

Kenya

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1. Introduction

The history of Social Accounting Matrices for Kenya goes back to the year 1986. This was the base year for the first Kenya SAM, which was used as an input for a CGE-model in the Ministry of Planning and National Development. In a modified version this SAM was also used as base for a computable general equilibrium (CGE) - model on Kenya's economy by Jürgen Levin (Levin J. 1998).

The Kenyan Central Bureau of Statistics constructed then a SAM for Kenya with the base year 1990, but it only contained a disaggregation of the agricultural sector in the four sub-sectors *Traditional Agriculture, Tea & Coffee, Other Agriculture* and *Fishing & Forestry*. The following 1997 SAM for Kenya constructed by the Kenya Institute for Public Policy Research and Analysis (KIPPRA) even had a disaggregation of agriculture only into the three sub-sectors *Traditional Agriculture, Other Agriculture* and *Fishing & Forestry*.

So, for the objective of building an expedient and more agriculture-focused database for a CGE - model, which is an important part of IFPRI's research support for USAID's Action Plan for Kenya, it was necessary to construct a new SAM with a more detailed disaggregation of the agricultural sector. Because of limited data availability for more recent years 2001 has been chosen as reference year for the Kenya SAM.

2. The 2001 SAM for Kenya

The first step in developing a disaggregated multi-sector (micro) SAM is the construction of a macroeconomic SAM, which captured the aggregated structure of Kenya's economy. The second step is the construction of a disaggregated Micro SAM as an expansion of an existing input-output (IO)-table concluding a series of activities, commodities, factors and institutions. The Macro SAM gives us a set of control totals for macro aggregates such as total gross domestic product (GDP) at factor cost, total imports & exports, total private consumption as well as total government and investment demand.

2.1 The Macro SAM

Table 1 describes the schematic structure of the 2001 Macro SAM for Kenya. The 2001 SAM adapts a typical structure of Macro SAMs as reported e.g. in Thurlow and Wobst (2003)¹. The Macro SAM is monthly based on info from the World Development Indicators (WDI) 2003, which are conform with 1993 system of national accounts (SNA)

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¹ For a general discussion on SAMs see Pyatt & Round (1985).

and largely are complete with respect to the data requirements. The thirty three non-zero entries of the preliminary squared Macro SAM (table 2) are based on this data.

As table 2 indicates, the Macro SAM balances Kenya's economy at 1,757,348 million of Kenyan Shillings (and a total GDP at factor costs of 772,679 million), with domestic absorption amounting to 2,038,254 million and a trade deficit of 76,311 million (total import value: 309,378 million and total export value: 233,068 million). Government expenditures amount to 210,314 million while the investment expenditure mounts up to 114,365 million. Tax collection amounts to 210,314 million of which 37,4 % corresponds to indirect taxes, 13,7 % to tariffs and 48,9 % to direct taxes. The households pay 102,856 million of direct taxes whereas the total household expenditures add up to 809,275 million and the foreign savings amount to 76,311 million.

The share of private consumption in GDP at factor costs is 89,5 %, while the share of government consumption is 19,5 % and the investment consumption's share in GDP at factor costs amounts to 14,8 %.

Table 1. Structure of the 2001 Macro SAM for Kenya

	Activities	Commodities	Factors	Households	Government recurrent	Savings-investment account	Rest of the world	Total sales
Activities		Domestic Supply		Home-consumed outputs				Activity income (gross output)
Commodities	Intermediate demand			Private consumption	Government consumption	Investment consumption	Exports	Domestic demand
Factors	Value added							Value added (f.c.)
Households			Factor income to households		Transfers to households			Household income
Government recurrent		Sales taxes, export taxes		Transfers to government				government income
Savings-investment account				Household savings	Government savings		Foreign savings	Savings
Rest of the world		Imports, c.i.f.						Payments to row
Total	Gross output	Absorption & exports	Factor expenditures	Household expenditures	Government expenditures	Total Investment	Foreign exchange available	

Table 2. The 2001 Macro SAM for Kenya (in KShs million)

