A SOCIAL ACCOUNTING MATRIX FOR TANZANIA

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CFNPP is funded by several donors including the Agency for International Development, The World Bank, UNICEF, the United States Department of Agriculture, the New York State Department of Health, The Thrasher Research Fund, and individual country governments.

Preparation of this document was financed by the U.S. Agency for International Development under USAID Cooperative Agreement AFR 0000-A-00-8045-00.

 ISBN 1-56401-162-3

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This document was edited, word processed, the text formatted and the cover produced by Brent Beckley.

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1. INTRODUCTION

The study of the impact of macroeconomic policies on households, especially poor ones, is an issue that is at the forefront of current development debates and necessitates the use of macrosectoral models with household distributional detail (Sarris, 1990). All such models are based on a Social Accounting Matrix (SAM), namely a one-year snapshot of all the flows (income, expenditure) between all sectors and institutions in an economy.[1] In Tanzania, one of the poorest countries in both Africa and the world, the issue of whether macroeconomic stabilization and adjustment policies have adverse impacts on poor households has been at the center of the debates between the government and external donors all throughout the last decade. However, up to now there has been no analytical exploration of the problem using counterfactual models. The purpose of this paper is to describe a SAM for Tanzania suitable for implementation of a macrosectoral model geared at investigating the above issues.

The only previous SAM for Tanzania is the one built by Rutayisire and Vos (1991). This is the first SAM ever built for Tanzania, and is highly aggregated, given that its objective was macroeconomic analysis. Nevertheless, it has significant detail on the capital account, and other desirable features that were found quite useful in the construction of the present SAM.

Just like the SAM built by Rutayisire and Vos (1991), the year for which the SAM described here was built is 1976. This is the last year for which there exists an input-output matrix, and a detailed national household budget survey (HBS), which permit substantial disaggregation of the economy. Despite the fact that 1976 is far removed from the present, it marks one of the last normal years of the pre-crisis period in Tanzania. From 1978 to 1984 the Tanzanian economy went through a major crisis, from which it has not yet fully recovered.[2] Hence it offers a good starting point for an analysis of both the subsequent crisis, as well as the post 1986 adjustment.

What follows describes both the method of construction of the Tanzanian SAM, as well as its detailed structure.

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[1] For a survey on SAM notions and construction see Pyatt and Round (1985), Pyatt and Thorbecke (1976), Pyatt and Roe (1977).

[2] For recent analysis of Tanzanian macrodevelopments see Sarris and van den Brink (1993), and Bevan et al (1990).

2. OVERVIEW OF THE TANZANIAN SAM

Figure 1 presents the basic structure of the Tanzanian SAM, while Table 1 presents the aggregated version. The SAM includes both current as well as capital accounts, dividing the SAM in four major blocks. The upper left hand block concerns current transactions within the current account. There are fifteen production activities in the current account, which are subaggregates of the 73 production activities of the 1976 input-output (IO) table (United Republic of Tanzania (URT), 1986). Table A.1 in Appendix A shows the correspondence between the activities utilized here and those of the IO.

Of the fifteen activities, the first five are agricultural, given the importance of agriculture in the economy. The next four are manufacturing activities of which the fourth includes household industries (local brewing, tailoring, other cottage industries in the IO). The tenth sector is construction, the eleventh is commerce and the twelfth is transport and communication. The next three activities are services, the last including only the public administration. Parastatal activities are included in their respective producing sectors.

Factors of production consist of eight labor classes and three types of capital returns. The labor categories consist of unskilled and skilled labor employed by the public sector, parastatal enterprises, formal private sector, and the informal or uncontrolled sector. In Tanzania, given the emphasis of the government in centralized planning, the institutional distinction above is important. Returns to capital are split among those accruing to unincorporated capital owners, parastatals, and the formal private sector.

Institutions include six household classes; poor, middle income, and rich households in rural and urban regions respectively. While the original desire was to distinguish households according to factor endowments, this turned out to be impossible with available data. Two types of enterprises are distinguished, namely parastatal and formal (mostly incorporated) private ones. The government and rest of the world complete the institutional detail.

