

Existing Macro models in Africa

- Modeling as an input to policy dates back to Tinbergen's model of 1936 and 1939
- There are several ways of classifying Models:
 1. Mathematical structure (simulation, optimization, dynamic, linear, nonlinear, etc)
 2. Methodology (macroeconomic, CGE, etc)
 3. Policy Focus or interest (policy analysis, planning, forecasting, etc)
 4. Theoretical structure (keynesian, neoclassical, structuralist, supply side, demand driven, etc)
 5. By the Nature of Agencies that Developed Such Models (e.g. multilateral agencies, national policy institutions, individuals)
 6. In this review, models are grouped by methodology and policy interest (focus on institutional models only)

Planning Models

- These are models designed specifically for planning purposes
- They are the earliest type of Macroeconomic models in Africa. These include:
 1. World Bank Revised Minimum Standard Model (RMSM)
 - ❑ Used in Nigeria by the Federal Ministry of National Planning in the 1980's
 - ❑ The RMSM applied to Nigeria is a large scale model containing 73 equations with large number of variables (some exogenous)
 - ❑ The RMSM was used for development planning activities including the development of a macroeconomic framework from the early 1980s till the 1990s
 - The RMSM was designed for making projections of certain macroeconomic variables for use in the World Bank's periodic country studies.
 - The model's major emphasis on the foreign sector of the economy
- 2. The IMF Financial Programming Model

Macroeconometric/ forecasting Models

- Existing institutional-based and operational macroeconometric models for policy analysis and forecasting in Africa:
 - Bank of Botswana Forecasting (Models) Framework
 - KIPPRA-Treasury Macro Model Kenya (KTMM);
 - Namibia Macroabc Model
 - Zambia macro model project (ZAMMOD)
 - Rwandan Macromodel
 - Bank of Ghana 5 Sector Macroeconomic Model (EMOD1)
 - Central Bank of Egypt Open Economy Gap Model
 - NISER Model (Nigeria)
 - Petroleum Model (EPM); Egyptian Natural Gas Model (E-GAS); Short-run Energy Macroeconomic Model for Egypt (E-MACRO)

Macroeconometric/ forecasting Models

- The Ethiopian Macroabc model (EPPD-MOFED)
- the Macroeconometrics Model for Sudan (MEMS) Committee, Ministry of Finance
- Tanzania Macroeconomic modelling (MACMOD)
- CGE Model of Ghana (Ministry of Finance), not available to public
- Cameroon Macroeconomic Models
 1. **The SIPAE Model-macroeconometric framing model and forecasting**
 2. **The JUMBO Model for Financial and Economic Forecasting**
 3. **The Poverty Analysis Macroeconomic Simulator (PAMS)**
 4. The 1-2-3 PRSP model (CGE)
 5. The Integrated Macroeconomic Model for Poverty Analysis (IMMPA)
- An Operational Consistent Macroeconomic Accounting Spreadsheet Model for the Gambia

Macroeconometric/ forecasting Models

- **Models of the South African Economy**

- **Macroeconomic planning/ forecasting Models**

1. The National Institute for Economic Policy Model
2. The World Bank Macroeconometric model
3. The Industrial Development Corporation's CGE model
4. The Development Bank of Southern Africa (DBSA) Model
5. International Food Policy and Trade and Industrial Policy Models

- **Macroeconometric Model**

1. University of Pretoria Macroeconometric Model
2. The Reserve Bank Econometric Model

Type of Model	Developed by	Size	Theoretical Framework	Purpose	Utilized	Currently being used	Updated	Funding
Planning Models:								
RSMS-Nigeria	Federal Ministry Of National Planning	Large Scale Model	Two-gap model	For development Planning activities (foreign sector) and Forecasting	yes	No	No	FGN
RSMS-Jumbo Model	Agence Française de Développement (AFD)	Small scale	Keynesian-type model	forecasting macroeconomic performances in CFA franc countries	yes	yes	Twice a year	Franc Zone
The National Institute for Economic Policy (NIEP) Model (CGE) South Africa	Macroeconomic Research Group (MERG) and National Institute of Economic and Industry Research in Australia	Large scale	neo-Keynesian structuralist	Simulation Model for Reconstruction and Development Program	yes	??	??	South African Government