	Activities	Commodities	Factors	Households	Government recurrent	Savings-investment account	Rest of the world	Total
Activities		1,621,418		135,930				1,757,348
Commodities	984,669			555,657	150,496	114,365	233,068	2,038,254
Factors	772,679							772,679
Households			772,679		36,596			809,275
Government recurrent		107,458		102,856				210,314
Savings-investment account				14,831	23,222		76,311	114,365
Rest of the world		309,378						309,378
Total	1,757,348	2,038,254	772,679	809,275	210,314	114,365	309,378	

2.2 The Micro SAM

The intermediate demand sub-matrix of the micro-SAM is mostly based upon the Input-Output-relationships of KIPPRA's 1997 Kenya SAM, but with a further disaggregation of the agricultural sector. Factor markets are disaggregated according to The 2001 Micro SAM for Kenya disclaims a disaggregation of the components *Government recurrent, Indirect tax account, Tariff account, Direct tax account, Saving-investmen*" and *Rest of the World*. Factor markets are disaggregated into 4 groups and households are divided into 12 socio-economic groups. The other institutions featured in the SAM *Government recurrent, Savings-Investments account* and *Rest of the world* are not further disaggregated.

2.2.1 Disaggregation of the Activities and Commodity Accounts

Activities are disaggregated in 33 categories. As already mentioned "activities agriculture" is disaggregated into 15 sectors: *Maize, Other cereals, Roots & Tubers, Pulses, Sugar Cane, Fruits, Vegetables, Cutflowers, Tea, Coffee (green), Beef & Veal, Milk & Dairy, Other Livestock, Fishing and Forestry & Logging*. The data used for this disaggregation was taken from FAOSTAT production data. The manufacturing Activities are disaggregated in the sectors *Food, Textiles, Leather & Footwear, Wood & Paper, Petroleum, Metal Products, Non-metallic and Other Chemicals* whereas the industries activities are disaggregated in *Mining, Construction and Electricity, Gas & Water*. The services activities are divided into *Trade, Transport and Communication, Owned Housing, Other private Services (including Hotels, Restaurants & Financial Services), Public Administration, Education, Health and Agricultural Services*. The main data structure for non-agricultural activities is based upon KIPPRA's 1997 Kenya SAM.

Commodities are disaggregated into the same 33 sub-sectors plus accounts that capture transaction costs for exported, imported and domestic commodities respectively. Import and export data was made available by the Customs Department of the Kenyan Ministry of Finance and Planning, Nairobi.

2.2.2 Dissaggregation of Factors and Households

The factor classification of the micro-SAM distinguishes four production factors, that is, labour and capital, which divided into agricultural and non-agricultural respectively.

The households are disaggregated according to location (rural/urban), gender of head of household and poverty status (ultra-poor, poor or non-poor). Table 3 describes the resulting 12 household categories and their particular share in total households.

Table 3. Household categories and their particular share in total households and population

Household category	Households	
	Number	In %
Rural, female-headed, ultra-poor	411,741	9.7
Rural, female-headed, poor	145,988	3.4
Rural, female-headed, non-poor	486,917	11.4
Rural, male-headed, ultra-poor	826,700	19.4
Rural, male-headed, poor	351,992	8.3
Rural, male-headed, non-poor	1,140,313	26.8
Urban, female-headed, ultra-poor	19,812	0.5
Urban, female-headed, poor	81,401	1.9
Urban, female-headed, non-poor	85,630	2.0
Urban, male-headed, ultra-poor	49,440	1.2
Urban, male-headed, poor	254,958	6.0
Urban, male-headed, non-poor	403,517	9.5
Total households	4,258,409	100.0

Source: Calculations from the 1997 KMWS

Factor employment by activity, factor endorsement by household and relation household expenditure patterns were also estimated from the 1997 Kenya Welfare Monitoring Survey.

3. The Balancing Process

Although the Macro SAM is balanced, the data used to disaggregate the Micro SAM is from a number of inconsistent sources. This results in a number of imbalances between row and column accounts in the prior Micro SAM, which must be removed in order to arrive at a final balanced 2001 SAM for Kenya. A cross-entropy approach to SAM estimation is used for the balancing process leading from the unbalanced prior to the balanced final SAM. Since data availability and data consistency are limited, the cross-entropy approach is an appropriate tool for estimating a balanced and consistent database starting from an unbalanced database that contains all available information.