The lower left hand side of the SAM shows current savings of the various types of institutions, which are a primary source of financing for the capital transactions of institutions. The lower right hand side of the SAM describes the flow of funds accounts. Each row shows the sources of investment finance for each type of institution, other than own savings. Apart from interinstitutional capital transfers, financing can be provided by financial institutions. There are two such institutions distinguished in the SAM; the central bank, and private banks (including state banks).

Finally the upper right hand side of the SAM exhibits the real investments of institutions. In the lower right hand side each entry in a given row and column, when viewed from a row perspective, describes a change in a liability of

Figure 1 — Structure of the Tanzanian SAM

		EXPENDITURES												
		CURRENT ACCOUNT						CAPITAL ACCOUNT						
				INSTITUTIONS				INSTITUTIONS				FINANCIAL INSTITUTIONS		
	RECEIPTS	PRODUCTION ACTIVITIES 1-15	FACTORS L,K	Households 1-6	Enterprises	Government	REST OF WORLD	Households	Enterprises	Government	Other Wealth Accumulation	Banks	REST OF WORLD	TOTAL
CURRENT ACCOUNT	PRODUCTION ACTIVITIES 1-15	Intermediate Demand		Household Consumption		Government Consumption	Exports	Real Investment						Total Demand
	FACTORS Labor Capital	Distribution of Value Added												Factor Income
	INSTITUTIONS Households Enterprises Government		Distribution of Factor Income	Transfers			Current Transfers from R. of W.							Total Income of Institutions
		Indirect Taxes		Direct	Taxes			Indirect Taxes						
	REST OF WORLD	Imports		Transfers	to Rest	of World		Imports						Rest of World Receipts
CAPITAL ACCOUNT	INSTITUTIONS Households Enterprises Government Other Wealth Accumulation			Domestic Savings				Capital Transfers to Domestic Institutions				Changes in Financial Liabilities of Institutions	Capital Transfers from Rest of World	Aggregate Investment Finance
	FINANCIAL INSTITUTIONS Banks Informal Financial Sector				Current Bank Savings			Changes in Financial Assets of Institutions				Financial Transactions among Financial Institutions		Change in Liabilities of Financial Institutions
	REST OF WORLD						Current Foreign Savings	Capital Transfers to Rest of World						Total Foreign Savings
	TOTAL	Total Supply	Distributed Factor Income	Uses of	Incomes of	Institutions	Rest of World Expenditure	Aggregate Investment Expenditure				Changes in Assets of Financial Institutions	Foreign Investment	

Table 1 — Condensed 1976 Social Accounting Matrix for Tanzania (All Figures are in million Tsh)

Current Account

		Production Activities 1	Labor 2	Capital 3	Households 4	Enterprises 5	Government 6	Rest of World 7
Current Account								
Production Activities	1	13,037.7	0.0	0.0	16,815.1	0.0	4,224.5	4,984.8
Factors Labor	2	13,341.6	0.0	0.0	0.0	0.0	0.0	0.0
Capital	3	11,192.3	0.0	0.0	0.0	0.0	0.0	0.0
Households	4	0.0	13,341.6	6,605.2	66.6	2,242.3	65.1	124.7
Enterprises	5	0.0	0.0	4,587.0	0.0	702.8	332.5	164.8
Government	6	631.3	0.0	0.0	2,568.8	786.0		633.2
Rest of World	7	3,437.0	0.0	0.0	770.0	58.3	309.7	
Capital Account								
Households	8	0.0	0.0	0.0	2,225.0	0.0	0.0	0.0
Enterprises	9	0.0	0.0	0.0	0.0	1,808.4	0.0	0.0
Government	10	0.0	0.0	0.0	0.0	0.0	502.1	0.0
Stock Changes	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Financial Institutions	12	0.0	0.0	0.0	0.0	189.4	0.0	0.0
Rest of World	13	0.0	0.0	0.0	0.0	0.0	0.0	329.7
Total		41,639.9	13,341.6	11,192.3	22,445.5	5,787.1	5,433.8	6,237.2

