For two projects further research is necessary to estimate the decommissioning activities that already have taken place: for the power plant of Dodewaard during the years 2002-2005 and for the low flux reactor in Petten that have started in 2014. The costs of power plant Dodewaard will be incorporated in the revised time-series. Regarding the low flux reactor in Petten it is assumed that the costs of 2.5 mln are evenly spread out during the period 2015-2017. For 2015 1 mln will be recorded as decommissioning costs.
- 3) Oil rigs: Research on the dismantling of oil rigs in 2015 is still work in progress. A list has been drafted of large companies that own oil rigs. These companies will be monitored more closely for decommissioning costs and asked for further details. There is in the future information available on the number of platforms removed or dismantled in the Netherlands. Also information found on average decommissioning

¹⁰ See 'Comparison among different decommissioning funds methodologies for nuclear installations. Country report the Netherlands, 2007. Wuppertal Institut für Klima, Umwelt, Energie, GmbH im Wissenschaftszentrum Nordrhein-Westfalen.

costs per platform can possibly be used in the future. It is expected that the impact on GNI will be small¹¹.

With the benchmark revision decommissioning costs are estimated at a total of 6 mln euros for the year 2015. These costs are recorded as gross fixed capital formation and allocated to the institutional sectors general government (landfill sites, 5 mln) and non-financial corporations (low flux reactor Petten, 1 mln). For the consumption of fixed capital decommissioning costs are recorded when they are incurred, thus at the end of the period at the same time as gross fixed capital formation.

Table 2.11.2 projected decommissioning costs 2015

Project	Decommissioning costs 2015
Landfill sites	5
Low flux reactor Petten	1
Oil rigs	Cost estimation in proces
Preliminary total costs	6

2.11 Action point A11-Transaction of public stockpiling units

Statistics Netherlands should investigate whether the transactions of public stockpiling units (e.g. Netherlands Petroleum Stockholding Agency) are adequately included in the GNI estimates. The estimates for changes in inventories should cover all inventories of strategic reserves whether hold privately or publicly excluding holding gains and losses.

Prior to the 2015 benchmark revision, the changes in inventories of the Netherlands Petroleum Stockholding Agency (COVA) have not been taken into account. The COVA has now been analysed in detail. The results will be used in the 2015 benchmark revision.

¹¹ In balancing the SUT output of construction is leading, therefore adjustments in GFCF for decommissioning will generally be counterbalanced in GFCF of other industries.

Annual reports have been used as input for the analysis. In the annual report, there are two stock positions on the balance sheet, namely the stock valued at purchasers' prices and at market prices.

In addition, there is data available from the cash flow statement. This statement contains data on the cash paid and received related to changes in inventories. These data are used for estimating changes in inventories. .

Table 2.12.1-Changes in inventories (P.52) of COVA (millions of euros)

Year	Petroleum raw materials	Petroleum products	Total
2007	0	26	26
2008	63	256	319
2009	3	-42	-39
2010	8	0	8
2011	-5	-5	-10
2012	25	377	402
2013	0	-148	-148
2014	12	-33	-21
2015	-20	-71	-91

2.12 Action point A13-Merchanting: use of international trade in services survey

Investigations should be made by Statistics Netherlands whether merchanting estimates can be based on the statistic international trade in services (ITSS) instead of the structural business survey.

Concerning action point A13, an investigation was carried out by Statistics Netherlands to determine whether merchanting estimates can be based on the statistic international trade in services (ITSS) instead of the structural business survey (SBS). The ITSS survey delivers merchanting data on a quarterly basis and includes enterprises in all industries in the Dutch economy. It could therefore be a more timely and exhaustive source for estimating merchanting in the Dutch national accounts.

Wholesale trade industry

To evaluate the results from the ITSS survey, the merchanting levels of enterprises in the wholesale trade industry are compared with values reported in the SBS¹² on a three-digit NACE level for 2015 in the table below.

