

INFORMATIVE NOTE ON ELASTICITIES AND CALIBRATION OF MAMS

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The calibration of MAMS basically requires the following:

- a. A SAM (and its SAM-based parameters).
- b. Labour data from household surveys.
- c. Non SAM-based parameters.
- d. Elasticities (both the standard-CGE-model specific ones and the MAMS specific ones).

We assume all countries have a SAM or country teams are working on getting one built up. The MAMS code (Löfgren and Díaz-Bonilla, 2006) handles the computation of SAM-based parameters in the same way that the standard CGE model (Löfgren, Lee and Robinson, 2001) does; so, people do not have to worry about this. Every country must have one or various household surveys available for getting employment data.

Non SAM-based parameters and MAMS specific elasticities may be more difficult to find. The worse case scenario would be that of a model (i.e. MAMS Excel data file) comprising most non SAM-based parameters that are not estimated econometrically but guessed or computed using some basic operations provided that the required data were available. In some cases, also, non SAM-based parameters tend to be borrowed from other studies or models for other countries. This is of course far from ideal and essentially induced by data limitations. If guesstimates are to be used, let them be educated guesses; meaning, think well about the nature of the elasticity and the reality of the country whose economy is being modelled. That is, should one expect a high or low responsiveness to changes in demand, income or relative prices?

Since MAMS fundamentally draws from the CGE standard model, its functioning and solution feasibility will heavily depend upon standard-CGE-model specific elasticities; that is, elasticities of substitution for the composite supply (CES), elasticities for output transformation (CET), elasticities of substitution between factors -- bottom of technology nest (PRODELAS), elasticities of substitution between aggregate factor & aggregate intermediate -- top of technology nest (PRODELAS2), and expenditure elasticities (LESELAS1 and 2).

Estimating econometrically

- These standard-CGE-model specific elasticities can be computed if time series are available for basic macroeconomic indicators (aggregate demand components and employment) which, nonetheless, have to be available for sectors. First, appropriate care should be taken of the specification of the equations such that the appropriate elasticity can be derived. Second, sufficient data observations need to be available. When using time series one would require at least 20 years (time periods). Examples of estimable equations (and their derivation) and a list of data requirements to estimate standard-CGE-model specific elasticities along the aforementioned lines are found in Sanchez (2004) and Annabi, Cockburn and Decaluwé (2003). For the Sanchez paper, see in particular section 7.3.2 (Role of elasticities in the model and elasticity value estimation) and Appendix I (section I.1).
- If most of this information is available to estimate most required elasticities, there is then enough information already to enable finding of those few elasticity values lacking through sensitivity analysis.
- For the MDG block (specifically education and health) one should use as much as possible the type of microeconomic analysis as proposed in the basic project methodology document (see, e.g., the technical notes by Vos, and the work of Matthew Hammill).

When using guesstimates

- As said in the above, when doing this, make sure these are educated guesses. Use of elasticity values from other models should also be subject to such scrutiny: are these realistic in order of magnitude for my country? The examples of the elasticities provided in the afore-mentioned literature may be helpful as a reference. When using them, try to imagine whether corresponding sectors and economic agents of your country would be at a similar development stage, income level and/or facing similar market conditions.
- The more guesstimates have been used, the more important it will become to perform some sensitivity analysis with the key elasticities, that is, changing them one by one to check whether (a) there is still a feasible model solution after altering the elasticity and (b) whether there is a major change in the overall outcome. Such sensitivity analysis can be a tedious and lengthy process to which we will pay some careful attention in the course of the project.

In the end, it is all in the model builders hands.

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