Capital Account

		Households 8	Enterprises 9	Government 10	Stock Changes 11	Financial Institutions 12	Rest of World 13	Total
Current Account								
Production Activities	1	582.1	1,286.6	581.9	127.3	0.0	0.0	41,639.9
Factors Labor	2	0.0	0.0	0.0	0.0	0.0	0.0	13,341.6
Capital	3	0.0	0.0	0.0	0.0	0.0	0.0	11,192.3
Households	4	0.0	0.0	0.0	0.0	0.0	0.0	22,445.5
Enterprises	5	0.0	0.0	0.0	0.0	0.0	0.0	5,787.1
Government	6	191.4	460.4	162.7	0.0	0.0	0.0	5,433.8
Rest of World	7	385.8	1,018.0	258.4	0.0	0.0	0.0	6,237.2
Capital Account								
Households	8	0.0	0.0	0.0	0.0	0.0	0.0	2,225.0
Enterprises	9	429.9	0.0	722.2	0.0	582.6	165.6	3,708.7
Government	10	0.0	0.0	0.0	0.0	1,094.3	593.9	2,190.3
Stock Changes	11	0.0	127.3	0.0	0.0	0.0	0.0	127.3
Financial Institutions	12	527.9	816.4	465.1	0.0	-215.4	163.4	1,946.8
Rest of World	13	107.9	0.0	0.0	0.0	485.3	0.0	922.9
Total		2,225.0	3,708.7	2,190.3	127.3	1,946.8	922.9	117,198.5

Source: Computed by author.

the institution in the row. From a column perspective, it describes an equal change in an asset of the institution in the column. Hence, the column sums of the capital account describe the changes for the given base year, of all the assets (real and financial) of a given institution. The row sums depict the changes in their liabilities. Clearly, for each institution, the row sum must equal the column sum.

In the Tanzanian SAM all flows are expressed in producer's prices. Marketing and other commercial margins are included in the commerce sector. Each production activity is assumed to produce one composite commodity of the same type. This is, of course, not strictly correct, as on the one hand some commodities destined for intermediate or final demand might consist of a mix of the products of the various activities, and similar production activities might produce commodities of several types. The resolution of this in more detailed SAMs is by the specification of appropriate transformation matrices. However, for the case of Tanzania there was no information on which to base the estimation of such matrices.

Households and enterprises receive the returns to the various factors as income. They also receive transfers from each other and the government, as well as the rest of the world (ROW) as income. Their current spending involves purchases of commodities, direct taxes, transfers to other domestic institutions and the rest of the world. The residual is current savings, shown in the lower left hand part of the SAM.

Government current receipts include direct and indirect taxes (net of subsidies), and current transfers from domestic institutions and ROW. Government expenditures include purchases from the various sectors (mainly the sector public administration), and various transfers. The residual is current government savings.

On the capital account, apart from the institutions already described, there is a row and column which aggregates stock changes. This is labeled in Figure 1 as other wealth accumulation. Ideally, one should allocate stock changes to different institutions, but this was not possible. Banks, while included in the producing sectors under sector 14 (other services), are also included separately as financial institutions. In order to utilize their published balance sheets, current savings and real investments (e.g. in office buildings, etc.) were included in the savings and investment blocks of the public enterprise accounts. Hence, in the flow of funds accounts only changes in financial assets and liabilities are indicated.

In the sequel the methods and assumptions used in constructing the SAM, and the detailed data making up the cells of the aggregated SAM of Table 1, are outlined.

3. THE PRODUCTION ACCOUNTS

The fifteen production sectors of the SAM were aggregated from the 73 sector 1976 IO, but, there are several adjustments made to the original figures. First, the IO figure for government consumption seems exaggerated by comparison with official figures from other sources such as the Bank of Tanzania (BOT) Economic and Operations Reports. Rutayisire and Vos (1991) also noticed this and adjusted their figure for government purchases from the service sector downward by 1238.4 mTsh (million Tanzanian Schillings). The same adjustment was made here, except the figure adjusted was government purchases from public administration. The adjustment in output of the public administration sector was balanced by an equal reduction in wages of that sector.