The Cross-entropy Balancing Method²

A SAM can be defined as a matrix T of monetary flows $T_{i,j}$ representing payments by account j to account i . Following the convention of double-entry bookkeeping, total receipts and total expenditures of a particular agent i have to be equal (i.e., respective row and column sums are balanced). This is shown below.

$$y_i = \sum_j T_{i,j} = \sum_j T_{j,i}$$

² For a detailed discussion see Robinson *et al* (2001).

Dividing every cell entry of the flow matrix T by its respective column total generates a matrix A of column coefficients:

$$A_{i,j} = \frac{T_{i,j}}{y_j} \quad \text{with} \quad \sum_i A_{i,j} = 1 \quad \forall j$$

In matrix notation it follows that: $y = A y$

Balancing a SAM is an underdetermined estimation problem using information from various sources and for various years. The cross-entropy approach allows the incorporation of errors in variables, inequality constraints, and prior knowledge about any part of the SAM (as opposed to just row and column sums as in the RAS balancing method).³ These features of the crossentropy estimation technique allow considerable flexibility in incorporating specific information and implementing limits to which the estimation results are restricted. The general cross-entropy approach is described by the following optimization problem.⁴

$$\min \sum_i \sum_j A_{i,j}^* \cdot \ln \left(\frac{A_{i,j}^*}{A_{i,j}} \right)$$

$$\text{s.t.:} \quad \sum_j A_{i,j}^* y_j^* = y_i^* \quad \text{and} \quad \sum_j A_{i,j}^* = 1 \quad \forall i$$

In this equation A is a coefficient matrix representing any prior SAM. Despite being inconsistent and imbalanced, this prior SAM represents the starting point of the balancing process aimed at determining a new and balanced coefficient matrix A*.⁵ The described problem is set up to minimize the entropy difference between the two

³ Following information theory developed by Shannon (1948) and further developed by Theil (1967) the expectation of separate information values can be described as the expected information of data points:

$$-I(p:q) = - \sum_{i=1}^n \frac{p_i \ln p_i}{q_i}$$

where q and p are prior and posterior probabilities regarding a set of events i E and -I(p:q) is the Kullback-Leiber (1951) measure of the 'cross-entropy' distance between the two probability distributions. The cross-entropy approach minimizes the cross-entropy distance between the probability distributions that are consistent with the information in the data and the prior.

⁴ As formulated by Golan, Judge, and Robinson (1994) to update an input-output table by solving for a new coefficient matrix A, which minimizes the entropy difference between the underlying prior A and the new matrix A.

⁵ This means that the prior A does *not* need to satisfy the model $y = A y$, but the sum of its column coefficients adds up to one, *i.e.*

$$\sum_i \overline{A_{i,j}} = 1 \quad \forall j.$$

coefficient matrices. This becomes clearer if the optimization problem is rearranged as follows:

$$\min \sum_i \sum_j A_{i,j}^* \cdot (\ln A_{i,j}^* - \ln \bar{A}_{i,j})$$

Additional equality and inequality constraints can be formulated as linear ‘adding-up’ constraints on various elements of the SAM. For an aggregator matrix G , which has ones for those Micro SAM entries that correspond to a certain Macro SAM aggregate and zeros otherwise, the formulation for k such aggregation constraints is given by

$$\sum_i \sum_j G_{i,j}^{(k)} \cdot T_{i,j} = \gamma^{(k)}$$

where $\gamma^{(k)}$ is the value of the aggregate and the T_{ij} 's are the Micro SAM flows.

Measurement errors in variables can be incorporated into the system through

$$y = \bar{x} + e$$

where y is a vector of row sums and x the initially known vector of column sums measured with error. The error e is defined as a weighted average of known constants

$$e_i = \sum_w W_{i,w} \cdot \bar{v}_{i,w}$$

where w is a set of weights W , v are constants, and weights are subject to

$$\sum_w W_{i,w} = 1 \text{ with } 0 \leq W_{i,w} \leq 1$$

For the purposes of the Kenyan Micro SAM, a symmetric distribution around zero given lower and upper bounds is generally chosen using five weights.⁶ Consequently, the optimization problem of minimizing the entropy difference now contains a term for the weights W , as shown below.

$$\min \left(\sum_i \sum_j A_{i,j}^* \cdot (\ln A_{i,j}^* - \ln \bar{A}_{i,j}) + \sum_i \sum_w W_{i,w} \cdot \ln W_{i,w} \right)$$

⁶ Note that if the error distribution is symmetrically centered on zero and all weights are equal – as are their initial prior values – then the respective error equals zero.

