

Box 1 Methodological challenges in measuring gross national income

The measurement of gross national income (GNI), as published in the national income and production accounts on page S–110 of this *Quarterly Bulletin*, is based on the System of National Accounts (SNA).¹ This box highlights a few important aggregates in the SNA that are needed for the calculation of nominal and real GNI.

Measuring nominal and real gross national income

R millions

| | 2018 | |
|--|-----------------------------|-----------------------------------|
| | Nominal (current prices) | Real (constant 2010 prices) |
| Gross domestic product..... | 4 873 899 | 3 144 539 |
| <i>Trading gain or loss from changes in the terms of trade</i> | | 48 770 |
| Net primary income to the rest of the world | -154 045 | -103 141 |
| Primary income receivable from the rest of the world..... | 96 507 | |
| <i>Less: Primary income payable to the rest of the world</i> | 250 552 | |
| Gross national income..... | 4 719 854 | 3 090 168 |

Sources: Stats SA and SARB

Nominal gross domestic product (GDP)² at market prices is an important and well-known summary aggregate in the national accounts as well as an indicator of a country's economic activity. This GDP measure includes gross value added at basic prices as well as taxes and subsidies on products, and differs from nominal GNI at market prices. The difference is the net of economic activities by residents abroad (primary income receivable from the rest of the world) and by non-residents in the national economy (primary income payable to the rest of the world).³ In South Africa, nominal GDP is always larger than nominal GNI as the income on foreign-owned factors of production in South Africa exceeds that on South African factors of production abroad. Both GDP and GNI, in nominal terms, cover the total economy, but with GDP referring to production (output) and GNI to income. The annual nominal estimates of value added are used to derive real GDP by applying double-deflation.⁴ This procedure removes the effect of prices in order to measure the change in volumes from one period to another.

Income flows cannot be disaggregated into quantity and price components but can be calculated in real terms at constant purchasing power. Real GNI⁵ is affected by the price level in the reference year and the choice of price deflator numerators. Therefore, proceeding from real GDP to real GNI requires an adjustment for trading gain or loss from changes in the terms of trade (ToT)⁶ between the national economy and the rest of the world, as real income is affected by the difference between export and import prices as well as the relative rate of change in export and import prices.

The literature is inconclusive about the choice of a price deflator for the value of exports minus imports of goods and services⁷ (current balance) at nominal values to measure the trading gain or loss from changes in the ToT. One possibility in the SNA is to deflate the current balance by either the export or the import price indices, depending on whether it is positive or negative. Another option is to deflate by the average of export and import prices, or by a general price index unrelated to foreign trade. In the case of South Africa,

1 The methodology to compile national accounts aggregates adheres to the guidelines of the *System of National Accounts 2008 (2008 SNA)*. This statistical framework provides 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>.

2 South Africa's GDP statistics are compiled and published by Statistics South Africa. For the methodology, see <http://www.statssa.gov.za/publications/P0441/P04413rdQuarter2014.pdf>.

3 Primary income receivable and payable are measured and published by the South African Reserve Bank (SARB) as part of the balance-of-payments statistics, as shown on pages S–82 to S–84 and S–86 to S–89 of this *Quarterly Bulletin*. The methodology to compile balance-of-payments statistics adheres to the guidelines of the *Balance of Payments and International Investment Position Manual – Sixth Edition (BPM6)* of the International Monetary Fund. See www.imf.org/external/pubs/ft/bop/2007/pdf/bpm6.pdf.

4 Real GDP statistics (at constant 2010 prices) are shown on pages S–113 and S–115 of this *Quarterly Bulletin*. See <http://www.statssa.gov.za/publications/P0441/P04413rdQuarter2014.pdf> for Statistics South Africa's double-deflation methodology.

5 Real GNI measures the purchasing power of total income generated by domestic production.

6 The terms of trade (ToT) is calculated as the ratio between the prices of exports and imports. The ToT is relevant in this context because in theory, with an improvement (deterioration) in the ToT, the residents of a country could increase (decrease) the volume of imports for income generated by domestic GDP.