Concerning exports, Rutayisire and Vos (1991) noticed that the IO figure for total exports was lower than that reported in the National Accounts (NA), and adjusted agricultural exports upwards. However, reference to BOT figures suggests that the figure in the IO is quite close to that reported by the BOT. It was thus decided not to adjust the IO export figures upward.

Another adjustment done by Rutayisire and Vos (1991), (also done here) is to include export taxes (497.2 mTsh), as indirect taxes on producers of agricultural exportables. The allocation of these taxes to the five agricultural product groups was done according to the export values of these groups. By this method 92 percent of export taxes fell on the export crop sector.

Another adjustment to the IO concerned the output of the three non-household based manufacturing industries. In the Tanzanian national accounts (NA), manufacturing output is estimated from information of establishments, employing more than five persons, and is then adjusted upward by 30 percent to account for the output of small scale industry (URT, 1985). This was not done in the 1976 IO. The adjustments made here are the following. First, the value added and inputs to the three manufacturing sectors (food processing, other consumer good manufacturing, intermediate and capital good manufacturing) were adjusted upward by 30 percent. For the three manufacturing sectors the adjustment on the uses was made by adjusting private consumption expenditures. For the other sectors whose output must be increased to accommodate the new demand for supply of intermediate inputs to manufacturing, the operating surplus was adjusted accordingly.

Table 2 presents a comparison between the 1976 GDP at factor cost (fc) and market prices (mp) and its components; reported by the NA, the original 1976 IO and the SAM. As far as GDP at fc is concerned, the IO and the SAM total estimates are less than 1 percent apart, while they both exceed the NA figure by about 13 percent. The largest discrepancies between the SAM and the NA estimates of GDP at fc are present in the GDP of agriculture (including forestry, fishing and hunting), transport and communication, and services (including public

Table 2 — Comparisons Between the GDP and other Aggregates Reported by the Tanzanian NA, the IO, and the SAM (All Figures in mTsh)

	NA	IO	SAM
1. GDP at f.c. Total	21,652	24,344.4	24,533.9
1.1 Agriculture, Forestry, Fishing, Hunting	9,046	9,470.2	9,776.9
1.2 Manufacturing, Mining, Utilities	3,244	2550.2	3,244.3
1.3 Construction	884	786.3	791.1
1.4 Commerce[1]	2,839	2,794.4	2,813.7
1.5 Transport and Communications	1,685	3907.1	3,946.1
1.6 Public Administration, Finance, Insurance and other Services[2]	4,378	4,848.8	3,961.8
1.7 Imputed Bank Service Charge[3]	-424		
1.8 Indirect Taxes	2,932	2723.8	2,723.8
1.9 Subsidies	165	255.2	255.2
2. GDP at m.p. Total	24,419	26,813.0	27,002.5
2.1 Government Final Consumption Expenditure	3,989	5,447.2[4]	4,224.5[4]
2.2 Private Final Consumption Expenditure	15,377	17,004.6[4]	18416.9[4]
2.3 Change in Stocks	438	127.3	127.3
2.4 Gross Fixed Capital Formation	5,159	4,927.3[4]	4,927.34
2.5 Exports of Goods and Services	5,297	4,984.8[4]	4,984.84
2.6 Imports of Goods and Services	5,841	5,678.2[5]	5,678.25

Sources: URT (1991), URT (1986), and author's calculations.

[1] In the NA hotels and Restaurants are included in this sector (1976 GDP 57.6 mTsh), while in the aggregated IO and the SAM they are included in other services.
[2] The NA reports two subcategories here with public administration aggregated with other services. In the IO and SAM the aggregation was different so only the total is reported for comparison.
[3] There is no corresponding entry in the IO or SAM.
[4] Inclusive of net indirect taxes and trade duties.
[5] Exclusive of net indirect taxes and trade duties.

administration). On the expenditure side, the largest discrepancy is in private final consumption.

