

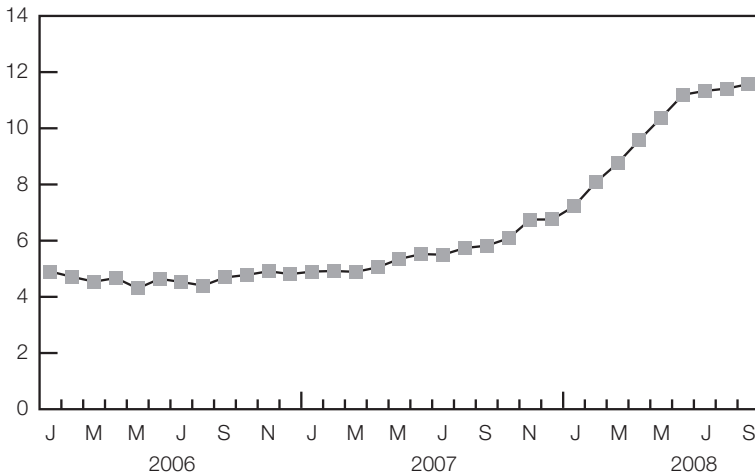
Commentary: Some issues in modelling and forecasting inflation in South Africa

Coen Pretorius

Monetary policy and forecasts

Regardless of the monetary policy framework, policy-makers must have a view of the future because of the existence of variable and long lags in the transmission mechanism of monetary policy. Forecasts are even more important in an inflation-targeting monetary policy framework as a result of the forward-looking policy process. Alan Greenspan (1994: 241), the former Chairman of the United States Federal Reserve has stated that “[i]mplicit in any monetary policy action or inaction is an expectation of how the future will unfold, that is, a forecast. There is no way to avoid making a forecast, either explicitly or implicitly.”

Figure 1: Change in Reuters Consensus CPIX (μ) forecast



The main reasons for the substantial change in the Reuters Consensus CPIX inflation forecasts can be attributed to supply-side shocks emanating from increased oil and food prices, especially since the beginning of 2008. However, the increase in oil and food prices appears to be an international phenomenon, and has had a similar impact on inflation in most economies. Although it is widely agreed that monetary policy should react to second-round effects of exogenous supply-side shocks, it is extremely

difficult to measure these second-round effects. Normally, second-round effects are visible in

- the price increases from products excluding food and energy prices
- increases in inflation expectations
- increases in salary and wage negotiation settlements.

There is currently clear evidence of second-round effects in all three indicators in South Africa.

Furthermore, South Africa has additional challenges on the inflation front in the form of

- increasing electricity prices, and the announced additional price increases in 2009 and 2010
- the South African rand, which has depreciated substantially since the beginning of 2008
- the growing deficit on the current account of the balance of payments, which is also cause for concern.

Central banks generally have to make a choice between a single and multiple modelling route. No single model can cover all aspects of the inflation-forming process and the South Africa Reserve Bank (the Bank) therefore follows a pluralistic approach, that is, by not making use of one model for all occasions, but rather using a suite-of-models approach. The multiple modelling route provides the advantage that the results of the various models can be compared with one another in order to emphasise different aspects of the inflation process. The models are, furthermore, supplemented with surveys and value judgements. Some models might depict early-warning signs of inflationary pressure before others do.

I am therefore in full agreement with the advantages of modelling the components of the consumer price index (CPI) separately in the form of a disaggregated inflation model approach. The main components of the CPI are modelled independently with monthly data, using the weights of the CPI to compile the total CPI. The Bank essentially models the inflation components mainly as a function of unit labour costs, import prices and the output gap. Additional explanatory variables are also used in the equations to explain the movements of the components. An estimate of administered price inflation is obtained, which is then used as an exogenous assumption in the core model of the Bank. However, some individual components, such as food prices, will always remain difficult to forecast.

More recently, most central banks have dedicated their resources and conducted research on the development of quarterly projection models (QPMs) and dynamic stochastic general equilibrium (DSGE) models. These models provide policy-makers with a tool that tells a consistent story with regard to the economic interpretation and impact of economic

shocks on the economy. The models also reflect the policy-makers' views of the monetary policy transmission mechanism. Normally, the parameters of these models are calibrated rather than estimated. The models are also able to recommend an interest rate path to policy-makers that will ensure that inflation returns to the target after a period.

The authors, Aron and Muellbauer, compare the forecasting ability of their producer price inflation (PPI) single equation against the PPI equation in the core model of the Bank. In this regard, it is important to distinguish between a forecast produced with a single-equation model and a forecast produced with a full macroeconomic estimated model. In a model context the same equation is used for the forecast of all the periods into the future in contrast with Aron and Muellbauer's paper where four different equations are used for the same variable. The selection of numerous explanatory variables is, to a certain extent, also limited in a macro model. A new equation or a new assumption is required for all additional explanatory variables in the model. In a macro model all the very volatile variables, such as the stock exchange or even house prices, are avoided because of the difficulty in forecasting or even assuming these variables accurately. The inter-linkages between variables in a macro model provide additional information in the forecasting process, which is not usually the case in a single-equation forecast. For example, inflation expectations are not an explanatory variable in the Bank's PPI equation, but the impact thereof works through the other equations in the model to the PPI. In addition, the rebasing and reweighting exercise that will be done from January 2009 might be helpful in lowering inflation expectations, as a result of the lower expected value of actual inflation. Since inflation expectations are not captured in the PPI equations in Aron and Muellbauer's paper, the lowering of expectations cannot be taken into consideration in the forecast.

The creation of the openness variable in the paper is a useful and valuable addition to the research on the price-forming process in South Africa, and the inclusion of the openness measure variable improves the fit of the equations. The Bank's own experience of including a 'crude measure' of openness in the model was not successful during the forecasting process. Both imports and exports are extremely volatile series and cause much volatility in the forecasting process. The authors do not explain how the openness variable should be treated during a forecast. If it is held constant, then it would not help to explain movements in the PPI.

The negative sign of the rand price of oil in the dynamic terms is difficult to explain and it is suggested that it should be excluded from the equation. The different dynamic terms and seasonal factors that are used in the various PPI equations are also difficult to explain. It is not surprising that the first two quarters of the PPI data of 2008 are classified as "outliers" by the authors, because the movements in the new PPI data

are somewhat ambiguous. The much higher weight of some of the commodity prices in the new PPI from January 2008 has caused the volatility of the series to increase substantially. Early indications suggest that the movements in the new PPI from the beginning of 2008 are less correlated with the movements in the CPI. The authors' statement that the new PPI equations are better equipped to predict a turning point in PPI inflation is less than convincing. Volatile exogenous variables such as oil prices, food prices and the exchange rate will, nevertheless, continue to have a huge influence in determining the turning point and trend.

It is very clear from the long list of publications written by Aron and Muellbauer on modelling and monetary policy in South Africa that they have made, and still make, a valued contribution on various research topics and in the building of research capacity.

Reference

Greenspan, A. 1994. "A discussion of the development of central banking". In Capie, F, Goodhart, C, Fischer, S and Schnadt, N (eds). *The future of central banking*. Cambridge: Cambridge University Press.