## Box 1 Explaining the revision to nominal gross domestic product[1,2]

In March 2019, Statistics South Africa (Stats SA) published revised gross domestic product (GDP) estimates according to the production approach for the period 2015 to the third quarter of 2018. This lowered the level of nominal GDP by R72 billion for the first three quarters of 2018 as well as the growth rates calculated over four quarters.[3] On a quarterly basis, the impact on both the level and growth rates in the prior years was less pronounced. In addition, the effect of the revisions on annual nominal GDP from 2015 to 2017 in terms of both the levels and growth rates was fairly insignificant, as expected.[4] This box addresses questions raised by the unexpected large downward revision to quarterly nominal GDP in 2018.

### Nominal gross domestic product at market prices
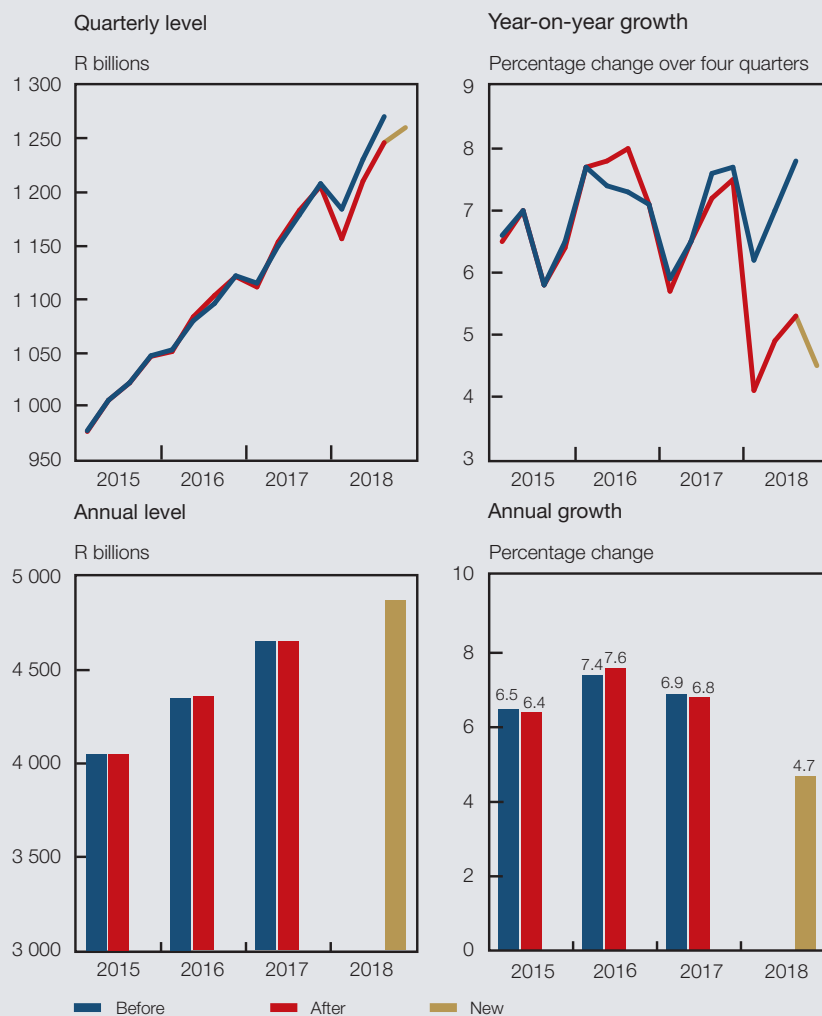


Source: Stats SA

The estimates for the national accounts aggregates in South Africa are compiled by Stats SA according to the System of National Accounts (SNA)[5] methodology. The estimates for GDP, both nominal and real, are derived from both the production[6] and expenditure[7] approaches at market prices within the framework of the

1   Stats SA compiles and publishes South Africa's GDP estimates. For the methodology, see  http://www.statssa.gov.za/publications/P0441/ P04413rdQuarter2014.pdf

2   Nominal GDP is the current value at market prices of all the final goods and services produced in an economy during a specific period, and it reflects changes in both volumes and prices.