Table A.2 in Appendix A exhibits in detail the adjusted input-output table utilized in the construction of the SAM. The table is augmented by two rows appended to the bottom that show the sectoral make up of GDP at fc and GDP at mp.

4. ALLOCATION OF VALUE ADDED TO FACTORS

For the allocation of sectoral value added to the various factors exhibited in Table 3, the following methods were used. First, the allocation of total gross operating surplus from the IO table was apportioned to parastatal capital, formal private capital, and informal capital. For agriculture, the proportions of total area (and livestock numbers) in the various IO categories that are cultivated by large scale parastatals and private large scale (the formal sector) farms, were estimated from the 1971/72 agricultural census. It was assumed that total agricultural output, and return to capital accruing to large scale enterprises were also proportional to these numbers. These were estimated to be for 0.041 cereals, 0.025 for other staples, 0.172 for other food crops, 0.526 for export crops, and 0.014 for other agriculture. It appears on the basis of the 1971/72 census that it is mostly export and other cash crops where large scale "formal" private and parastatal production activity is present. Although the 1973-75 villagization campaign could have altered these proportions, recent analysis (Sarris and Van den Brink, 1993) suggests that the agricultural production patterns between 1971 and 1987 have not changed much.

Given the share of gross operating surplus accounted for by formal establishments, public and private; the accounts of parastatals (URT, 1990) were used to find the amount of sectoral value added due to agricultural parastatal production. The proportion of this amount in total agricultural value added (1.9 percent) was used to apportion the operating surplus of each of the five agricultural sectors to parastatal production. The remaining formal sector capital returns was apportioned to formal private sector enterprises. The rest of agricultural gross operating profit of the IO was assumed to originate in the peasant sector. Ninety percent was assumed to be returns to unskilled agricultural labor (50 percent for the livestock sector), while the rest was considered return to peasant agricultural capital (land, trees etc. for the crop sectors, and mainly animals for the livestock sector).

For manufacturing, the parastatal accounts allowed an estimate of the gross operating profits in parastatals active in mining, manufacturing and electricity (all included in manufacturing in the SAM). The ratio of this and the unadjusted, namely in the original IO (see earlier) total gross operating surplus in the three non-household based manufacturing sectors was first computed. This was used to apportion the unadjusted gross operating surplus in each of the three sectors between parastatal and formal private capital. Unincorporated (namely informal) capital was assumed to consist of the additional returns to capital that was estimated by the 30 percent adjustment to the IO reported earlier. For all the other sectors, except public administration, capital returns to parastatals were estimated directly from the accounts of parastatals. Then the unadjusted IO gross operating surplus was split between formal and informal capital. In construction, this was done by assuming that 100 percent of rural own account investment in dwellings, 70 percent of urban residential investment, and 30 percent of urban non-residential investment in buildings (all reported in

Table 3 —Allocation of Value Added to Factors of Production in the SAM (All values in mTsh)

	Cereals 1	Other Staples 2	Other Food Crops 3	Export Crops 4	Livestock, Forestry, Fishing, Hunting 5	Food Manufacturing 6	Consumer Good Manufacturing 7
Labor Public Unskilled	—	—	—	—	—	—	—
Labor Public Skilled	—	—	—	—	—	—	—
Labor Parastatal Unskilled	12.9	8.1	24.9	26.4	16.9	19.0	35.5
Labor Parastatal Skilled	12.4	7.7	23.9	25.4	16.2	20.7	38.6
Labor Formal Unskilled	17.8	11.1	34.2	36.3	23.3	22.2	41.5
Labor Formal Skilled	13.4	8.3	25.7	27.4	17.5	20.9	39.1
Labor Open Unskilled	1,827.7	1,501.9	1,414.2	949.4	1,224.2	53.2	72.0
Labor Open Skilled	—	—	—	—	43.8	13.4	18.0
Labor Total	1,884.2	1,537.1	1,522.9	1,064.9	1,342.0	149.9	244.6
Uninc. Capital (UC) Non-agriculture	—	—	—	—	—	135.7	150.5
UC Cereals	200.8	—	—	—	—	—	—
UC Other Staple Crops	—	165.5	—	—	—	—	—
UC Other Food Crops	—	—	152.8	—	—	—	—
UC Export Crops	—	—	—	100.9	—	—	—
UC Livestock, Forestry, Fishing, Hunting	—	—	—	—	1,126.0	—	—
Parastatal Capital	6.6	2.8	12.7	46.1	3.5	141.1	66.2
Formal Private Capital	55.6	24.1	107.7	390.6	30.1	185.8	87.1
Total Returns to Capital	263.0	192.4	273.2	537.6	1,159.6	462.6	303.8
Total Value Added	2,147.2	1,729.5	1,796.1	1,602.5	2,501.6	612.0	548.4

