

Measuring South Africa's Economic Growth

There are numerous methods to measure the economic growth of a country, but the most commonly used one is that of the real gross domestic product (GDP). The real GDP is the total value of goods and services that are produced in an economy in a certain time period, with the term “real” indicating that the GDP has been adjusted to remove the effects of inflation. Statistics South Africa (Stats SA) publishes two different approaches to measure the growth of real GDP: firstly, the quarterly growth at a seasonally adjusted and annualised rate; and, secondly, unadjusted year-on-year quarterly growth.

a. The real GDP quarterly growth at a seasonally adjusted and annualised rate

The quarterly growth at a seasonal adjusted and annualised rate, expressed in an annualised rate, reflects changes in real GDP from one quarter to the next. This annualised rate is calculated by raising the percent change between the two quarters by the power (exponent) of four. The quarters are seasonally adjusted to remove all seasonal affects before its annualised. This method is based on the assumption that the percentage change from the one quarter to the following quarter will be maintained for the entire year (sometimes questionable assumption, but the best option in the absence of better alternatives). This method is called “annualising” and is used in South Africa as the official economic growth rate.

The advantage of this method is that quarterly growth rates can directly be compared with previous annual movements and then be used as a forecasting tool to provide a macroeconomic framework to make necessary decisions (for example, with regard to government budgets).

For example, real GDP increases 2,4 percent from year one to year two and increases at an annual rate of 3,2 percent in the first quarter of year three. It is now very easy to compare and to observe that the first quarter growth rate in year three is larger than the growth for year two. If the growth rate in the first quarter of year three was expressed in a unadjusted quarterly rate (for example 0,9 percent) the comparison with year two would not have been that clear.

The formula used to calculate the percent change between two quarters at an annualised rate in Table 1 is:

$$(((99\,499 / 93\,027)^4) - 1) \times 100 = 30,9$$

Table 1 – Annualised quarterly value added for the mining and quarrying industry (R million)

Year	Quarter	Mining and quarrying	Annualised percentage change
2012	1	93 027	
	2	99 499	30,9
	3	96 176	-12,7

One of the big disadvantages of this method is that sometimes the annualised data can be very volatile due to the effects of any irregular occurrences during a specific quarter, e.g. labour disputes.

b. The real GDP unadjusted year-on-year quarterly growth.

This method compares the quarterly level of real GDP in a specific quarter with the same quarter of the previous year. The quarters in this method are not seasonally adjusted or annualised. Some analysts prefer this method for year-on-year comparisons, as it removes the impact of seasonal variations. This method looks at what happened to the economy over the entire previous year and not only at the last three months as in the case of the quarterly growth at a seasonal adjustment and annualised rate.

The formula used to calculate the unadjusted year-on-year quarterly percent change in Table 2 is:

$$((8\ 993 / 8\ 522) - 1) \times 100 = 5,5$$

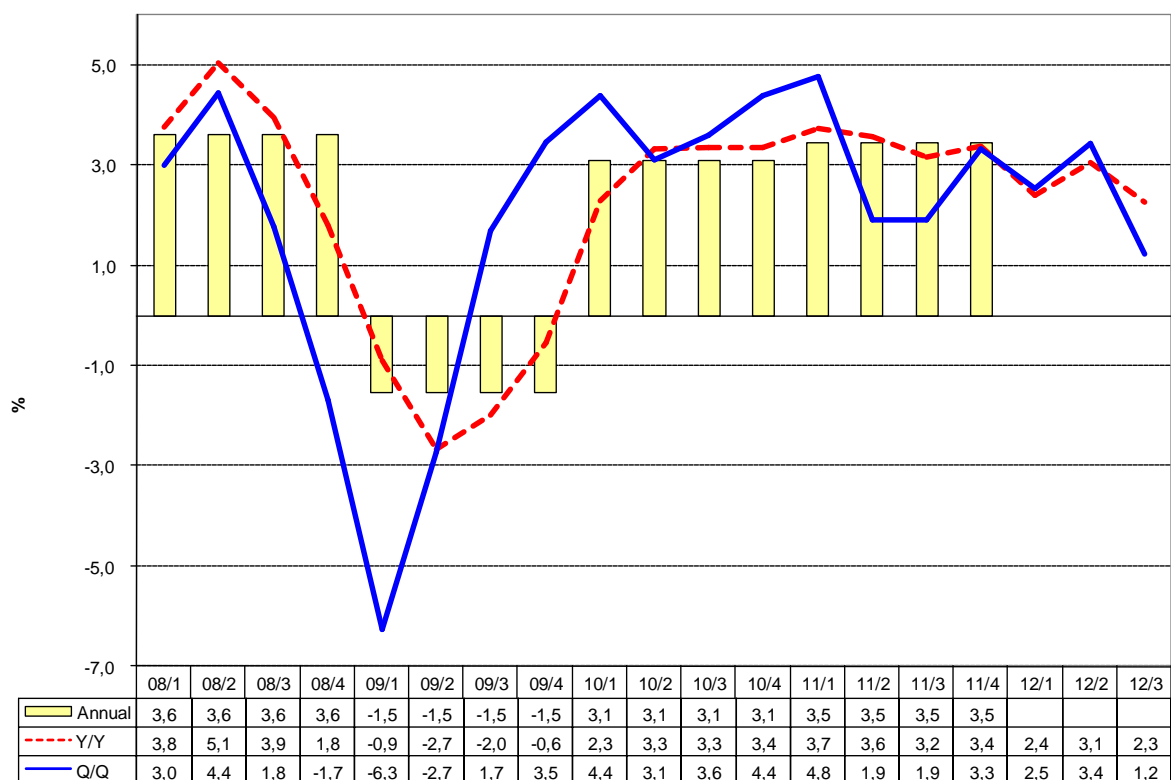
Table 2 – Unadjusted quarterly value added for the agriculture, forestry and fishing industry (R million)

Year	Quarter	Agriculture, forestry and fishing	Annualised percentage Change
2011	1	8 522	
	2	14 456	
	3	12 021	
	4	6 881	
2012	1	8 993	5,5
	2	15 078	6,5
	3	11 725	-2,5

Although the unadjusted year-on-year quarterly growth rate is not considered as the official method to calculate the economy's growth rate, it remains a very useful measurement together with the official quarterly growth at a seasonal adjustment and annualised rate to analyse the behaviour of the economy.

Figure 1 shows the relationship between the quarterly growth at a seasonal adjusted and annualised rate (solid line) and the unadjusted year-on-year quarterly growth rate (dotted line). The annual growth rates (bars) are also added to show the comparison between the quarterly and annual growth.

Figure 1 – Growth in gross domestic product year-on-year (Y/Y), quarter-on-quarter seasonally adjusted and annualised (Q/Q) and the annual real estimates



Trying to analyse and explain the behaviour of the economy through a single number is ill-advised, due mainly to the various complex interactions which prevail. By providing both growth rates, Stats SA enables analysts to have an informed view of the dynamics of the economy.

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