Table 2.13.1- Wholesale trade industry merchanting in SBS compared to ITSS for 2015 (current prices, in million euro)

NACE	Description	SBS 2015			ITSS 2015		
		Sale	Purchase	Margin	Sale	Purchase	Margin
46.1	Wholesale on a free or contract basis	725	550	175	253	197	57
46.2	Wholesale of agric. products and live animals	8938	8764	174	11648	11932	-284
46.3	Wholesale of food and beverages	5118	3343	1775	4711	2717	1995
46.4	Wholesale of consumer goods	12139	8278	3861	15335	11328	4007
46.5	Wholesale of communication equipment	1590	1112	478	646	564	82
46.6	Wholesale of other machines, equipment	1123	930	193	718	423	295
46.7	Other specialised wholesale	45873	41529	4345	25612	22596	3016
46.9	Non-specialised wholesale	1325	1200	125	3	3	0
46	Total wholesale trade	76833	65706	11127	58926	49758	9168

Note: Reported sales and purchases in SBS have been corrected in this table for known errors as indicated in the data of the Large Case Unit (LCU).

There are two reasons for differences between SBS and ITSS: first, some large enterprises are missing in the ITSS observation; and secondly, there are still some reporting errors in the ITSS survey that need to be corrected. The main reason that units are missing in ITSS, is that certain enterprises are not able to separate merchanting flows from other wholesale activities. Annual merchanting figures in SBS for these enterprises are estimated indirectly by Statistic Netherlands by comparing international trade data from ITSS and International Trade in Goods Statistic (ITGS) with the external trade figures from the Statistic on the Finances of

¹² The Dutch SBS only contains merchanting data for the wholesale trade industry.

Enterprise Groups (SFO)¹³. These calculations are not done on a quarterly basis and are therefore not included in ITSS.

Another reason that units are missing in ITSS is that ITSS only includes merchanting flows if a country split is available of the purchases and sales of the goods. Since a country split is missing for some enterprises, they are excluded from ITSS.

Furthermore, for some enterprises the value of sales of goods under merchanting in ITSS exceeded total sales (including other wholesale trade and other output) in SBS and SFO.

Given these findings, we conclude that SBS is the better, more complete source for estimating annual values for merchanting in the wholesale trade industry.

Other (non-wholesale trade) industries

In addition to the wholesale trade industry, the ITSS survey also covers other enterprises. The SBS however, does not contain data on merchanting activities outside the wholesale industry. For the 2010 benchmark revision, due to lack of other sources, the merchanting data within the SBS of the wholesale trade industry was used to estimate sales and purchases of goods under merchanting in other industries¹⁴.

The following table compares the merchanting data in ITSS for 2015 with the national accounts (based on the 2010 benchmark revision method).

Table 2.13.2: Merchanting outside the wholesale trade industry, national accounts compared to ITSS for 2015 (in million euro)

¹³ SFO imports and exports contain merchanting data. For these enterprises the LCU determined that the difference between SFO and ITGS/ITSS is merchanting.

¹⁴ The method is described in the Eurostat grant 'Economic ownership as leading principle in ESA 2010: consequences for national accounts', Chong (2015), page 15-16.

Industry	National accounts 2015			ITSS 2015		
	Sales	Purchases	Margin	Sales	Purchases	Margin
Agriculture forestry and fishing	0	0	0	10	9	1
Mining and quarrying	0	0	0	0	0	0
Manufacturing	7786	6864	922	7293	4788	2505
Food beverages and tobacco	660	590	70	1921	1876	45
Textile- leatherproducts	33	25	8	24	18	5
Paper- wood products printing	12	10	2	109	86	23
Coke and petroleum	3587	3597	-10	0	0	0
Chemicals	108	86	22	24	20	4
Pharmaceuticals	15	9	6	1	1	0
Plastic and building material	42	33	9	19	15	4
Basic metals and -products	73	51	22	0	0	0
Electronic products	2063	1431	632	4995	2596	2398
Electrical equipment	537	494	43	6	4	1
Machinery nec	266	207	59	56	40	16
Transport equipment	222	182	40	0	0	0
Other manufacturing and repair	167	148	19	140	131	9
Electricity and gas supply	0	0	0	10	11	0
Construction	0	0	0	0	0	0
Trade and repair of motor vehicles and cycles	124	96	28	3897	3702	195
Wholesale trade (excl motor vehicles/cycles)	0	0	0	0	0	0
Retail trade and repair	112	73	39	217	154	63
Hotels and restaurants	0	0	0	0	0	0
Transport storage and communication	290	230	60	95	91	5
Financial and business activities	186	157	29	398	373	25
General government	0	0	0	0	0	0
Care and other service activities	0	0	0	0	0	0
Total	8498	7420	1078	11920	9128	2792

There are only a few large enterprises that are responsible for almost all merchanting in ITSS outside the wholesale industry.