3   See table KB605 on page S–114 of this *Quarterly Bulletin*.

4   See table KB601 on page S–110 and table KB605 on page S–114 of this *Quarterly Bulletin*.

5   The *System of National Accounts 2008 (2008 SNA)* provides the statistical framework for a comprehensive and consistent set of macroeconomic accounts. The *2008 SNA* was developed by the United Nations, the European Commission, the Organisation for Economic Co-operation and Development, the International Monetary Fund and the World Bank Group. See https://unstats.un.org/unsd/ nationalaccount/docs/sna2008.pdf

6   The production (output) approach measures gross value added (GVA) as the value of output *less* intermediate consumption. GDP is measured as GVA *plus* taxes on products *less* subsidies on products.

7   The expenditure approach measures the final uses of the produced output as final consumption expenditure *plus* gross capital formation, *plus* exports *less* imports.

supply and use tables.[8] The annual GDP estimates are also calculated independently from the quarterly estimates within the supply and use framework.

Revisions of estimated national accounts aggregates are essential to correct for additional source data, new methodologies and statistical errors. When revisions are made because of methodological improvements, it is quite important that these be explained, and their impact on the data clearly identified. Stats SA revises the national accounts statistics annually and at five-yearly intervals, with the latter being a more comprehensive benchmark. Annual GDP estimates are revised once a year and published in March of the following year.

For quarterly GDP statistics, Stats SA uses short-term economic indicators, which are incomplete in terms of coverage, to derive trends for the estimation of quarterly nominal GDP. These short-term indicators are generally not as reliable and comprehensive as annual surveys.

The revision in March 2019, for the three years from 2015 to 2017, incorporated revised estimates from one of Stats SA's important economy-wide surveys known as the Annual Financial Statistics, and was complemented by other surveys. The revision also took into account the latest large sample surveys of the different industries within the systematic framework of the supply and use tables, which provided for comprehensive comparison and data confrontation.

In the revision process, the annual gross value added (GVA) at basic prices[9] of each industry is derived within the supply and use framework from both the production and expenditure approach. Output[10] and intermediate consumption[11] are estimated separately, with GVA at basic prices equal to output less intermediate consumption for each sub-industry.[12]

## March 2019 revisions to annual nominal gross domestic product

R billions

| Year | | Output at basic prices | *Less:* intermediate consumption | *Equals:* GVA at basic prices | *Less:* net taxes on products | *Equals:* GDP at market prices |
|---|---|---|---|---|---|---|
| 2015 | Before ........................ | 7924 | 4298 | 3626 | 426 | 4052 |
| | After ........................... | 7928 | 4303 | 3625 | 425 | 4050 |
| | *Difference*................... | *4* | *5* | *-1* | *-1* | *-2* |
| 2016 | Before ........................ | 8432 | 4551 | 3881 | 469 | 4350 |
| | After ........................... | 8464 | 4572 | 3892 | 467 | 4359 |
| | *Difference*................... | *32* | *21* | *11* | *-2* | *9* |
| 2017 | Before ........................ | 9002* | 4830* | 4172 | 480 | 4652 |
| | After ........................... | 8965 | 4792 | 4173 | 480 | 4653 |
| | *Difference*................... | *-37* | *-38* | *1* | *0* | *2* |
| 2018 | New ........................... | 9327* | 4986* | 4341 | 533 | 4874 |

\* Estimates made by the SARB
Components may not add up to totals due to rounding off

Sources: Stats SA and SARB

The 2015 to 2017 independent annual revisions of nominal GDP estimates led to the revision of all the quarterly estimates. The revisions of the 2017 estimates, in particular for the fourth quarter, also affected the revisions of the first three quarters of 2018.

