

## Revision of gross domestic product in 2015

On 8 September 2015, Statistics Estonia released the national accounts time series with the following revisions:

- As part of the regular revision, the annual and quarterly national accounts for 2011 were revised according to the supply and use tables; and the accounts for 2013 were revised according to the Structural Business Survey (SBS, or EKOMAR in Estonian). As a result of these revisions, the gross domestic product (GDP) for 2011 decreased by 1.6% and the GDP for 2013 by 1.5%. Due to the revisions made based on the above-mentioned data sources, the 2012 and 2014 calculations had to be reviewed as well. The GDP for these years changed by 2.1% and +2.2%, respectively. As 2014 is the base year for the calculation of the 2015 accounts, the accounts for the 1st quarter of 2015 released in June this year were also revised.
- On 20–21 January 2015, Eurostat undertook a standard excessive deficit procedure (EDP) dialogue visit to Statistics Estonia, as a result of which changes were introduced into government finance statistics. In order to ensure consistency between national accounts and government finance statistics, Statistics Estonia revised the GDP time series since 1998.
- In the national accounts time series, sickness benefits and redundancy payments were distinguished from wages and salaries.
- The methodology of the seasonal and working day adjustment of national accounts estimates was improved.
- The time series of national accounts for 1995–1999 were published for the first time, with changes according to the ESA 2010 methodology, reservations and other specifications. These changes increased the Estonian GDP at current prices by a total of 0.3–0.4% (Table 1).

Ensuing from all these revisions, the annual GDP at current prices changed by 0.0% to 2.2% in the period of 1995–2014 (Table 1).

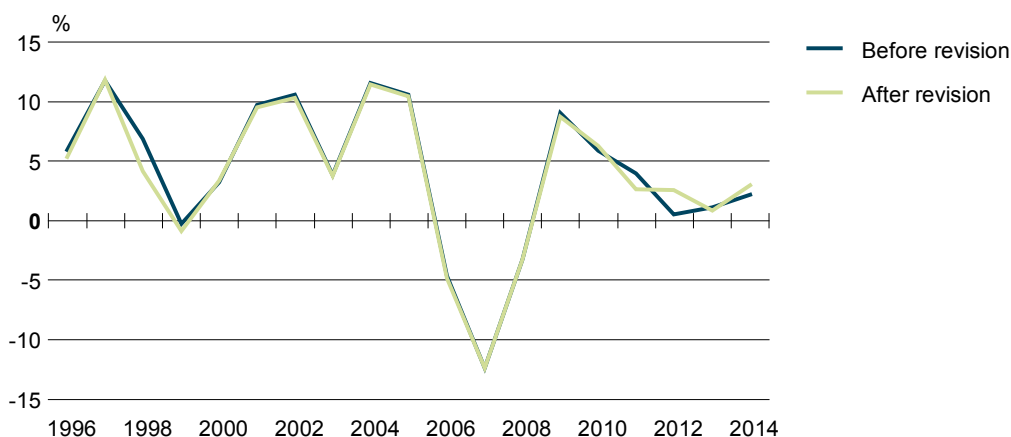
**Table 1. GDP at current prices, before and after revision, 1995–2014**

	Before revision, million euros <sup>a</sup>	After revision, million euros	Difference, %
1995	2,767.4	2,779.5	0.4
1996	3,637.6	3,649.3	0.3
1997	4,480.7	4,494.8	0.3
1998	5,032.3	5,049.2	0.3
1999	5,358.5	5,378.7	0.4
2000	6,170.5	6,170.8	0.0
2001	6,963.4	6,976.4	0.2
2002	7,759.5	7,773.8	0.2
2003	8,698.5	8,708.9	0.1
2004	9,706.4	9,707.7	0.0
2005	11,260.2	11,262.3	0.0
2006	13,517.9	13,521.7	0.0
2007	16,241.1	16,246.4	0.0
2008	16,511.0	16,517.3	0.0
2009	14,138.2	14,145.9	0.1
2010	14,709.1	14,718.5	0.1
2011	16,403.8	16,667.6	1.6
2012	17,636.7	18,006.0	2.1
2013	18,738.8	19,014.8	1.5
2014	19,525.3	19,962.7	2.2

<sup>a</sup> 1995–1999 data are based on the ESA 95 methodology.

