An econometric model of the Malawian economy

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Abstract

This paper has estimated a small-open economy macroeconomic model for Malawi. The structure of the model consists of production, expenditure, government, monetary, employment sectors and prices. The estimated parameters of the long run version of the model were used to perform simulation experiments to determine the model's tracking performance of the historical data and to assess the effects of changes in selected exogenous variables on key macroeconomic variables. The dynamic simulation results indicate that a sustained devaluation of the Malawi kwacha improves the real trade balance, but leads to higher inflation and reduces real GDP growth. Bond-financed increases in government consumption expenditures are less inflationary, lead to higher real GDP growth, but worsen the real trade balance position. The short run version of the model was estimated using the cointegration estimation technique. © 2002 Elsevier Science B.V. All rights reserved.

1. Introduction

The model developed in this paper utilizes the small-open economy IS-LM aggregate supply framework and takes into account the unique features of the

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Malawian economy.[1] Although this framework has been associated with analyzing dynamic macroeconomic phenomena in developed economies, this view is changing. Indeed, such models have been estimated for a number of developing countries, both for individual countries and groups of countries (see, e.g. Elliott et al., 1986; Haque et al., 1990). It is in this spirit that the present model of Malawi is developed and used for simulating the effects of alternative policies on the economy of Malawi.

The current model has been estimated in line with the co-integration technique. This involved, as a first step, specifying the form of the long run relationship and collecting the appropriate data. The second step involved determining the order of integration of the relevant time series. This was achieved by the use of augmented Dickey–Fuller (ADF) and Phillips–Perron (PP) tests. The variables in the co-integrating equations were found to be integrated of order one, I(1), and the residual formed from the co-integrating vector was I(0) at the 5% significance levels of ADF and PP tests. The third step consisted of testing whether or not the relevant I(1) time series were co-integrated. This was achieved by performing the Johansen Cointegration test. The final step involved specifying the form for the short run relationship. In the short run, changes in the endogenous variable on the left-hand-side of the equation adjust to the long run via the error correction term and also in some cases adjust directly to changes in the factors included in the long run equation.

The annual data set used in the model estimation spans the period 1967–1996. In general, data availability is relatively good. The national account statistics and government finance have been continuously available since independence in 1964. Data on monetary aggregates have been available since 1965. The export and import prices are available since 1967. There are, however, a number of gaps, which affected the overall modeling strategy and choice of specification of individual equations. In particular, data on employment and wages are relatively weak and are not up-to-date at sector level. The data used to estimate the model were obtained from various secondary sources such as the International Monetary Fund's *International Financial Statistics*, Reserve Bank of Malawi's *Financial and Economic Review*, and *Malawi Statistical Year Book*.

The remainder of this paper is organized as follows. Section 2 highlights the key features and developments in the Malawian economy. Section 3 describes the specification and structure of the model and includes a discussion of the theoretical underpinnings of the equations and the empirical results. In Section 4, the results of simulation experiments to evaluate the forecasting accuracy of the long run version of the model and the impact of alternative policies on main macroeconomic variables are reported. Finally the conclusions and policy implications which have emerged from the study are summarized.

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[1] There are very few economy-wide econometric models of Malawi. In fact, the only widely known model of Malawi is a supply-oriented prototype model developed by Van Frausum and Sahn (1993).