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**NORTH-HOLLAND**

Journal of Policy Modeling  
23 (2001) 411–419

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*Journal of  
Policy  
Modeling*

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# Macroeconomic effects of a currency devaluation in Egypt

## An analysis with a computable general equilibrium model with financial markets and forward-looking expectations

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### **Abstract**

This paper presents a general equilibrium model for Egypt, which allows for different forms of expectations formation and takes financial markets into account. Moreover, it uses a new calibration method. The model is used to examine the macroeconomic effects of a currency devaluation. The results show that the impact of a currency devaluation on the current account is small in the medium run, whereas effects on production are substantial in the medium term. Finally, results differ considerably for forward-looking or adaptive expectations. © 2001 Society for Policy Modeling. Published by Elsevier Science Inc.

*JEL classification:* C68; D5; D58; E17; E44; O16

*Keywords:* Computable general equilibrium; Calibration; Forward-looking expectations; Financial markets

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### **1. Introduction**

This paper presents a newly developed computable general equilibrium (CGE) model for Egypt including a financial sector. Egypt has a longstanding

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tradition in CGE modelling, which started with a Cairo University–M.I.T. research project in 1977. This was followed by a constant flow of CGE models. None of these modelled financial markets (see Löfgren, 1994b). The paper also describes a new method to calibrate large CGE models. While all existing models calibrate the model to *one specific year*, in our model some crucial parameters are based on a calibration over a *time period*. This makes our model much more suitable to analyze the medium-run effects of different economic policies. Additionally, the model allows different forms of expectations formation. We are able to calibrate and simulate the model assuming completely forward-looking expectations, adaptive expectations, and some intermediate forms.

The model is used to examine the macroeconomic effects of a currency devaluation in Egypt. The necessity of a devaluation of the Egyptian pound has always been one of the most contentious issues in discussions between the IMF and the government of Egypt. During the 1995–1996 negotiations, the IMF emphasized the need of a further devaluation of the Egyptian pound, whereas the Egyptian government strongly opposed it. We argue that it is important to analyze the impact of a currency devaluation in the framework of a general equilibrium model, since supply side and demand side effects as well as feedback effects between different sectors should be considered. However, most existing CGE models are of dubious value to examine the effects of a devaluation, since they rarely pay attention to the modelling of expectations and only rarely model a financial sector. While forward-looking expectations play a prominent role in the theoretical literature on currency devaluations, there are only a few CGE models in which expectations are forward looking (exception is Agénor, Haque, & Montiel, 1993).

After giving an overview of the model and explaining the calibration method in the following two sections, the simulation results are presented in Section 3. Section 4 concludes.

## 2. A general outline of the model<sup>2</sup>

The model is based on Dervis, De Melo and Robinson (1982) for the real side and Rosensweig and Taylor (1990) for the financial side. The main differences are country specific elements, and the role of expectations. The model consists of firms, households, government, financial and an external sector. There are three goods producing sectors; agriculture, industry and services. The financial sector comprises a central bank and a commercial banking sector.

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<sup>2</sup> A full description of the model can be found in Thissen and Lensink (1997).

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