The Industrial Development Corporation's CGE model South Africa (IDC) Model	Impact Research Group of Monash University in Australia and IDC	Large Scale	Neoclassical Walrasian general equilibrium theory	the effects of increase in government spending , implications of capital flows and trade policy on the industrial sector of the economy; the effects of an increase in government spending on provincial gross products; and the implication of the adoption of Uruguay Round trade liberalisation measures	yes	??	yes	IDC
The Development Bank of Southern Africa (DBSA) Model	A structuralist-CGE model built by B.Gibson and D. van Seventer	Large scale	structuralist	to examine the consistency and impact of the new government's policies and to explain the effects of exogenous shocks on the economy	yes	??	Yes	DBSA
The Integrated Macroeconomic Model for Poverty Analysis (IMMPA) Cameroon	World Bank	CGE		Policy Simulations	??	??	??	World Bank and UNDP

Macroeconometric/ forecasting Models:

Type of Model	Developed by	Size	Theoretical Framework	Purpose	Utilized	Currently being used	Updated	Funding
Forecasting Model	Central Bank of Botswana	Small scale	Rational expectations	Forecasting inflation, etc	yes	yes	unknown	CBB
Macroeconometric Model (NISER & NEIC Versions)	NISER-Nigeria	Large scale	Neoclassical	Policy Analysis	yes	NO	variants	National Planning commission
CEAR Econometric Model	Centre for Econometric and Allied Research	Large scale	Neoclassical	Short-term Planning and Projection Purposes	Yes (NEEDS)	??	variants	National Planning commission
The KIPPRA-Treasury Macroeconomic Model (KTMM)	Kenyan Institute for Public Policy Research and Analysis (KIPPRA) and Macroabc	Large scale	Demand-driven Keynesian	Budget and Policy analysis	yes	yes	Yes/every year	EU/Kenyan government
MACMOD	Ministry of Finance and the Planning Commission in Tanzania	Medium scale	Keynesian type Model	Budget Preparation and Macroeconomic analysis	yes	yes	Every year	Ministry of Finance

Forecasting Model	Central Bank of Egypt	Small scale	Expectations based model	Forecasting Inflation and Policy Analysis	yes	yes	??	Bank of Egypt
Namibia Macroabc Econometric Model	Micromacro Consultants	Large scale	MMC's macroabc methodology (demand-driven)	National Development Plan (NDP3), Budget and Policy Analysis	yes	yes	yes	World Bank Assisted
Rwandan Macromodel	Economists from MEPU MINECOFIN and other institutes	Large scale	Keynesian	Preparation of Budget framework paper, Annual Economic Report, impact Analysis	yes	yes	yes	World Bank Assisted
EPPD-MOFED Macro Model (EMM)	Center for Development Policy Research (CDPR) and SOAS and MMC	Large Scale	??	policy simulations and forecasting for internal purposes	yes	yes	yes	Ethiopian MOFED
The Gambia Macroeconomic Model	Research Team	Medium scale	Keynesian type model	Policy Analysis	yes	yes	yes	(ISPEFG), and the Ministry of Finance.

Type of Model	Developed by	Size	Theoretical Framework	Purpose	Utilized	Currently being used	Updated	Funding
Macroeconomic Model for Mali (MME_DNPD) and Threshold 21 Medium and Long-term Forecasting and Simulation Mode	National Planning and Development Directorate (DNPD)	??	??	Implementation of (PRSP), manage development in Mali, forecasting	yes	yes	yes	Government of Mali
The World Bank macroeconomic model (South Africa)	World Bank	Large Scale (300 endogenous vars and 60 exogenous vars)	mainstream IS-LM model	Simulate macroeconomic consequences of public expenditure, Macroeconomic policy, industrial policy, and public expenditure alternatives	yes	??	yes	World Bank
University of Pretoria Macroeconomic Model	University of Pretoria	Large scale		Fully linked world model to appraise the distributional impact of national policies	yes	yes	yes	University of Pretoria
The Reserve Bank Econometric Model (South Africa)	The Reserve Bank of South Africa	Formally Large Scale with 400 equations to small scale with 34 Equations		forecasts of the SARB inflation targeting.	yes	yes	yes	Reserve Bank