Changes compared to current values in Dutch national accounts of 2015

Using ITSS data for estimating merchanting in the national accounts outside the wholesale trade industry leads to the following changes in the national accounts.

Table 2.13.3- Merchanting outside wholesale trade industry, ITSS compared to national accounts for 2015 (in million euro)

	National accounts 2015			ITSS 2015		
	Sale	Purchase	Margin	Sale	Purchase	Margin
All industries, except for wholesale trade	8498	7420	1078	11920	9128	2792

The merchanting trade margin outside the wholesale industry will increase from 1.1 to 2.8 billion euro. The production of the enterprises accounting for the additional merchanting margin is already included in the national accounts as trade margin on exports. The use of ITSS merchanting data will therefore result in a shift from trade margins on exports to trade margin on merchanted goods. GNI effect is zero.

2.13 Action point A14-VAT gap

Non-deductible Value Added Tax (VAT) is included as a separate ‘product group’ in the supply and use tables (SUT): this concerns non-deductible VAT on purchases by households, enterprises on fixed capital formation and intermediate consumption linked to VAT-exempted activities. The main examples are government, banking, insurance and health services. VAT paid on inputs for the production of exempted goods and services from VAT cannot be deducted.

Two estimates are available for the VAT, the theoretical VAT that is estimated by applying the VAT-rates to all concerning transactions and the (accrual) VAT that is actually received by the government. In order to align the final VAT-estimates in the SUT tables with the government data a twostep approach applied. First, the theoretical VAT is estimated in the SUT. In the second step, adjustments are made to align this estimate with the government receipts.

Theoretical VAT

If applicable the actual VAT rate is applied to each individual transaction for estimating VAT for households and industries. The calculation of VAT is carried out on the highest level of detail (products and industries) available in the SUT.

For the calculation with industries, the share of exempted goods and services in total output is determined first. Assuming that for the tax-exempt output within an industry the same intermediate inputs are used as for the taxable output, VAT can be compiled by multiplying the intermediate consumption with the VAT rate and the exemption fraction for every separate product group. The sum over all product groups is the total non-deductible VAT for the concerning industry.

Example

Total output of industry X is 10 000. The output of this industry includes a number of products which are exempted from VAT. Production of these products is worth 2 000, giving an exemption ratio of $2\,000/10\,000 = 0.2$.

Total intermediate consumption in this industry category amounts to is 8 000; 1 000 is subject to the reduced VAT-rate (6 per cent) and 4 000 to the standard VAT-rate (19 per cent). This gives VAT payments of $1\,000 * 6\% + 4\,000 * 19\% = 820$.

Assuming that the input structure for exempted output is similar to the input structure of taxed output, non-deductible VAT is then estimated as $820 * 0.2 (= \text{exemption ratio}) = 164$.

In the Dutch supply use tables VAT is calculated on taxed transactions irrespective whether it concerns 'white' or hidden economy. Only sales of products that are in all circumstances illegal (for example sales of cannabis or cocaine, which is always illegal as opposed to for example prostitution) are not included, as the VAT rate for these products is zero. This implies that in this calculation of theoretical VAT, the VAT not being transferred to tax authorities is included. Therefore the actual VAT-receipts by the government are lower than the theoretical VAT. For the benchmark year 2015, this VAT gap amounts to 1618 million euros.

Breakdown of VAT gap

In order to make adjustments on the theoretical VAT in order to align with accrual government receipts, the VAT gap can be split into different parts, see table 2.14.1

Table 2.14.1 Missing VAT receipts by origin, 2015

Underground production and illegal activities	622
Other exhaustiveness	107
Consumption of non residents in the Netherlands	52
Small producers	139
Bankruptcy	264
Intra-community fraud	434
Total missing VAT	1618