Solving the above optimization problem in conjunction with the constraints imposed on the system derives a balanced SAM that is as close to the prior SAM as possible while still satisfying the constraints. By varying the value of the standard errors on the constraints it is possible to adjust the confidence placed on various areas within the prior. For instance, it is possible to lower the standard errors on the macro control constraints so as to ensure a closer match of the Micro SAM's aggregates to those found in national accounts. The remainder of this section outlines the constraints used for the Kenyan SAM.

References

- Golan, A., Judge, G. and S. Robinson (2004) "Recovering Information from Incomplete or Partial Multisectoral Economic Data". **Review of Economics and Statistics**, Vol. 76.
- Kullback, S. and R. Leibler (1951) "On information and sufficiency". *Annual Mathematical Statistics*, Vol. 22.
- Levin, J. (1998). *Structural Adjustment and Poverty: The case of Kenya*. Department of Economics. Göteborg University, Göteborg.
- Pyatt, G. and J. Round (1985). *Social Accounting Matrices: A Basis for Planning*. World Bank, Washington D.C.
- Robinson, S., Cattaneo, A., and El-Said, M. (2001) "Updating and Estimating a Social Accounting Matrix Using Cross Entropy Methods". *Economic Systems Research*, Vol. 13.
- Shannon, C. E. (1948) "A Mathematical Theory of Communication". *The Bell System Technical Journal*, Vol. 27.
- Theil, H. (1967) *Economics and Information Theory*. Amsterdam.
- Thurlow, J. and P. Wobst (2003) "Poverty focused Social Accounting Matrices for Tanzania". TMD discussion paper series 112, IFPRI, Washington D.C.

ACRONYMS

CBS	Central Bureau of Statistics (Kenya)
FAOSTAT	Food and Agricultural Organisation of the United Nations – Statistical Database
KIPPRA	Kenya Institute for Public Policy Research and Analysis
IFPRI	International Food Policy Research Institute
SAM	Social Accounting Matrix
SNA	System of National Accounts
USAID	United States Agency for International Development
WDI	World Development Indicators
KWMS	Kenya Welfare Monitoring Survey

Appendix 1. List of SAM codes

Sectors:	Activity codes:	Sectors	Commodity codes
Maize	A36AMAIZ		C36AMAIZ
Other Cereals	A36AOTHC		C36AOTHC
Roots and Tubers	A36AROOT		C36AROOT
Pulses	A36APULS		C36APULS
Sugar Cane	A36ASUGA		C36ASUGA
Fruits	A36AFRUI		C36AFRUI
Vegetables	A36AVEGE		C36AVEGE
Cutflowers	A36ACUTF		C36ACUTF
Tea	A36ATEAG		C36ATEAG
Coffee, Green	A36ACOFF		C36ACOFF
Beef & Veal	A36ABEEF		C36ABEEF
Milk & Dairy	A36AMILK		C36AMILK
Other Livestock	A36AOTHL		C36AOTHL
Fishing	A36AFISH		C36AFISH
Forestry & Logging	A36AFORE		C36AFORE
Mining	A36NMINI		C36NMINI
Food	A36NFOOD		C36NFOOD
Textiles, Leather & Footwear	A36NTEXT		C36NTEXT
Wood & Paper	A36NWOOD		C36NWOOD
Petroleum	A36NPETR		C36NPETR
Other Chemicals	A36NOTHC		C36NOTHC
Non metallic	A36NNONM		C36NNONM
Metal Products (incl. Mach & Equ)	A36NMETA		C36NMETA
Electricity, Gas & Water	A36NELEC		C36NELEC
Construction	A36NCONS		C36NCONS
Trade	A36NTRAD		C36NTRAD
Transport & Communication	A36NTRAN		C36NTRAN
Owned Housing	A36NHOUS		C36NHOUS
Other Private Services (incl. Hotels, Restaurants & Financial Services)	A36NOTHS		C36NOTHS
Public Admin	A36NPUBA		C36NPUBA
Education	A36NEDUC		C36NEDUC
Health	A36NHEAL		C36NHEAL
Agr. Services	A36NAGRS		C36NAGRS
		Health	C36NHEAL
		Export transaction costs	CTDTP-E
		Domestic transaction costs	CTDTP-D
		Import transaction costs	CTDTP-M
			Government recurrent codes
	<i>Factor codes</i>		
Wage Labor ag.	FALAB	Indirect tax on commodities	COMTAX
Wage Labor non-ag.	FNLAB	Import Duty	IMPTAX
Capital ag.	FACAP	Direct taxes on domestic institutions	INSTAX
Capital non-ag.	FNCAP	Government	GOV
			Savings-investments code
	<i>Household codes</i>		
Household rural female ultra	HRHDPF	Savings-investments account	S-I
Household rural female poor	HROVPF		<i>Rest of the world code</i>
Household rural female non	HRNONF	Rest of the world	ROW

