



Keynote address by Dr Rashad Cassim, Head of Research Department, at the Research Department Statistics Seminar, Forever Resort, Bela-Bela, 29–31 March 2011

“Why accurate statistics matter (for the real economy)”

This note highlights two important areas as to why accurate statistics matter. The first is what are credible and reliable statistics? The second, is what practices of data collection make statistics credible? Credibility in statistics has to do with both the accuracy of your numbers and the manner in which they are packaged and communicated to the public.

At the outset, it may be useful to state that, for our purposes, there is a rich literature on monetary policy and data noise, which essentially argues that the ability to fine-tune the economy through any kind of stabilization policy is severely limited when we operate with imperfect data. It is more serious if we operate with error ridden data.

Production and compilation of economic data

In thinking about the production and compilation of statistics, it would be useful to flag a few important trade-offs in data compilation, although the differentiating line can be very fine or artificial at times.

- There is the trade off between aggregate economic data which at high levels of frequency, makes more sense than more detailed data.
- Furthermore there is the trade-off between frequency and structure. That is, tracking business cycles or long-term structural issues.
- A further distinction between levels and rates of change exists. Sometimes measures of change are robust and co-exist with levels that may be less accurate.
- There is also a trade-off between time series consistency, and fundamental methodological improvements in data, which often results in a break in series but is more relevant to the present.

I will attempt to deal with the issues above by looking at a, few examples, in economic statistics.

Context

Before going into some details of data credibility, it may be useful to lay down the context within which we operate. We are part of a larger statistical system – or what is called the national statistical system. Usually the official statistical agency has the power to declare a series official. In practice it may not mean much. It is however, important to bear in mind that we cannot really think of a strategy of statistical collection without clarifying the involvement of Statistics South Africa (Stats SA), as the agency that has, through the Statistical Act, important powers and authority that we mostly lack and need for statistical collection. Any future deliberations of what we want to venture into, specifically in the real economy should be done in conjunction with Stats SA.

Data and credibility

There are a variety of areas where either the interpretation of data or the existence of a variety of data on some parts of the economy reveal different outcomes. A few examples are pertinent in the South African context.

Conflicting messages

In the case of employment, formal sector employment in South Africa based on firm surveys show that from the 4th quarter 2009 to the 4th quarter 2010, the number of people employed increased, while the labour force survey shows that employment decreased over the same period. What does this imply for policy, as it gives two fundamentally different messages about the extent of the economic recovery?

Similarly, in the case of the national accounts, the production side of the GDP shows that the economy grew at a certain percentage while the expenditure side shows that the economy grew at a different percentage. Once again, two very different messages about the pace of economic growth.

Erroneous interpretation of data

Examples where data are interpreted erroneously are also abundant. For example, Stats SA conducts an income and expenditure survey every five years. The survey forms the basis for measures of inequality in the economy. Often analysts draw conclusions from a change in inequality measures over time – but these surveys are better geared to estimate levels rather than changes. So to draw simple conclusions that inequality has worsened (or improved for that matter) from two points of two different surveys, especially where the confidence intervals are not very convincing, would result in incorrect (policy) conclusions.

Another common mistake that people make is that often with high frequency data, samples are much more robust for aggregate numbers than for more industry detail, for example. The case of employment is a useful one. Employment numbers for quarters are available at the 2-digit industry level but statistical agencies makes it clear that 3-digit industry data are less reliable than 2-digit data. But analysts continue to use the latter without careful qualifications that it has to be treated carefully.

Understanding biases and what they means?

It is always important to bear in mind that statistics are never pure. They operate within an error band and a variety of sampling and non-sampling errors create noise in the data. The aim of an agency compiling the data is to, the best of its abilities, minimize biases by constantly striving to understand where they may come from and create mechanisms to reduce them.

While South Africa has a highly credible CPI based on standards which are on par with most OECD countries, we must not lose sight of the fact that it is by nature crude – although not incorrect. A more pure CPI would imply that enumerators visit every household in the country every month and track the changing consumptions weights. In addition, we need a full census of where everyone buys their goods. No country is practically able to provide such a CPI. Fortunately in the case of our CPI, owing to investment made in it because of its importance in contract setting, the extent of biases is not as great as it would be in other surveys like employment.

The point is that we must always accept that biases exist in statistics and we must intelligently use the numbers knowing that they are not perfect. The fact that we operating with an error band can have a significant influence on the way we think about policy.

What are the hallmarks of credible data

How do we ensure that the numbers we produce are credible? A large part of this has to do with giving comfort to users that the statistical collection process is credible and that our methods of collecting the data are both as scientific and as transparent as is possible.

The following are important characteristics and considerations that need to be taken into account to ensure credible data:

a) *Scope and coverage of the collection*

- The theoretical boundaries of the collection (scope) and the practical limitations resulting in its coverage
- Target population
- Frequency of collection
- Reference period

b) Population frame

- Description of processes involved in producing the population frame (snapshot) from the Business Survey Frame
- Editing and derivations required to be applied to the frame population prior to sample design and allocation
- Definition of outliers and their treatment in the frame
- Treatment of inconsistencies between frames
- Setting size and industry boundaries

c) Construction of sample frame, stratification and sample allocation

- Describe the criteria underlying the sample design, e.g., industry coverage, precision, etc.
- Sample allocation (criteria used), e.g., Neyman allocation
- Sample rotation practices in place or contemplated

d) Concepts, classifications and data items

- Describe the underlying concepts, classifications and data items and how are they aligned with Stats SA and international standards
- Describe initiatives undertaken to ensure data items and concepts are meaningful to potential informants and that data in accordance with these are available in informant's records.
- In the case of financial data, indicate whether these are collected in accordance with accounting standards and reasons for any deviations

e) Form design and testing

- Describe form design standards adopted
- Observational studies undertaken with respondents to ensure ease of completion
- Form testing undertaken to ensure ease of data entry and editing

f) Response rate and imputation

- Is the percentage of real, live responses high enough to support the survey estimates of level and change?

- Describe definitions used to measure response
- Are practices for the imputation of missing responses statistically sound, in terms of:
 - proportion of total cell value that is imputed
 - number of survey iterations for which a repeat non-respondent is imputed
- Is control of the statistical consequences of changes to units (for example, births, deaths and changes of size and activity) statistically sound?

g) Weighting and estimation

- Weighting procedures and processes utilized
- How is non-response treated in the weighting system?
- What types of analysis are undertaken to gauge the effect of non response on the design weights?
- What are the non-response imputation methods used?

h) Survey evaluation

- What quality assurance procedures are in place?
- What reviews and evaluations are undertaken and planned?
- Implementation of findings

What I have listed above is an important checklist and test that we have to pass to ensure that the production of our data is credible. A comprehensive collection methodology is a prerequisite for credible statistics. If we are not prepared to put ourselves through this rigor, then we should not be in the business of economic information – we should not be in the statistics game.