Quarterly estimates of nominal and real GVA and GDP are based on annual estimates. The objective is to preserve the movements in the short-term indicators within the constraints of the new annual estimates. The proportional Denton method[13] is used to maintain the trends in the quarterly estimates of GDP and in the growth rates.

The downward revision of quarterly nominal GVA and nominal GDP at market prices in the first three quarters of 2018 largely reflected revisions in the finance, real estate and business services; the trade, catering and accommodation; and the manufacturing sectors.

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8   The supply and use tables provide a framework to verify the consistency of economic statistics obtained from different sources. See http://www.statssa.gov.za/?page_id=1854&PPN=P0441

9   GVA at basic prices is defined as output valued at basic prices *less* intermediate consumption valued at purchasers' prices.

10  Output consists only of those goods and services that are produced within an establishment, and that are available for use outside the establishment and for own final use in the establishment.

11  Intermediate consumption is expenditure by enterprises on goods and services consumed as inputs in the production process.

12  See table KB601 on page S–110 and table KB642 on page S–135 of this *Quarterly Bulletin*.

13  The Denton method implicitly constructs a quarterly series of ratios between value added and the underlying indicators, calculated from the revised annual ratios between estimates of value added and the underlying indicators. The constraint is that quarterly ratios average those of annual ratios for the years that have a revised annual estimate of GDP.

## Change in nominal gross value added and gross domestic product in the first three quarters of 2018

R billions

| | Contribution to total GVA* in 2017 (per cent) | 2018 | | | |
| --- | --- | --- | --- | --- | --- |
| | | Q1 | Q2 | Q3 | Total |
| Agriculture, forestry and fishing.................................... | 2.6 | 1 | 3 | 1 | 5 |
| Mining and quarrying.................................................. | 8.2 | -1 | 0 | 2 | 2 |
| Manufacturing ........................................................... | 13.4 | -3 | -3 | -5 | -11 |
| Electricity, gas and water............................................ | 3.8 | 0 | 0 | 0 | 1 |
| Construction............................................................... | 3.9 | -1 | -1 | -1 | -3 |
| Trade, catering and accommodation ........................... | 15.0 | -5 | -5 | -6 | -16 |
| Transport, storage and communication ....................... | 9.8 | -2 | -1 | -3 | -7 |
| Finance, real estate and business services................. | | -13 | -10 | -11 | -33 |
| Finance and insurance ........................................... | 9.0 | -3 | -6 | -6 | -15 |
| Real estate and business services .......................... | 10.8 | -9 | -4 | -5 | -18 |
| General government services ....................................... | 17.6 | -2 | -1 | -1 | -4 |
| Personal services ...................................................... | 5.8 | 0 | 0 | 0 | -1 |
| Gross value added at basic prices ............................ | 100.0 | -24 | -20 | -24 | -68 |
| Taxes *less* subsidies on products ............................... | | -4 | -1 | 0 | -5 |
| Gross domestic product at market prices ................. | | -28 | -20 | -24 | -72 |
| Level | | | | | |
| Before ...................................................................... | | 1 184 | 1 231 | 1 271 | |
| After ........................................................................ | | 1 157 | 1 211 | 1 246 | |

\* Contribution of each kind of economic activity in 2017 to nominal GVA
Components may not add up to totals due to rounding off