During the same period, the annual real growth of the GDP changed by –2.7 to 2.5 percentage points (Figure 1).

**Figure 1. Real GDP growth compared to corresponding period of previous year, before and after revision, 1996–2014**



## Clarifications of methodological changes

Below is a more detailed description of the methodological changes.

### I. Regular revision of national accounts time series

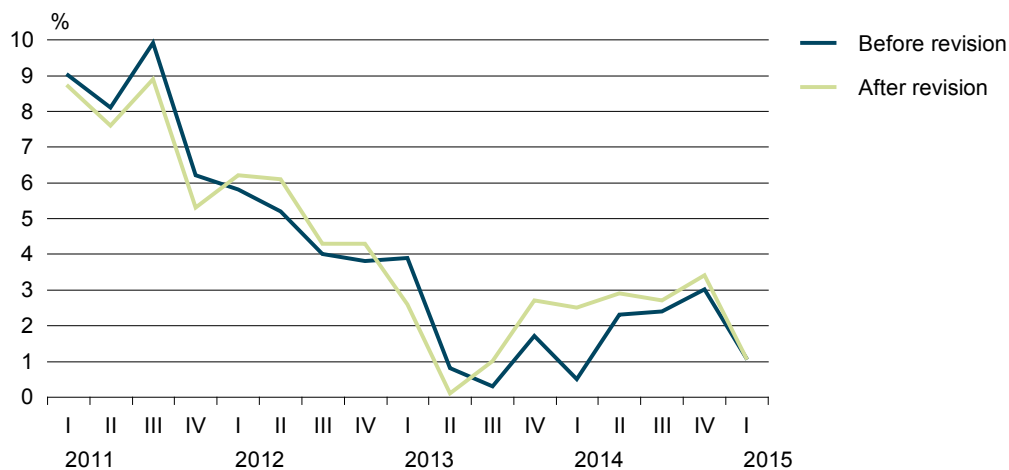
Ensuing from the regular revision made in 2015, the annual GDP at current prices changed by 1.5% to 2.2% for the period of 2011–2014.

The annual real growth of the GDP for the same period changed by –0.7 to +0.8 percentage points and the quarterly real growth of the GDP changed by –1.3 to 2.0 percentage points (Figure 2 and Table 2).

**Table 2. Revised real GDP growth rate compared to corresponding quarter of previous year and difference from previously published growth rate, 1st quarter 2011 – 1st quarter 2015**

	2011		2012		2013		2014		2015	
	Growth, %	Difference, pp	Growth, %	Difference, pp	Growth, %	Difference, pp	Growth, %	Difference, pp	Growth, %	Difference, pp
1st quarter	8.7	–0.3	6.2	0.4	2.6	–1.3	2.5	2.0	1.1	0.1
2nd quarter	7.6	–0.5	6.1	0.9	0.1	–0.7	2.9	0.6	..	..
3rd quarter	8.9	–1.0	4.3	0.3	1.0	0.6	2.7	0.4	..	..
4th quarter	5.3	–0.9	4.3	0.5	2.7	1.0	3.4	0.4	..	..
<b>Annual</b>	<b>7.6</b>	<b>–0.7</b>	<b>5.2</b>	<b>0.5</b>	<b>1.6</b>	<b>–0.1</b>	<b>2.9</b>	<b>0.8</b>	..	..

**Figure 2. Real GDP growth rate compared to corresponding period of previous year, before and after revision, 1st quarter 2011 – 1st quarter 2015**



As a result of the regular revision, the total value added in 2011 decreased 1.8% compared to the previously published estimate. The biggest changes occurred in the value added of administrative and support service activities and that of mining and quarrying, which increased 8.8% and 6.9%, respectively. Domestic demand decreased 2.6%.

