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A macro-econometric model of Lithuania LITMOD

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Abstract

This paper presents a medium-sized macro-economic sectoral model of the Lithuanian economy using econometrics on a limited number of quarterly observations. A central element in the model is a 12-sector input/output table of the Lithuanian economy facilitating analyses of structural changes. The general formulation of equations is the error correction model. The paper presents a general overview of model characteristics and a few empirical results. Model properties are illustrated in a standard public consumption simulation experiment. In general, the model gives an acceptable reproduction of past changes and model properties are comparable with similar models for other countries.

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1. Introduction

This paper presents a short to medium-term macro-economic model of the Lithuanian economy “LITMOD”. Lithuania has a small open economy and is one of the countries that joined EU on 1 May 2004. The period analysed and used for the calibration of the model is the first quarter of 1995 to the second quarter of 2002, i.e., the period just before EU entry

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and the period characterised by the transition from a centrally planned economy to a market economy, that is, economic liberalisation, changing focus from Eastern to Western European economies and considerable structural changes.

The developed model is a standard demand-driven macro-economic sectoral model in the tradition of the European national models HERMES (Commission of the European Communities, 1993), E3ME (European Commission, 1995), the Danish model ADAM (Dam, 1996, 1986), all estimated on annual data, and the Finnish model BOF5 (Willman et al., 2000) estimated on quarterly data. However, due to data limitations, seen in relation to the models mentioned, the ambition in modelling and the use of econometrics are fairly moderate. The model operates with 12 sectors facilitating analyses of structural changes, which have been and will continue to be important for the economic development in Lithuania. Econometrics on a limited number of observations is used to calibrate the model. The limited number of observations implies that a few key long-term parameters are restricted to theoretical sound/interpretable values. However, in general, both short- and long-term parameters are estimated, i.e., instead of developing a CGE-model calibrated on 1 year, we use the limited number of observations and econometrics to calibrate a macro-economic model, including the determination of short-term dynamics.

The model may be used for aggregated macro-economic forecasts, policy and structural analyses. Another use of the model is to analyse exogenous assumptions required for the simulation of different levels of growth.

After a few general characteristics of the Lithuanian economy in Section 2, the model and a few empirical results are presented in Section 3. Model properties are illustrated in Section 4 presenting a standard public consumption experiment. Finally, Section 5 gives a few general conclusions.

2. A few general characteristics of Lithuanian economy and economic development

A fairly comprehensive survey of recent studies of economies in transition is given in Capos and Coricelli (2002). Capos and Coricelli summarise the first 10 years of transition in seven stylised facts of transition economies: Output fell, Capital shrank, Labour moved (i.e., the labour force/the participation rate decreased and the unemployment increased), Trade re-oriented, Structure changed, Institutions collapsed and Costs were high (measured by increased unemployment and income inequality).

Looking at the development in Lithuania, the stylised facts defined by Capos and Coricelli apply for Lithuania.¹ However, looking at Fig. 1, although GDP has not reached the level in 1990, a considerable recovery of the economy after the initial decrease in GDP is observed. Due to the very close dependency of the Russian economy, the initial decrease was stronger in Lithuania than in most Central and Eastern European countries. However, the actual size of the decrease is difficult to assess, as the data quality is questionable and the period is characterised by considerable structural changes, factory closings, hyperinflation and probably a shadow economy growth. In Schneider and Enste (2000),

¹ Data for the economic development in Lithuania is found in The Ministry of Economy and Statistics Lithuania, 2002, 2003.

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