Household rural male ultra	HRHDPM
Household rural male poor	HROVPM
Household rural male non	HRNONM
Household urban female ultra	HUHDPF
Household urban female poor	HUOVPF
Household urban female non	HUNONF
Household urban male ultra	HUHDPM
Household urban male poor	HUOVPM
Household urban male non	HUNONM

TOTAL

TOTAL code
TOTAL

FACAP	15,636	13,88	8,901	13,084	2,518	9,607	14,564	1,839	10,324	6,474	8,934	10,834
FNCAP												
HRHDPF												
HROVPF												
HRNONF												
HRHDPM												
HROVPM												
HRNONM												
HUHDPF												
HUOVPF												
HUNONF												
HUHDPM												
HUOVPM												
HUNONM												
COMTAX												
IMPTAX												
INSTAX												
GOV												
S-I												
ROW												
TOTAL	64,382	27,967	27,937	47,435	7,411	29,793	57,36	5,397	35,294	19,877	27,922	36,746

FNLAB	9,844	31,716	26,649		42,105	22,009	7,483	13,814	8,447			
FACAP												
FNCAP	4,225	55,209	63,706	27,07	58,665	384	131	241	147			
HRHDPF												
HROVPF												
HRNONF												
HRHDPM												
HROVPM												
HRNONM												
HUHDPF												
HUOVPF												
HUNONF												
HUHDPM												
HUOVPM												
HUNONM												
COMTAX										5	71	
IMPTAX										528	2,576	
INSTAX												
GOV												
S-I												
ROW										16,47	6,197	
TOTAL	29,702	153,49	129,272	28,489	174,325	79,817	81,708	28,823	14,733	59,881	33,215	17,14

Appendix 2. 2001 Micro SAM for Kenya (continued)

	C36APULS	C36ASUGA	C36AFRUI	C36AVEGE	C36ACUTF	C36ATEAG	C36ACOFF	C36ABEEF	C36AMILK	C36AOTHL	C36AFISH	C36AFORE
A36AMAIZ												
A36AOTHC												
A36AROOT												
A36APULS	32,845											
A36ASUGA		7,411										
A36AFRUI			13,628									
A36AVEGE				37,85								
A36ACUTF					5,397							
A36ATEAG						35,294						
A36ACOFF							19,877					
A36ABEEF								26,63				
A36AMILK									18,428			
A36AOTHL										13,275		
A36AFISH											9,611	
A36AFORE												3,87
A36NMINI												
A36NFOOD												
A36NTEXT												
A36NWOOD												
D												
A36NPETR												
A36NOTHC												
A36NNON												
M												
A36NMETA												
A36NELEC												
A36NCONS												
A36NTRAD												
A36NTRAN												
A36NHOUS												
A36NOTHS												
A36NPUBA												
A36NEDUC												
A36NHEAL												
A36NAGRS												
C36AMAIZ												
C36AOTHC												
C36AROOT												
C36APULS												
C36ASUGA												
C36AFRUI												
C36AVEGE												
C36ACUTF												
C36ATEAG												
C36ACOFF												
C36ABEEF												
C36AMILK												
C36AOTHL												
C36AFISH												
C36AFORE												
C36NMINI												
C36NFOOD												
C36NTEXT												
C36NWOOD												
D												
C36NPETR												
C36NOTHC												
C36NNON												
M												
C36NMETA												
C36NELEC												
C36NCONS												
C36NTRAD												
C36NTRAN												
C36NHOUS												
C36NOTHS												
C36NPUBA												
C36NEDUC												
C36NHEAL												
C36NAGRS												
CTDTP-E	30		116	260	440	2,353	1,635	2		13	5	142
CTDTP-D	3,088	623	780	3,719	438	3,561	1,93	2,633	1,822	1,009	950	332

