

# CONSTRUCTION OF A SOCIAL ACCOUNTING MATRIC FOR KENYA 2009

BY

MIRIAM W O OMOLO, Ph.D

INSITUTE OF ECONOMIC AFFAIRS KENYA

*(Work in Progress)*

# BACKGROUND

- A Social Accounting Matrix (SAM) is a matrix representation of transactions in a socio-economic system. It is generally a comprehensive and disaggregated framework that shows the generation of incomes by activities of production.
- It provides information on the income generation process of a country as it gives details on the sources and destinations of transactions by economic institutions.
- Within the SAM framework, one is able to establish the income and revenue links between agents and institutions at an empirical level.
- A SAM is therefore an important tool for economic analysis given the information that can be generated from it in terms of interdependencies in the socio-economic systems and the interaction between various agents within the socio-economic system.

# BACKGROUND

- Pioneer work on social accounting techniques were undertaken by Stone (1978) and Pyatt and Round (1979, 1985).
- A SAM can be used to undertake several analytical questions such as economic drivers of growth, the impact of public policies on millennium development goals, food security, and poverty reduction among others.
- However, such questions can only be answered depending on the level of disaggregation of a SAM and its availability
- The most recent SAM for Kenya that can be used to undertake economic wide analysis dates back to 2003, moreover, the level of disaggregation of the SAM 2003 does not allow for undertaking in depth development analysis.

# THE PROBLEM

- Under Economic Pillar of Kenya vision 2030, six sectors have been identified to deliver 10 percent growth rate per annum, this include: tourism, agriculture, manufacturing, wholesale and retail trade, business process outsourcing and financial services.
  - *There is very no evidence on how the choice of these sectors as the main drivers of growth was reached.*
- In the social pillar, education and health have been identified as ingredients that would ensure a society enjoys equitable social development in a just and cohesive society.
  - *It would be important differentiate private and government production in a SAM order to establish the economy wide effects of government social policies.*
  - *Such an analysis is important in monitoring and evaluation of the medium term implementation framework of the vision 2030.*
- New issues arising in the global arena such as climate change, energy use and environmental conservation.
  - *Such issues require to be incorporated appropriately in an integrated data framework so that economy wide effects can be established.*

# OBJECTIVES

- To construct a macro SAM that consistently captures and represents the macroeconomic framework for the Kenyan economy in 2009.
- To disaggregate the macro SAM into a Micro SAM incorporating accounts of individual activities, commodities, factors of production and institutions.
- To Balance the SAM using cross entropy procedure in GAMs (General Algebraic Modeling).

# SIGNIFICANCE OF STUDY

- There are new issues arising in the global development arena such as climate change, environment protection and use of renewable energy. These issues are cross cutting and tend to affect different sector of the economy in varied manner
- This study intends to construct the 2009 SAM that can be used to analyse the new 21<sup>st</sup> century emerging issues.
- Initial impacts of the Doha on poverty have been undertaken under the project using SAM for Kenya for 2003 which is quite dated. A more updated SAM will be appropriate in undertaking analysis of the impact of the on-going Doha negotiations.
- Kenya has moved to a devolved system of governance, a more disaggregated SAM will facilitate county related economic changes.
- The 2009 SAM will be significant in answering the 21<sup>st</sup> century challenges relating to millennium development goals, trade liberalization impacts, climate change and environmental impacts the SAM intends to include components that would facilitate such analysis.

# METHODOLOGY

- **To construct macro SAM that consistently captures and represents the macroeconomic framework for the Kenyan economy in 2009.**
  - The SAM has the following major accounts: activities, commodities, factors (of production), institutions, taxes and saving-investment.
- **To disaggregate the macro SAM into a Micro SAM incorporating accounts of individual activities, primary factors and economic institutions.**
  - The macro SAM that will have been constructed above will be disaggregated into a micro SAM particularly for activities, commodities, factors , household and taxes.

# METHODOLOGY

- Mapping HS classification to CPC classification for purposes of international trade analysis.
- Government demand (consumption and investment) will be classified by function: social services (education, health, and water-sanitation), infrastructure and “other government”. This will facilitate analysis of the impact of government intervention on MDGs.
- Transportation will be disaggregated to sea, air and water
- Factors will be aggregated as follows; capital (rural/urban, formal/informal) and labour (skilled, unskilled and semi-skilled), location and gender.
- Taxes will be disaggregated duties, VAT and other taxes.
- Institutions:
  - Households will be disaggregated similar to the 2003 SAM for Kenya i.e. by deciles and location.
  - ROW will be divided into EAC, COMESA (*exc.* EAC), EU, US, China and ROW. This will facilitate policy analysis of major and potential trading partners.