Due to the revision, in 2013, the total value added of the Estonian economy decreased 1.6%, while domestic demand decreased 0.2%. The growth was the biggest in the value added of mining and quarrying, and electricity, gas, steam and air conditioning supply. At the same time, the largest decrease was recorded in the value added in human health and construction.

## II. Standard EDP dialogue visit

On 20–21 January, Eurostat undertook a standard EDP dialogue visit to Estonia. As a result of the visit, four units were reclassified to the general government sector. Three of the four units had previously been classified to the financial corporations sector. The first unit was reclassified considering the criteria of government control and aspects related to the autonomy of decision, the second unit was reclassified inside general government given its nature of a government-controlled captive financial entity and the third unit was reclassified inside general government given its nature of an ancillary unit. The fourth unit was reclassified from the non-financial corporations sector to the general government sector due to the fact that the unit is fully owned by the government and is thereby controlled by the general government sector.

As a result, there were changes in the estimates of output, intermediate consumption and value added for both non-financial and financial corporations. Taxes less subsidies on products and the changes in inventories, and the output, intermediate consumption and final consumption expenditures of the general government sector changed as well.

**Table 3. Impact of reclassification of units on GDP, 1995–2014**

	Impact on GDP, million euros	Impact on GDP, %
1995	0.0	0.0
1996	0.0	0.0
1997	0.0	0.0
1998	3.5	0.1
1999	7.0	0.1
2000	8.8	0.1
2001	11.4	0.2
2002	13.3	0.2
2003	10.3	0.1
2004	1.1	0.0
2005	1.9	0.0
2006	3.5	0.0
2007	5.2	0.0
2008	5.0	0.0
2009	7.2	0.1
2010	9.5	0.1
2011	–9.9	–0.1
2012	18.9	0.1
2013	26.6	0.1
2014	5.8	0.0

### III. Sickness benefits and redundancy payments

Starting from 1 July 2009, the procedure for the payment of sickness benefits was changed. The employer is to pay sickness benefit to the employee from the 4th until the 8th day of sickness, starting from the 9th day of illness the benefit is paid by the Estonian Health Insurance Fund.

So far, these payments were recorded in Estonian national accounts under wages and salaries, i.e. under transaction D.11, while sickness benefits were not included in the accounts in the financial corporations sector, the household sector and the sector of non-profit institutions serving households.

After different methodological materials and data sources had been examined, it was decided to include sickness benefits under employers' imputed social contributions (D.122) starting from 2009. As a result, there were changes in the estimates regarding the compensation of employees (D.1) paid in the financial corporations sector, the household sector and the sector of non-profit institutions serving households (NPISH). The final consumption expenditures and value added of the NPISH sector changed, causing changes in the GDP. In the non-financial corporations sector and the general government sector, the reclassification of indicators caused no changes in the estimates of the compensation of employees.

Further analysis revealed that redundancy payments had also been recorded under wages and salaries. Therefore, the necessary changes were introduced into the entire time series of national accounts since 1995. Redundancy payments are now correctly recorded under employers' imputed social contributions. The reclassification of indicators resulted in no changes in estimates regarding the compensation of employees and the GDP.

### IV. Revision of time series for 1995–1999

On 8 September 2015, Statistics Estonia published the indicators for the 1st quarter of 1995 until the 4th quarter of 1999, revised according to the ESA 2010 methodology for the first time. In addition to the methodological changes made under ESA 2010, other changes which were made into the time series for the period of 2000 until the 2nd quarter of 2014 and published together with the methodological changes of ESA 2010 on 8 September 2014 were also introduced into the time series.

The changes made in the time series were as follows:

- Reservations

The European Union (EU) budget is financed from national GNI-based own resources. Therefore, it is the task of Eurostat to monitor that the contributions of the Member States to the EU budget would be correctly calculated on the basis of the GNI (gross national income). If there are shortcomings in a Member State's methodology for calculating the GNI, Eurostat submits a reservation and requires the improvement of the methodology. All EU Member States who had been subject to such reservations had to make changes in their ESA 95 time series according to the reservations by September 2014.

