Even though data revisions are a normal feature of any statistical compilation process, such revisions are seldom taken into account or understood by users of statistics. This results in an over reliance on initially published preliminary estimates that are subject to change. Gross domestic product (GDP) estimates, for instance, are needed for the Monetary Policy Committee to set interest rates and the National Treasury to set budget limits, but because of the need for timely data, policy decisions are often based on preliminary estimates which are later revised as more comprehensive data become available. At the same time, changes to the initially published estimates may lead to adjustment measures being made to the assessment of the performance of the economy. This brief focuses on revisions to South Africa’s quarterly GDP estimates for the period 1999 to 2013. Based on the study of revisions to the South African quarterly GDP growth rates the following conclusions are made. First, the initially announced estimates are most likely to be revised upward. This is because initial announcements of the quarterly GDP growth rates are on average underestimated. Second, a bias exists in the estimation of the initially announced quarterly GDP growth rates. This suggests that the estimates contain measurement errors that can be eliminated to become better estimates of the final or true value. The brief looks at why data revisions happen and highlights how the study of revisions can be used to evaluate the reliability of initially published estimates. It then provides an analysis of revisions to the South African quarterly GDP growth rates followed by recommendations.

Revisions to Preliminary Estimates

Revisions are a normal feature of any statistical compilation process that estimates values for variables, whose source data gradually changes over time and where the definition of the variable is subject to change, or where methodological changes occur (Ahmad, Bournot and Koechlin 2007). Revisions are defined as any change in the value of an estimate initially published by a statistical agency (Carson, Khawaja and Morrison, 2004).

Carson et al (2004), Sleeman (2005), and Sim, De Castro and Pascou (2009) indicate that revisions may arise from:

- Incorporation of more comprehensive data, and/or re-estimation of the seasonal factors for seasonally-adjusted series. These are routine revisions in the weeks or months shortly after the initial announcement. For example, when imputed values are replaced by actual values or seasonal factors are updated following later observations.
- Reconciliation of quarterly and annual measures. These constitute annual revisions, for example, when monthly, and/or quarterly data are modified with more accurately based annual data.
- Rebasing and reweighting of the constant price series, and the introduction of definitional or methodological changes. These major revisions are referred to as comprehensive, or benchmark revisions. These include changes in statistical methods and/or changes in concepts, definitions, and classifications.

The different categories of revisions can be further classified as either informative or uninformative. Informative revisions carry informational content by reflecting the incorporation of new information which
decisions are often based on preliminary
Due to the need for timely data by users, policy
which data are used.
for Organisation for Economic Co-operation and Development (OECD) member countries. However,
such analysis has not been done in significant magnitudes for South Africa.

REVISIONS TO THE QUARTERLY GROSS DOMESTIC PRODUCT

Statistics South Africa (Stats SA) estimates the GDP figures for South Africa. For quarterly GDP estimates, Stats SA makes the initial announcement and publication release about 50 to 60 days after the end of that quarter. To incorporate the availability of more comprehensive data, revisions are made of estimates for the latest quarters and, once a year for annual estimates.

Major revisions to the estimates, in conjunction with the rebasing of the estimates at constant prices, are made every five years.

Figure 1 (page 3) presents the seasonally adjusted and annualised GDP growth rates at constant prices. This is the South African quarterly headline GDP figure usually announced in the form of a press conference. The data trends in Figure 1 are the initial announcements, total revisions, and final values for the quarterly GDP growth rates for the period 1999 to 2013.¹

¹ For a detailed explanation of the approaches to analysing revisions see Fotoyi, 2016.
A descriptive analysis of revisions to the South African quarterly GDP for the period 1999 to 2013 was done by examining the statistical properties of the total revision data trends.³

The results are summarised as follows:

- Mean absolute total revision of 0.64. Expressed in absolute percentage points the measure indicates the average size of total revisions to the initial announcements.
- Mean total revision of 0.5. The key interest of this measure is in its sign to determine the average direction of revisions. The positive sign of the mean total revision indicates that on average the initial announcements have been underestimated.
- T-statistics of 3.4874 with a p-value of 0.0009. The estimated t-stat and p-value provide the probability that the revisions are statistically different from zero. The test is performed to determine whether the observed mean total revision is statistically different from zero which gives insight of whether a bias exists in the initial announcements.⁴
- Standard deviation of 0.1419.⁵ This measures the spread of total revisions around their mean, thus giving an indication of the volatility of revisions.
- The minimum total revision of −0.8. This is the value of the lowest total revision to the initial announcements.
- Maximum total revision of 6.1. This is the value of the highest total revision to the initial announcements.

Based on the descriptive statistics results, the following conclusions can be made about the South African quarterly GDP growth rates.

First, the initially announced estimates are most likely to be revised upward. This is because the initial announcements of the quarterly GDP growth rates are on average underestimated.

Second, a bias exits in the estimation of the initially announced quarterly GDP growth rates. This suggests that the estimates contain measurement errors that can be eliminated to become better estimates of the final or true value.

² The data was gathered as follows: the initial announcement is derived as the initially published preliminary estimate for the relevant quarter; the later final value is derived to include as many informative revisions as possible, but avoids the inclusion of uninformative revisions; and, the total revision is derived by subtracting from the later final value the initially announced estimate for the relevant quarter.

³ For the results of the correlations and regression estimation methods applied in the analysis of revisions to the South African quarterly GDP for the period 1999 to 2013, see Fotoyi, 2016.

⁴ The t-test is adjusted for the existence of a serial correlation between quarters. And the level of significance chosen for the statistical test is the value of 0.05.

⁵ To take into account serial correlation, the study used a heteroscedasticity and autocorrelation consistent (HAC) standard deviation of the mean revision.
**RECOMMENDATIONS**

From the users’ perspective, it is recommended that not too much confidence be attributed to interpretations of the initially published estimates. Due to a lack of alternatives, for short-term analysis users are encouraged to focus on different measures when making decisions established on the performance of the economy. However, when looking at quarterly GDP data, users are encouraged to focus on the trends rather than the actual growth rate figures. It is recommended that users be knowledgeable, by engaging the producers, about how to best make use of preliminary estimates in their decision- and policy-making processes.

Users further need to be informed of the revisions processes through a revisions policy adopted by the statistical agency. It is further recommended that the statistical agency conduct periodic analysis of the revisions and make these available to users.

From the statistical agency perspective, it is important that the quality of initially published estimates be emphasised. For the initial announcements to become a better estimate of the final or true value, it is recommended that Stats SA improve data sources and methodology. The statistical agency is encouraged to look at improving the sample size and reporting systems to improve response rates. The agency is also encouraged to look at the representation and coverage of data sources. There is a need to look at imputation methods for missing data.

There also needs to be an on-going conversation between the statistical agencies and users focused on improving the statistical compilation processes and the use of the statistics for the purpose of decision- and policy-making.

**REFERENCES**


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