1. No VAT is paid to tax authorities on purchases of underground goods and services and most illegal activities. Exceptions are illegal activities which are recorded as legal activities, as may happen in case of prostitution. The missing VAT from these underground and informal activities can directly be estimated from the adjustments for exhaustiveness headed under the N1 and N2 adjustments. After all, these adjustments provide a direct estimate of the sales and purchases that are not registered in tax reports. The theoretical VAT on these adjustments is for 2015 estimated at 622 million euros. The largest adjustments are made for underground construction and for prostitution.
2. For some other (N3) adjustment for exhaustiveness, theoretical VAT is calculated, but not paid to the government. This is the case for own account energy production, for tipping and for rental of dwellings by owner-occupiers. Just like illegal activities, the theoretical VAT can directly be calculated from the adjustments for exhaustiveness. For 2015, this amounts to 107 million euros.
3. Tourist in the Netherlands from outside of the EU do not pay VAT or can get a VAT-refund on some of their purchases that they take home in their personal luggage. Examples are electronic devices, alcoholic beverages and clothing. About 1 in 5 foreign tourists to the Netherlands are from outside the European Union. However, as (outside purchases on the Airport) some action is required for the tourist get a VAT-refund, there will in practice be no 100 percent refunding. It is assumed that tourist outside the European Union get a VAT-refund on half of their purchases of goods that they take home in their personal luggage. Therefore, no VAT is paid on 10 per cent of

the purchase of these goods by foreign tourists. For 2015, this amounts to 52 million euros.

4. In the Netherlands, companies that have to pay less than 1883 euros on VAT (calculated as the VAT on their sales less the VAT on their purchases) on an annual basis get a deduction on their VAT bill. Companies whose VAT-bill is less than 1345 euros do not have to pay any VAT at all. As the companies do have to declare tax accounts to the authorities, the ministry of finance knows the exact amount of VAT that they missing due to this deduction scheme. For 2015, it amounted to 139 million euros.
5. Another reason for missing VAT are bankruptcies. There are two mechanisms that may lead to missing VAT. First, companies that are bankrupted may not pay the VAT that they owe. Second, companies that have sold goods to bankrupted companies and did not get paid, can get a VAT-refund from the government. Data from the tax authorities show that for 2015, the missing VAT due to bankruptcies amounts to 264 million euros.
6. Above estimates for missing VAT sum up to 1184 million euros out of the VAT gap of 1618 million euros. For the remaining 434 million euros, it is assumed that this is due to intra-community fraud. With intra-community fraud, a company imports goods from another European country, on which no VAT is levied. It subsequently sells the goods in the Netherlands, in which case VAT is levied. However, the company does not pay this VAT to the government and this scheme therefore results in missing VAT. Europol estimates that in the European Union, each year around 50 billion euros is lost due to intra-community fraud. The estimate of 434 million euros would mean that as a percentage of inhabitant or as a percentage of foreign trade, the Netherlands' losses on intra-community trade are far below the European average.

Adjustments made

For underground production and illegal activities, other exhaustiveness, and consumption of non-residents in the Netherlands, theoretical VAT is calculated for the buyers but not actually paid (mutual agreement). This concerns final consumption of households, gross fixed capital formation, intermediate consumption owner occupied dwellings (for underground construction) and export of services (for consumption of non-residents in the Netherlands). For these types of missing VAT the amounts are subtracted from the concerning expenditure category. In case the purchaser is a final consumer, this leads directly to a reduction of the estimate for GDP and GNI.

For the other types of missing VAT, VAT has been paid by the buyer of the goods or services. The seller of the good however did not hand this VAT over to the tax authorities. The missing VAT should therefore be subtracted from the VAT paid by the seller of these goods and services to the government. In the SUT however, paid VAT is attributed to users that are not allowed to deduct their VAT on purchases, i.e. final users and producers of VAT-exempted goods and services. Deduction of the non-handed-over VAT by enterprises therefore leads to negative payments of VAT by these companies. This negative VAT-payments are accepted as the most transparent way to record this missing VAT in the SUT . As the missing VAT is attributed to intermediate users, value added increases while VAT decreases so there is no effect on GDP and GNI. Table 2.14.2 shows the adjustments on VAT by user.

The missing VAT receipts by origin for 2016 are presented in table 2.14.3.

Table 2.14.2 Adjustments for missing VAT, 2015

Household consumption	-484
Gross fixed capital formation	-112
Export of services	-52
Intermediate consumption of owner occupied dwellings	-133
Other intermediate consumption	-837
Total	-1618

Table 2.14.3 Missing VAT receipts by origin, 2016

Underground production and illegal activities	679
Other exhaustiveness	117
Consumption of non-residents in the Netherlands	52
Small producers	150
Bankruptcy	240
Intra-community fraud	170
Total missing VAT	1408