7 The value of exports and imports of goods in the balance of payments is sourced from the South African Revenue Service. The SARB adjusts the exports and imports of goods for balance-of-payments purposes and compiles the services, income and transfer receipt and payment statistics.

either one of the two methods is used, depending on the level of nominal imports relative to exports. When exports exceed (are less than) imports, the difference between nominal imports (exports) divided by the import price deflator and nominal imports (exports) divided by the export price deflator is used.⁸

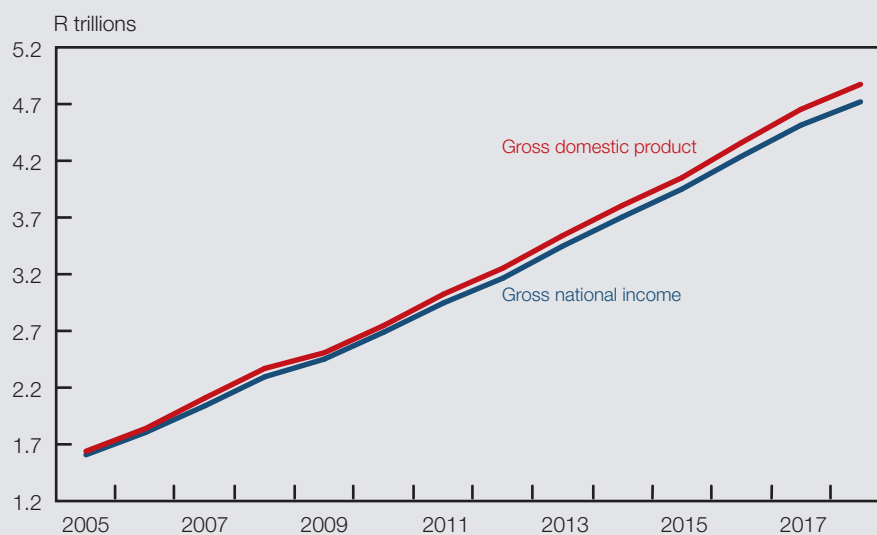
To proceed further to real GNI requires the deflation of net primary income. Here, also, a number of possible alternative approaches exist in the literature. In the case of South Africa, one of three methods is used, depending on the nominal level of net exports and net primary income. These are:

1. When net exports are positive (i.e. when exports exceed imports) and less than net primary income, then the real net primary income is calculated as nominal net exports divided by the export price deflator *plus* the nominal net primary income divided by the import price deflator *minus* nominal net exports divided by the import price deflator.
2. When net exports are negative (i.e. when exports are less than imports) and less than net primary income, then the real net primary income is calculated as the nominal net primary income divided by the import price deflator.
3. When net exports (i.e. exports minus imports) are greater than or equal to net primary income, then the real net primary income is calculated as the nominal net primary income divided by the export price deflator.

Finally, real GNI is measured as real GDP (i.e. production in volume terms) adjusted for trading gain or loss from changes in the ToT as well as the real net primary income.

A comparison of the level of GDP and GNI at current prices shows that, in the case of South Africa, GDP is always larger than GNI as the income on foreign-owned factors of production in South Africa exceeds that on South African factors of production abroad.

Comparison of nominal national accounts aggregates

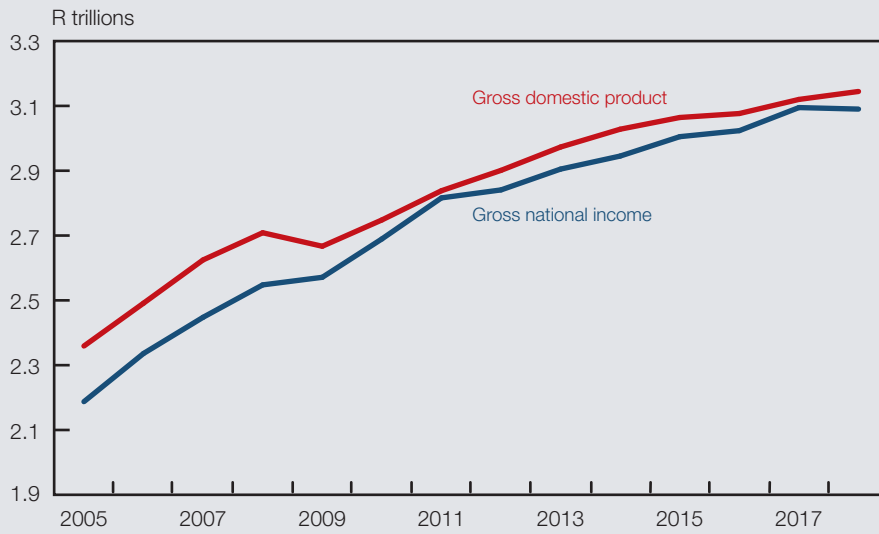


Sources: Stats SA and SARB

⁸ The export and import price deflators of goods and services are implicit aggregate price deflators derived from detailed export and import price deflators compiled by Statistics South Africa.

In the case of South Africa, the difference between the level of GDP and GNI at constant 2010 prices is not always small. This reflects the effect of relative changes in export and import prices on the real purchasing power of South Africans, affected by trading gain or loss from changes in the ToT as well as the effect of implicit price deflators on net primary income.

Comparison of real national accounts aggregates



Sources: Stats SA and SARB