Table 3 —continued

	Intermediate and Capital Manufacturing 8	Household Industries 9	Construction 10	Commerce 11	Transport and Communication 12	Health Education 13
Labor Public Unskilled	—	—	—	—	—	222.9
Labor Public Skilled	—	—	—	—	—	973.1
Labor Parastatal Unskilled	85.0	—	11.6	67.4	100.1	—
Labor Parastatal Skilled	92.5	—	10.9	62.7	107.5	—
Labor Formal Unskilled	99.4	—	54.7	77.3	32.3	54.9
Labor Formal Skilled	93.6	—	32.3	58.7	36.7	138.1
Labor Open Unskilled	113.3	36.9	39.6	410.7	585.0	3.8
Labor Open Skilled	41.5	12.3	25.8	195.2	260.3	4.8
Labor Total	525.3	49.1	174.9	872.1	1,121.9	1,397.7
Uninc. Capital (UC) Non-agriculture	540.1	205.6	479.7	1,278.5	1,582.4	5.9
UC Cereals	—	—	—	—	—	—
UC Other Staple Crops	—	—	—	—	—	—
UC Other Food Crops	—	—	—	—	—	—
UC Export Crops	—	—	—	—	—	—
UC Livestock, Forestry, Fishing, Hunting	—	—	—	—	—	—
Parastatal Capital	329.7	—	11.6	255.4	45.3	0.0
Formal Private Capital	434.1	—	124.9	563.2	1,196.5	86.8
Total Returns to Capital	1,303.9	205.6	616.2	1,941.6	2,824.2	92.7
Total Value Added	1,829.2	254.7	791.1	2,813.7	3,946.1	1,490.3

Table 3 —continued

	Other Services 14	Public Administration 15	Total
Labor Public Unskilled	—	520.7	743.6
Labor Public Skilled	—	321.4	1,294.5
Labor Parastatal Unskilled	69.2	—	477.1
Labor Parastatal Skilled	95.2	—	513.8
Labor Formal Unskilled	69.3	—	574.1
Labor Formal Skilled	93.2	—	605.1
Labor Open Unskilled	214.2	0.0	8,446.1
Labor Open Skilled	72.3	—	887.1
Labor Total	613.4	842.1	13,341.6
Uninc. Capital (UC) Non-agriculture	480.9	0.0	4,859.1
UC Cereals	—		200.8
UC Other Staple Crops	—		165.5
UC Other Food Crops	—		152.8
UC Export Crops	—		100.9
UC Livestock, Forestry, Fishing, Hunting	—		1,126.0
Parastatal Capital	-110.2		810.8
Formal Private Capital	482.2		3,776.2
Total Returns to Capital	1,106.0	0.0	11,192.3
Total Value Added	1,629.4	842.1	24,533.9

Source: Computed by author.

the NA), are accounted for by the unincorporated construction sector. This gave a share of construction value added (VA) (.708) that is due to private formal enterprises. The remainder of construction return to capital was assumed to originate in the informal sector.

For commerce, transport and communication, and other services, 40 percent of the unadjusted IO returns to capital were assumed to accrue to formal private enterprises. For health and education, parastatals were assumed to produce zero VA, as none is reported in the parastatals account. Hence, all the unadjusted IO capital returns were assumed to originate from formal private establishments. Returns to unincorporated capital were the residuals.