CTDTP-M	12		16							6		47
FALAB												
FNLAB												
FACAP												
FNCAP												
HRHDPF												
HRVOPF												
HRNONF												
HRHDPM												
HROVPM												
HRNONM												
HUHDPF												
HUOVPM												
HUNONM												
COMTAX	1,319		94							2,019		925
IMPTAX	11		53							13		65
INSTAX												
GOV												
S-I												
ROW	160		201							80		602
TOTAL	37,466	8,034	14,887	41,829	6,275	41,208	23,442	29,264	20,25	16,415	10,566	5,983

Appendix 2. 2001 Micro SAM for Kenya (continued)

	C36NMINI	C36NFOOD	C36NTEXT	C36NWOOD	C36NPETR	C36NOTHC	C36NNONM	C36NMETA	C36NELEC	C36NCONS	C36NTRAD	C36NTRAN
A36AMAIZ												
A36AOTHC												
A36AROOT												
A36APULS												
A36ASUGA												
A36AFRUI												
A36AVEGE												
A36ACUTF												
A36ATEAG												
A36ACOFF												
A36ABEEF												
A36AMILK												
A36AOTHL												
A36AFISH												
A36AFORE												
A36NMINI	5,602											
A36NFOOD		291,521										
A36NTEXT			26,195									
A36NWOOD				23,686								
A36NPETR					135,296							
A36NOTHC						22,084						
A36NNONM							35,9					
A36NMETA								25,362				
A36NELEC									34,937			
A36NCONS										29,702		
A36NTRAD											153,49	
A36NTRAN												129,272
A36NHOUS												
A36NOTHS												
A36NPUBA												
A36NEDUC												
A36NHEAL												
A36NAGRS												
C36AMAIZ												
C36AOTHC												
C36AROOT												
C36APULS												
C36ASUGA												
C36AFRUI												
C36AVEGE												
C36ACUTF												
C36ATEAG												
C36ACOFF												
C36ABEEF												
C36AMILK												
C36AOTHL												
C36AFISH												
C36AFORE												
C36NMINI												
C36NFOOD												
C36NTEXT												
C36NWOOD												
C36NPETR												
C36NOTHC												
C36NNONM												
C36NMETA												
C36NELEC												
C36NCONS												
C36NTRAD												
C36NTRAN												
C36NHOUS												
C36NOTHS												
C36NPUBA												
C36NEDUC												
C36NHEAL												
C36NAGRS												
CTDTP-E	184	1,756	426	348	2	1,867	604	1,292				
CTDTP-D	488	17,108	2,551	2,098	12,511	799	2,887	3,21				

CTDTP-M	109	1,402	349	686	1,722	4,164	564	8,223				
FALAB												
FNLAB												
FACAP												
FNCAP												
HRHDPF												
HROVPF												
HRNONF												
HRHDPM												
HROVPM												
HRNONM												
HUHDPF												
HUOVPF												
HUNONF												
HUHDPM												
HUOVPM												
HUNONM												
COMTAX	81	21,532	13,877	4,101	86	2,396	9,1	22,988				
IMPTAX	159	2,874	961	1,963	17	2,691	1,917	15,037				
INSTAX												
GOV												
S-I												
ROW	1,403	18,067	4,498	8,843	22,197	53,787	7,272	105,769				29,285
TOTAL	8,026	354,259	48,855	41,726	171,831	87,787	58,245	181,881	34,937	29,702	153,49	158,557

FNLAB												
FACAP												
FNCAP												
HRHDPF												
HROVPF												
HRNONF												
HRHDPM												
HROVPM												
HRNONM												
HUHDPF												
HUOVPF												
HUNONF												
HUHDPM												
HUOVPM												
HUNONM												
COMTAX	81	21,532	13,877	4,101	86	2,396	9,1	22,988				
IMPTAX	159	2,874	961	1,963	17	2,691	1,917	15,037				
INSTAX												
GOV												
S-I												
ROW	1,403	18,067	4,498	8,843	22,197	53,787	7,272	105,769				29,285
TOTAL	8,026	354,259	48,855	41,726	171,831	87,787	58,245	181,881	34,937	29,702	153,49	158,557