Namibia	Namibia Macroeconometric Model (NAMEX)	Bank of Namibia	2004	published		Tjiveze, Hannah and Ebson,
Namibia	Namibia Macroabc Model x	National Planning commission	2006	Published	Drafting the National Development Plan, Policy analysis and forecasting	Micromacro Consultants
Zambia	Computable General Equilibrium (CGE)	Commission for Development Planning	1997	Not Published		Consultants from Oxford
Cameroon	Computable General Equilibrium (CGE)	Ministry of Economy and finance	1984	Published		Local Staff with Foreign Culsultant from World Bank
Cameroon	Financial programming (monetary) model	Bangués des Etates Afrique Centrale	1991			IMF staff in collaboration with local staff.
Cameroon	TABLO Model	Ministry of the Economy and finance	1992		Rarely used	
Cameroon	JUMBO Model	Agence Française de Développement			for Macroeconomic Forecasting	
Senegal	Struturalist ‘gap’ models (RMSM-X family)/other projection devices	Ministry of Economic and Financial Planning	1987	In-house discussion paper		Local Staff with Foreign Culsultants

Sudan	Struturalist 'gap' models (RMSM-X family)/other projection devices	Ministry of Finance	1986	Not published		80% foreign consultants with no in-house skill for updating
Botswana	Struturalist 'gap' models (RMSM-X family)/other projection devices	Ministry of Finance	1991		used	World Bank Staff
Tanzania	Struturalist 'gap' models (RMSM-X family)/other projection devices		1993		MACMOD for projecting input to the Tanzanian budgetary projection model, BUDMOD	
Tanzania						
Cote d'Ivoire	Macroeconomic Model		1995	Published		Local Staff with Foreign Culsultants

MACROECONOMIC MODELLING In Africa (Assessment)

❑ Expertise in model building in Africa still developing

- Ability of Africa to produce insightful forecasting models is determined by the expertise of African Macroeconomic Modellers to make use of update forecasting techniques
- Existing models need to be periodically revitalised since they constitute guidance instruments for policy makers

MACROECONOMIC MODELLING In Africa (Assessment)

- Lack of required expertise is combined with the inexistence of a nurtured centralised database warehousing system
- Non availability of massive financial requirements for model building and updating constitutes an obstacle to the development of forecasting frameworks in Africa

MACROECONOMIC MODELLING In Africa (Assessment)

- Macromodels provide useful information for policy makers regarding the past as well as the future of the continent using dynamic equations
- Scarcity of sound forecasting frameworks weakens budgeting and planning processes in the Sub-Saharan Africa
- Existing macroeconomic models in Africa have failed to analyse the impact of policies on poverty

MACROECONOMIC MODELLING In Africa (Assessment)

- Many challenges faced by several African governments in their modelling exercises
- Several African countries remain far behind in building full-fledged macroeconomic models and in providing accelerated training for qualified modellers and forecasters

MACROECONOMIC MODELLING In Africa (Assessment)

- ❑ Macroeconomic forecasting in Africa has been highly dependent on the developed world economic pattern.
 - For example MMCs develop most of the models being used in Africa
- ❑ Due to the delay it had in modelling practices, Africa had to borrow westernised models, which were not true representation of local realities

MACROECONOMIC MODELLING In Africa (Assessment)

- Interest in proper African models has increased over the past years
 - thinkers as well as officials came to realise how forecasting models could be crucial for planning purposes
 - With the MDGs, governments have been alerted to pursue and attain their macroeconomic objectives that are achievable through efficient macroeconomic models

MACROECONOMIC MODELLING In Africa (Assessment)

- Insufficient sample size, multicollinearity, and mis-specification of the models(Shourie ,1972)
- The nature of underdevelopment, skill shortages and the cost of modelling, shocks and the ad hoc nature of economic management, governance and the policy environment, and the problem of competing models(Soludo, 2002),)
- Given the vigorous impacts of investment on both the supply and demand sides, Khayum (1991) argues that in any MEM for developing countries substantial attention should be placed on capital formation

Experience of modellers and model users in policymaking

- Seers (1963) criticised the application to developing countries of models which were appropriate for developed countries, since they had been designed for different purposes and totally different economic structures
- Despite these problems, Sastry suggested that MEMs can be useful if the value of the key parameters are checked and compared with those of other countries with a similar economic structure.

Conclusion

- Forecasting is meant to guide any policy-making unit to achieve its long-term goals.
- African government have set different goals aligned with the MDGs such as: long term economic growth (6 – 7%); poverty eradication; etc; only achievable by sound macromodelling.
- Good projections are linked to sustainability of socio-economic policies

End of Presentation

□ Thank You