By 8 September 2014, Statistics Estonia had to make the following changes in the time series (2000–2014) of Estonian national accounts calculated according to the ESA 95 methodology:

- improve the calculations of the consumption of fixed capital on roads and bridges by separating roads and bridges from other structures;
- improve the accounts of entertainment, literary and artistic originals and add them to national accounts estimates;
- record the vehicle registration tax according to ESA 95 as a tax on products, regardless of who pays the tax. So far, the registration tax for goods vehicles had been recorded as market output.

To achieve comparability with earlier indicators of Estonian national accounts, it was necessary to introduce the necessary estimates for the period of 1995–1999 as well. The changes were small; in the period of 1995–1999, the GDP changed by  $-0.04\%$  to  $+0.02\%$ . As a result of these methodological changes, there were changes in the estimates for the non-financial corporations sector and the government sector, as well as in gross fixed capital formation and taxes less subsidies on products.

- **Changes under ESA 2010**

The time series for 1995–1999, recalculated according to the ESA 2010 methodology, were published on 8 September 2015. Similarly to later years, the indicators for which were published according to the ESA 2010 methodology on 8 September 2014, the biggest impact on the increase in the GDP level resulted from the recognition of research and development activities (R&D) as investments.

In total, the introduction of the ESA 2010 methodology changed the level of the GDP at current prices in the period 1995–1999 by 0.3% to 0.5%. The changes made under ESA 2010 were as follows:

- Capitalised research and development

Unlike ESA 95, which recognised expenditures on R&D as intermediate consumption, ESA 2010 recognises such expenditures as fixed investments. As a result of this change, the GDP for the period of 1995–1999 increased by 0.2 to 0.3 percentage points.

- Non-life insurance and reinsurance

Unlike ESA 95, under the ESA 2010 methodology, adjusted claims are used for the calculation of non-life insurance and reinsurance output. As a result of this change, the GDP and the GNI can either increase or decrease. In 1995–1999, the output of non-life insurance and reinsurance changed by 0.03 to 0.3 percentage points.

- Military expenditures

According to ESA 2010, all military expenditures (except ammunition, rockets and bombs, which are treated as military inventories) are treated as gross fixed capital formation.

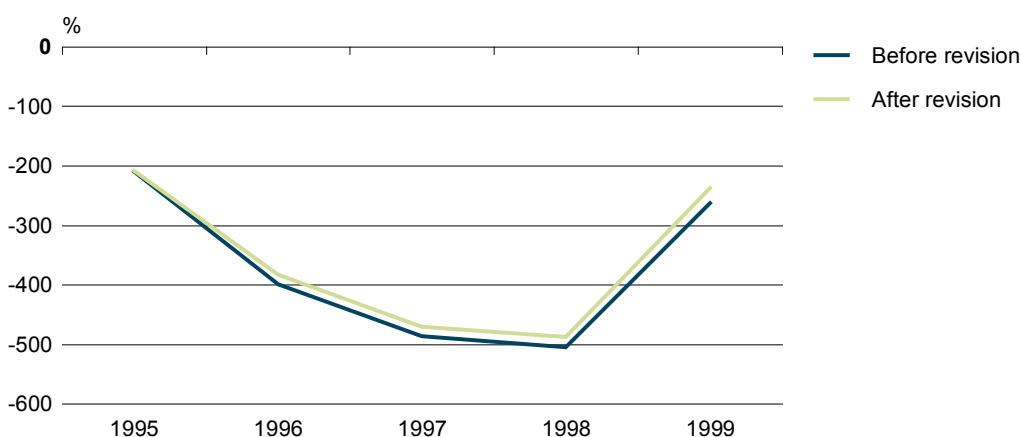
- Goods sent abroad for processing and merchanting of goods

Under ESA 95, goods sent abroad for processing were initially recorded as exported goods upon being sent abroad and as imported goods upon returning. Under ESA 2010, no movement of goods is recorded in the case of such transactions unless the owner of the goods changes as part of the transaction. Instead, the increase in the value of the goods following processing is recorded as an import of the processing service in the country where the goods were initially sent from and as an export of the service in the country where the goods were processed.