FACAP												
FNCAP												
HRHDPF												
HROVPF												
HRNONF												
HRHDPM												
HROVPM												
HRNONM												
HUHDPF												
HUOVPF												
HUNONF												
HUHDPM												
HUOVPM												
HUNONM												
COMTAX												
IMPTAX												
INSTAX	233	333	7,061	1,662	2,352	47,31	25	413	5,018	150	3,166	35,133
GOV												
S-I	34	48	1,015	240	339	6,826	4	60	724	22	457	5,064
ROW												
TOTAL	19,733	12,823	94,445	57,725	43,942	295,897	1,364	13,206	25,616	3,996	40,714	199,815

Appendix 2. 2001 Micro SAM for Kenya (continued)

	COMTAX	IMPTAX	INSTAX	GOV	S-I	ROW	TOTAL
A36AMAIZ							64,382
A36AOTHC							27,967
A36AROOT							27,937
A36APULS							47,435
A36ASUGA							7,411
A36AFRUI							29,793
A36AVEGE							57,36
A36ACUTF							5,397
A36ATEAG							35,294
A36ACOFF							19,877
A36ABEEF							27,922
A36AMILK							36,746
A36AOTHL							34,791
A36AFISH							10,223
A36AFORE							3,87
A36NMINI							5,602
A36NFOOD							291,521
A36NTEXT							26,195
A36NWOOD							23,686
A36NPETR							135,296
A36NOTHC							22,084
A36NNONM							35,9
A36NMETA							25,362
A36NELEC							34,937
A36NCONS							29,702
A36NTRAD							153,49
A36NTRAN							129,272
A36NHOUS							28,489
A36NOTHS							174,325
A36NPUBA							79,817
A36NEDUC							81,708
A36NHEAL							28,823
A36NAGRS							14,733
C36AMAIZ						71	59,881
C36AOTHC						82	33,215
C36AROOT						4	17,14
C36APULS						386	37,466
C36ASUGA							8,034
C36AFRUI						1,498	14,887
C36AVEGE						3,351	41,829
C36ACUTF						5,683	6,275
C36ATEAG						30,332	41,208
C36ACOFF						21,058	23,442
C36ABEEF						21	29,264
C36AMILK						5	20,25
C36AOTHL						172	16,415
C36AFISH					355	65	10,566
C36AFORE						1,827	5,983
C36NMINI					1,079	2,375	8,026
C36NFOOD					12,842	22,654	354,259
C36NTEXT					1,088	5,489	48,855
C36NWOOD					5,968	4,487	41,726
C36NPETR					601	30	171,831
C36NOTHC					1,416	23,951	87,787
C36NNONM					3,124	7,787	58,245
C36NMETA					2,827	16,662	181,881
C36NELEC					8,06		34,937
C36NCONS					21,936		29,702
C36NTRAD					440		153,49
C36NTRAN					30,726	33,648	158,557
C36NHOUS					8,71		28,489
C36NOTHS					13,99	51,431	208,872
C36NPUBA				79,034	538		79,817
C36NEDUC				41,052	314		81,708
C36NHEAL				16,001	115		28,823
C36NAGRS				14,409	235		14,733
CTDTP-E							11,487
CTDTP-D							68,795
CTDTP-M							19,056
FALAB							91,092
FNLAB							220,403
FACAP							132,995
FNCAP							328,189
HRHDPF							19,733
HROVPF				1,307			12,823
HRNONF				14,52			94,445
HRHDPM							57,725
HROVPM				1,422			43,942
HRNONM				9,472			295,897
HUHDPF							1,364
HUOVPF					510		13,206
HUNONF					161		25,616
HUHDPM							3,996

HUOVPM							40,714
HUNONM				9,204			199,815
COMTAX							78,594
IMPTAX							28,863
INSTAX							102,856
GOV	78,594	28,863	102,856				210,314
S-I				23,222		76,311	114,365
ROW							309,378
TOTAL	78,594	28,863	102,856	210,314	114,365	309,378	