Turning to the allocation of returns to labor, to institutions and skill classes, the first step was to allocate the IO reported returns to labor, to public, parastatal, formal private and open employment. The estimation of the public parastatal and formal private sector wage bill for each sector was done from the 1975-76 Survey of Employment and Earnings (SEE) (URT, 1981). These amounts were subtracted from the IO reported wage bill, with the remainder assumed to be the wage bill from open employment.

There are only two sectors in the IO where public wages are important. These are public administration, and health and education. The SEE estimated total public wage bill for 1976 was 1,332.2 mTsh, while the adjusted IO wage bill in public administration was 842.1 mTsh. The remainder between the SEE reported figure and the adjusted IO was apportioned to public wages in the health and education sector.

There was a problem with the health and education data resulting from this procedure. As mentioned, the total public sector wage bill from the SEE was 1,332.2 mTsh arising from payments to 147,472 regular employees and 24781 casual employees. The manpower figures are consistent with those found in other sources such as the World Bank Public Expenditure Review (PER) (World Bank, 1989). As noted earlier, of this total 490.1 was wages for health and education. However, total public expenditures for health and education were 1,649.5 mTsh (consistent with figures found for instance in PER). On the other hand, the output of that sector consists mostly of wages. It thus appears that public wages in that sector are grossly underestimated. Therefore, we increased the public wages in health and education so that the ratio of public wages to total public expenditure in health and education is the same as the IO implied ratio of wages to gross output in that sector. The remaining IO wages in health and education are allocated to the formal private sector.

In the agricultural and the three non-household manufacturing sectors, the amount of the total IO wage bill in each sector originating in the parastatal and formal private sectors, was assumed to be the same share as what was estimated from the SEE for all agriculture and manufacturing. It must be noted that the total parastatal wage bill reported in the SEE is larger than is reported in the accounts of parastatals (990.8 mTsh versus 818.0 mTsh), and within each subsector the variations between the two sources are much larger.

Determining the allocation of the returns to labor, for each sector and institution by the two skill classes was considerably more difficult. The following procedure was used. First, using data from the unpublished 1976 household budget survey (HBS), we estimated the number of household heads who declared employment in different sectors, and had education up to and including finishing primary school. Table 4 exhibits the allocation thus obtained. In the table it can be seen that households headed by a skilled person (defined as above) comprised only 2.5 percent of households in Tanzania in 1976. Only 1.1 percent of rural household heads were skilled, while only 10.2 percent of urban ones had some education or formal training beyond primary school.

The SEE reports the distribution for regular adult citizens of wage employment for each sector by monthly wage, for parastatal, public and private employment. It also reports average monthly wages by sector. In the absence of other information, it was decided to use average monthly wage as an indicator of skill. For each sector, the sectoral wage distribution was used to define a wage level below which all employees were considered unskilled, and above which all were considered skilled. These dividing wage levels were defined so that the number of skilled employees by sector and institution computed in this fashion were the same as those computed by the HBS. Then, the wage bill corresponding to the lower and upper parts of the distribution was computed. To that we added the wage bill of non-citizens (all considered to be skilled), and the wage bill of casual workers (all considered unskilled).

Thus we obtained for each sector and institution the SEE wage bill for skilled and unskilled labor (and also as a byproduct the number of workers in each category). For sectors with many subsectors in the SAM such as agriculture and manufacturing, the allocation of institutional wage bill to skilled and unskilled was done in the same proportion as for the whole sector. In the public administration sector the allocation of public wages to skilled and unskilled was done on the basis of the SEE estimated total public wage bill accruing to skilled and unskilled as discussed above. For health and education it was assumed in both the public and formal private sectors that 80 percent of the wage bill is for skilled labor.

Finally, for the informal sector we also used the results of an urban small scale enterprise survey (UES) conducted in the context of this project (Bagachwa et al., 1993). From that survey we constructed for each non-agricultural sector of the SAM the allocation of the firms' value added to skilled and unskilled labor as well as operating surplus. By using the multipliers from the UES we then reallocated the total informal sector value added (as derived in the first pass outlined above) to the two skill types and informal capital. In most sectors this did not lead to large changes from the allocations achieved in the first pass.