According to ESA 2010, goods under merchanting are no longer recorded as merchanting services. Instead, a net export of goods under merchanting is shown in the accounts of the merchant economy.

As a result of these changes, both the exports and imports of goods and services changed, while the changes in net exports (i.e. the difference between exports and imports) remained between one million euros in 1995 and 25.5 million euros in 1999. Among other reasons, the changes in net exports may be a result of the difference in time between when the goods were sent abroad and when they were processed, but also the difference between the declared value of the goods and the fee actually paid for the processing service.

**Figure 3. Net exports at current prices, before and after revision, 1995–1999**



- Financial intermediation services indirectly measured (FISIM) between resident and non-resident financial institutions

According to ESA 2010, unlike ESA 95, there is no more calculation and allocation of FISIM export and FISIM import between resident and non-resident financial intermediaries. FISIM output changed between 2.4 and 7.0 percentage points. Additionally, the calculation of FISIM at constant prices was also analysed and some deflators were replaced.

- Allocation of the output of the central bank

Under ESA 95, the output of the central bank was fully assigned to the intermediate consumption of other financial intermediaries. According to ESA 2010, the central bank output is divided into two and only the non-market output of the central bank is recognised as the intermediate consumption of other financial institutions. As a result of this change, the value added of commercial banks changed.

- Valuation of output for own final use

The output for own final use has to be valued at the basic prices of similar products sold on the market. In cases where these are not available, the output for own final use should be valued at production costs, to which a mark-up for net operating surplus or mixed income is to be added according to ESA 2010. In Estonia's national accounts, the calculations regarding software developed by market producers for own use were changed. The change did not concern software developed by non-market producers for own use.

#### Dwelling services

In 2011, there was another population and housing census (PHC) held in Estonia.

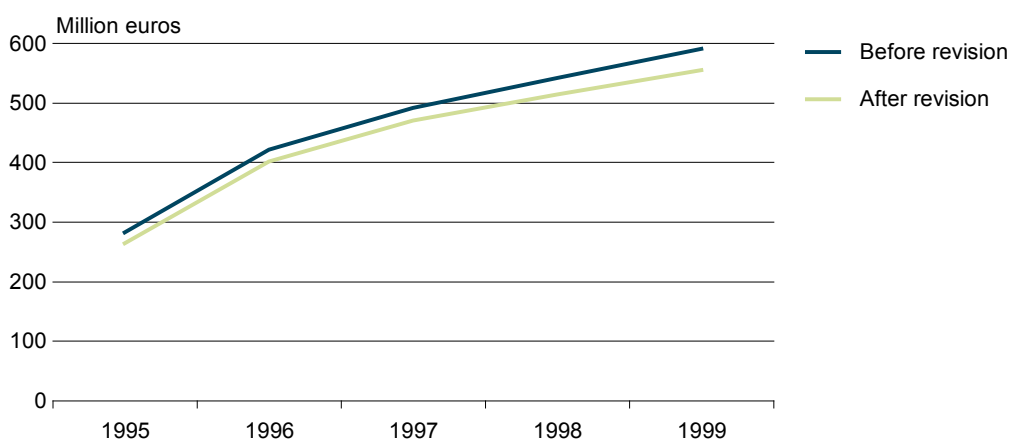
On 8 September 2014, the results of the 2011 census replaced the 2000 census data, which had been used so far.

The output of dwelling services includes both the services provided by rented dwellings (actual rent) and those provided by owner-occupied dwellings (imputed rent). In Estonia, the user-cost method is used for the calculations of imputed rents.

An analysis of the results of PHC 2011 showed that, due to the different questionnaire used in PHC 2000, dwellings let to relatives or friends for free (zero rentals) had been erroneously classified under dwellings actually rented. Therefore, the entire time series of dwelling services was adjusted, including the indicators for the period 1995–1999. As a result of new calculations, the output of actual rent decreased, while the output of imputed rentals increased.