# DATA SOURCE

Data	Source	Year
Supply and Use Table	Kenya National Bureau of Statistics <ul style="list-style-type: none"><li>• Production flow(supply and use)</li><li>• Commodity Flow (Supply and Use)</li></ul>	2009
Integrated Economic Accounts	System of Nation accounts for Kenya <ul style="list-style-type: none"><li>• Allocation of primary income account</li><li>• Secondary income account</li><li>• Transfers to and from the ROW</li></ul>	2009
Household Survey Data	Kenya Integrated Household Budget Survey <ul style="list-style-type: none"><li>• Labour data</li><li>• Household transfers</li><li>• Disaggregation of households</li></ul>	2005/06

# THE SUPPLY AND USE TABLE 2009

- **The Supply and Use Table (SUT)**
  - Most Recent data is SUT 2009
  - 80 Commodity- square matrix
  - Total output at basic price is Kshs. 4,605,95
  - Total intermediate consumption 2,082,111
  - Gross value added 1,375,066
- **Integrated Economic Accounts**
  - Contains current current account, use of income accounts and accumulation account
  - Provides transfers between institutions
  - Not available in Kenya
  - Alternative to obtain them from national accounts data and government documents

# SUPPLY AND USE TABLE

		Matrice des Ressources							
Catégories de Biens et Services	↑ ↓	Total ressources au prix d'acquisition (R7)	Taxes et subventions sur les produits (R6)	Marges de commerce et de transport (R5)	Total offre au prix de base (R4)	Branches d'activité		Total offre domestique au prix de base (R2)	Imports (R3)
						←→			
						Offre domestique prix de base (R1)			
						Total production branche au prix de base (R8)			

		Matrice des Emplois								
Catégories de Biens et Services	↑ ↓	Total ressources au prix d'acquisition (E7)	Branches d'activité			Exportations (E2)	Dépenses de consommation des ménages (E3)	Dépenses Publiques de Consommation (E4)	Formation Brute de Capital Fixe (E5)	Variation des stocks (E6)
			←→							
			Consommation intermédiaire (Matrice Entrée-Sortie) (E1)							
			Valeur Ajoutée : Compensation salariale, taxes et subventions de production, Excédent Brut d'Exploitation et Revenu Mixte (E8)							
			Total production branche au prix de base (E9)							

# SUT AND SAM

		ACT	COMM	MARGINS	FACTORS	INST	SAV/INV	ROW
		(1)	(2)	(2')	(3)	(4)	(5)	(6)
<b>ACT</b>	<b>(1)</b>		Domestic Purchase TRE <b>(R1)</b>					
<b>COMM</b>	<b>(2)</b>	Intermediate Consumption TRE <b>(E1)</b>				Final Consumption TRE <b>(E3&amp;E4)</b>	Investment Consumption TRE <b>(E5&amp;E6)</b>	Exports TRE <b>(E2)</b>
<b>MARGINS</b>	<b>(2')</b>		Transport and trade margins TRE <b>(R5)</b>					
<b>FACTORS</b>	<b>(3)</b>	Gross Value Added TRE <b>(E8)</b>						
<b>INST</b>	<b>(4)</b>	Act. Taxes and Subsidies TRE <b>(E8)</b>	Com. Taxes and Subsidies TRE <b>(R6)</b>		Factor Revenues TCEI	Transfers TCEI		Transfers (TCEI)
<b>SAV/INV</b>	<b>(5)</b>					Domestic Savings TCEI		Foreign Savings TCEI
<b>ROW</b>	<b>(6)</b>		Imports TRE <b>(R3)</b>					

# PRELIMINARY RESULTS- KENYA MACRO SAM 2009

	Activities	Commodities	Margins	Fators	Households	Government	Investments	ROW	TOTAL
Activities	-	4,744,093							4,744,093
Commodities	2,135,094				2,305,708	453,607	498,140	464,886	5,857,434
Margins			-						-
Factors	2,609,496								2,609,496
Households				2,609,496		5,180		16,426	2,631,102
Government	(496)	298,897			325,394				623,795
Savings									-
ROW		859,533				24,540			884,073
<b>TOTAL</b>	<b>4,744,093</b>	<b>5,902,523</b>	<b>-</b>	<b>2,609,496</b>	<b>2,631,102</b>	<b>483,327</b>	<b>498,140</b>	<b>481,312</b>	
<b>R-C (Diff)</b>	<b>(0)</b>	<b>(45,089)</b>	<b>-</b>	<b>(0)</b>	<b>0</b>	<b>140,468</b>	<b>(498,140)</b>	<b>402,761</b>	

# THE MICRO SAM 2009

- **Has 80\*80 activity commodity mapping (HS classification)- harmonization of HS and CPC- available from SUT**
- *Disaggregation of factors to skilled, unskilled and semi-skilled using household survey data.*
- *Disaggregation of households by deciles and region (urban, rural)*
- *Disaggregation of ROW- (EAC, COMESA, EU, CHINA, US, OTHER)*
- *Balancing of the Micro-SAM using cross Entropy method*