AGRODEP contribution to addressing economic modeling needs in AFRICA

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The landscape

• Actors involved
  • Individual researchers/scholars
  • Pure research centers (private and public)
  • Research centers inside institutions (central banks...)

• Topics: Strategic development issues for Africa
  • Agriculture (growth, policy distortions, value chains...)
  • International trade (international trade agreements, regional integration...)
  • Natural resources management
  • Economic growth and income distribution (poverty/inequality)
  • Impact evaluation
  • Other important pure macro topics (monetary policy, fiscal policy...)

• Tools
  • A large class of models, but here focus on simulation and econometric models
Economic modeling needs in Africa: The current situation

• Econometric modeling is in general good and sometimes excellent
• Good skills due to good local schools of statistics
• The opposite is true for simulation models
• Not part of the curriculum/trainings
• Since the early years, only small macro econometric models and “quasi accounting” models used for short term analysis and forecasting
• Mainly used at central banks or Ministries of finances for budgetary analysis/planning
• Also input-output models and SAM multipliers analysis
• A few static single country (CGE) models
• Almost no DSGEs
Limitations of the existing models

• Input-output models and SAM multipliers analysis are clearly limited (ignore non linearities, increasing returns to scale, assume fixed prices...)

• Static models cannot handle reforms that are gradually implemented (Ex: trade agreements)

• Single country models have a very limited coverage by definition: issues such as trade creation/diversion and regional integration (common current account constraint) cannot be studied

• In general the specificities of the African economies are ignored
  • In agriculture, huge amount of home consumption and market failures ⇒ separability issues
  • Dual nature of the economies/labor markets (formal vs informal) or even “dual-dual” nature (urban-rural and formal-informal)
  • The dispersion of tariffs (aggregation issues)
  • The inefficiencies of the tax collection systems
  • Expectations formation and price setting mechanisms
  • Parameters are hardly or poorly estimated (crucial for the results)
AGRODEP CONTRIBUTION

• Support through a shared platform which provides a large family of models and toolboxes actively maintained (so far 21 models/tools)

• State of the art models, validated by the international scientific community (publications in highest ranks journals)

• Designed and customized and as needed for specific issues/needs of Africa

• Simulation models
  • Single country (CGE) models, static and dynamic (based on IFPRI and PEP models), include specificities in Africa (ex: home consumption in agriculture)
  • Multi country and multi-sector CGE models (MIRAGE, MIRAGRODEP and its extensions to reflect the African context, such as the dual-dual nature of African economies)
  • Agricultural and trade focused Partial Equilibrium models, including tools for handling prices volatility issues and the effectiveness/optimality of stabilization policies (RECS) or trade policy options in a context of a multi-product value chain (ERATO)
  • Customized macroeconometric models

• Econometric models
  • So far, focus on gravity models

• (Modeling) Toolboxes
  • GAMS modeling, Supply and demand elasticities, Micro-Macro distributional analysis, consistent tariff aggregator and scenario builder...
structure of model/toolbox packages

- The models are implementable for countries or group of countries included in the data component.
- Some of the models came from trainings and then released on the platform
- “Package” is not just a documentation
- Each model/tool includes
  - A full documentation with concrete examples
  - Computer codes
  - The data set used so that the user can replicate the examples
- Some specific modeling tools include video lessons, exercises, “debugators” and online support
The data

• Models come along with data

• The best model will produce biased results if run with poor data

• EX: No CGE without a good SAM
  • SAMs are thoroughly checked and validated before being published
  • We sometimes build our own SAMs
  • All the materials used in process are available for the user

• Same thing for household surveys
Future work

• No new family of models in the near future

• Continue to customize the existing models for issues specific to Africa while incorporating important model innovations (Ex: MIRAGRODEP-DUAL-DUAL and RI)

• Focus on increasing the ownership of the library by the members by providing more documentations, examples, and applications to the models to different regions/questions.

• NB: Trainings also provide useful tools for econometric modeling not covered here (Ex: impact evaluation)