The revision of dwelling services influenced the calculations of household final consumption expenditure and the value added of the household sector. Also, the estimates for non-financial corporations and the general government sector changed.

**Figure 4. Output of dwelling services at current prices, before and after revision, 1995–1999**



- **Consumption of fixed capital**

In 2014, with the introduction of the ESA 2010 methodology, the linear method used for calculating the consumption of fixed capital was replaced with the geometrical method. Similar calculations were introduced for the years 1995–1999 as well. Additionally, costs associated with the transfer of ownership of land were added to buildings and structures.

**Table 4. Consumption of fixed capital at current prices, before and after revision, 1995–1999**

	Before revision, million euros	After revision, million euros	Difference, %
1995	5,422.4	6,534.0	20.5
1996	6,555.3	7,459.7	13.8
1997	7,744.5	8,713.3	12.5
1998	8,727.2	9,707.9	11.2
1999	9,963.2	10,598.1	6.4

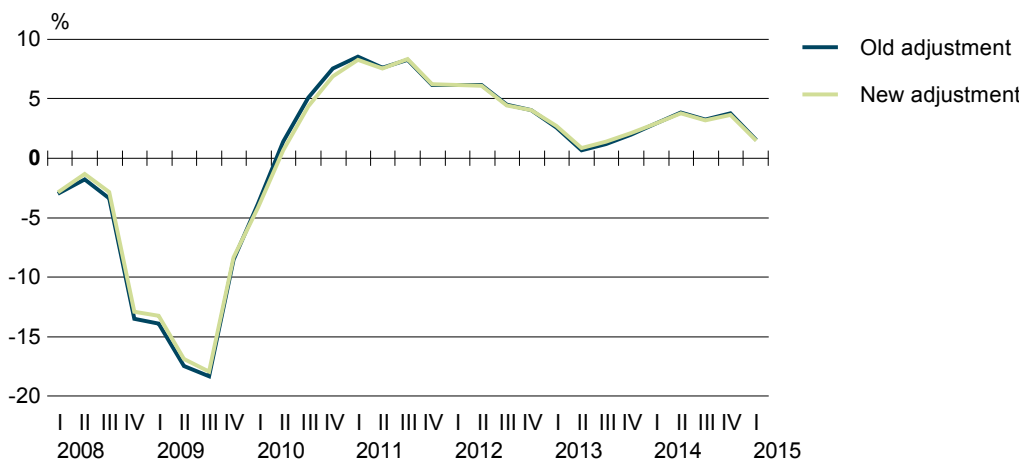
- **Clarification of calculations of taxes less subsidies on products**

Due to the above-mentioned reservations, goods vehicle registration fees were added to vehicle registration fees. In the process of adjusting the calculations, the calculations made so far were also revised and, as a result, vehicle registration fees decreased instead. Similarly to the consecutive time series published on 8th September 2014, the deflation of value added tax was changed. The method used so far consisted in extrapolation with the value added of the previous period. The new index is calculated using the weighted average value added tax rate and the consumer price index.

## V. Seasonal adjustments

As of 8 September 2015, it is no longer required that the time series of the seasonally and working day adjusted GDP be temporally consistent, i.e. the sum of quarters for the adjusted time series no longer needs to be equal to the sum of quarters for the unadjusted time series. As a result, the adjusted time series depict more accurately the seasonal movements and the effect of the varying number of working days by year. The effect of this change on economic growth amounts to approximately 0.1 percentage points per year, at the turning points of the economy the effect is 0.5 percentage points at the most.

**Figure 5. Seasonally and working day adjusted real GDP growth compared to corresponding period of previous year, 1st quarter 2008 – 1st quarter 2015**



## **VI. Other corrections**

During the revision of the time series, the deflation of GDP transactions was also analysed, including the indices used for goods and services, and some indices of goods and services were replaced.

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