Source: Stats SA

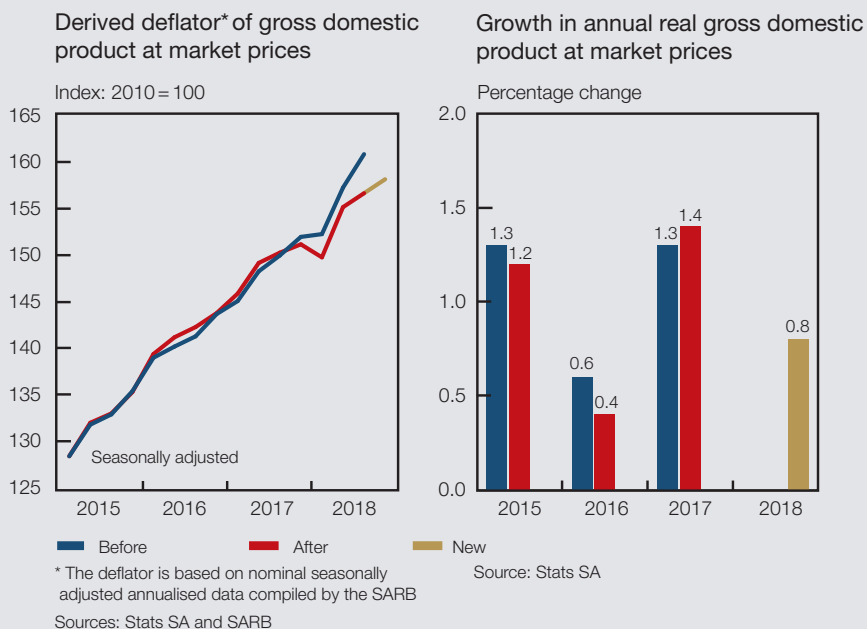## Double deflation and the derived deflator

| Year | Output at basic prices | *Less:* intermediate consumption | *Equals:* GVA at basic prices |
| --- | --- | --- | --- |
| **Economy as a whole** | | | |
| Current prices (R billions) | | | |
| 2016 Before ........................................................ | 8432 | 4551 | 3881 |
| After ......................................................... | 8464 | 4572 | 3892 |
| *Difference*................................................... | *32* | *21* | *11* |
| **Agriculture, forestry and fishing** | | | |
| Current prices (R billions) | | | |
| 2016 Before ........................................................ | 237 | 142 | 95 |
| After ......................................................... | 240 | 143 | 97 |
| *Difference*................................................... | *3* | *1* | *2* |
| Constant 2010 prices (R billions) | | | |
| 2016 Before ........................................................ | 169 | 105 | 64 |
| After ......................................................... | 170 | 106 | 64 |
| *Difference*................................................... | *1* | *1* | *0* |
| Derived deflator (Index: 2010 = 100) | | | |
| 2016 Before ........................................................ | 140.3 | 135.7 | 148.1 |
| After ......................................................... | 141.0 | 135.1 | 150.8 |
| *Difference*................................................... | *0.7* | *-0.6* | *2.7* |

Components may not add up to totals due to rounding off

Source: Stats SA

Annual real GVA estimates (at constant 2010 prices) are derived from nominal values through double deflation.[14] This method separately removes price changes from the nominal value of output and intermediate consumption. The derived deflator for GVA changes when the original unchanged price indices are used to deflate revised nominal levels of output and intermediate consumption by sub-industry.

The change in the derived GDP deflator[15] is not due to price changes but due to the application of double deflation[16] to the revised nominal value of output and intermediate consumption, which changes the level of nominal GVA and GDP at market prices.

### Derived deflator* of gross domestic product at market prices

Index: 2010 = 100



Seasonally adjusted

■ Before  ■ After  ■ New

\* The deflator is based on nominal seasonally adjusted annualised data compiled by the SARB

Sources: Stats SA and SARB

### Growth in annual real gross domestic product at market prices

Percentage change



Source: Stats SA

In the final instance, the revisions of nominal GVA and GDP are also reflected in the real variables which only show the changes in volumes.

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14   Double deflation provides for separate deflation of both output and intermediate consumption of all sub-industries using suitable price indices. For Stat SA's double-deflation methodology, see http://www.statssa.gov.za/publications/P0441/P04413rdQuarter2014.pdf

15   The derived GDP deflator is an implicit price index that measures inflation or deflation in an economy, and is calculated by dividing the nominal GVA by the real GVA or nominal GDP by the real GDP.

16   For an example of double deflation, see the table on the previous page.