Table 4 —Allocation of Household Heads by Sector and Institution of Employment and Skill Class

Sector	Unskilled	Skilled	Total
		(Number of Household Heads)	
Agriculture	2,550,320	10,270	2,560,590
Mining	1,170	0	1,170
Manufacturing	89,600	3,630	93,230
Utilities	10,830	260	11,090
Construction	24,500	840	25,340
Commerce	58,970	7,130	66,100
Transport Communication	43,060	6,540	49,600
Finance	10,650	4,980	15,630
Community Services	174,920	41,090	216,010
Total	2,964,020	74,740	3,038,760
Number of Heads with Given Education by Institutional Employer			
TANZANIA			
Private	2,704,520	26,250	2,730,770
Parastatal	119,100	25,110	144,210
Public	140,400	23,380	163,780
Total	2,964,020	74,740	3,038,760
RURAL			
Private	2,443,080	12,520	2,455,600
Parastatal	36,590	4,300	40,890
Public	77,070	11,490	88,560
Rural Total	2,556,740	28,320	2,585,060
URBAN			
Private	26,1440	13,730	275,170
Parastatal	82,510	20,810	103,320
Public	63,330	11,890	75,220
Urban Total	407,280	46,420	453,700

Source: Computed from the 1976 Household Budget Survey.

5. ALLOCATION OF VALUE ADDED TO INSTITUTIONS

It has already been mentioned that households were divided into six classes: rural and urban poor, middle, and rich households. The division among them was done on the basis of criteria established by the poverty analysis done in Sarris and van den Brink (1993), as well as the availability of data. As poor were considered households whose annual cash expenditures were less than 4,000 Tsh. The middle income were considered households whose annual cash expenditures were between 4,000 Tsh and 10,000 Tsh, with the rich expending more than 10,000 Tsh annually. A better criterion would have been the per capita total (cash and subsistence) expenditure. However, since the raw HBS data was not available, and since most of the available HBS tables were produced on the basis of per household cash expenditure, it was deemed best to use this classification. Table 5 gives some statistics for these classes of households from the HBS.

Table 6 shows in detail the allocation of value added to the various institutions. All formal private capital income was apportioned to formal private enterprises, and all parastatal capital income accrues to parastatal (publicly owned) enterprises. After some adjustments to the HBS, it was possible to estimate the amount of total stated income of households in different classes that arise from: crop husbandry, animal husbandry, wages, trade, enterprises and profession, and some other categories. This provided the first basis of allocation of various types of factor income to households. Interestingly, the total economy wide wage income estimated from the HBS amounts to 3,146.5 mTsh, while in the IO, total returns to labor wages amount to 6,358.3 mTsh. The HBS reported wages correspond closely to formal wages only (public and private), which were estimated from the SEE to amount to a total 3309.2 (a close correspondence with the HBS). However, it is not possible to ascertain whether HBS reported wage income comes from public, parastatal, formal private or open employment.

Some indication of the sources of the discrepancy might be seen from comparison of the SEE and the HBS. From the SEE in 1976 there were 480.7 thousand formal sector wage earners (308.5 thousand in the enterprise sector, parastatal and private, and 172.3 thousand in the public sector). However, the HBS reports that in the same year there were 756,000 rural and 307,000 urban households making income from wages and salaries. It is clear that many households in the HBS have not reported all their formal or informal wage and salary earnings.

The allocation of private formal and open labor income to the various types of households was done on the basis of the HBS estimated proportions of total, economy wide wage income that originates in different classes. For public and parastatal income, these proportions were adjusted to reflect the fact that wage earners in the public and parastatal sector generally have household incomes much larger than wage earners in the other private sector.

Table 5 — Household Classification in the SAM

Range of Annual Household Cash Expenditures (Tsh/annum)	Rural			Urban		
	Poor 0-3,999	Middle 4,000-9,999	Rich ≥10,000	Poor 0-3,999	Middle 4,000-9,999	Rich ≥10,000
Number of Households (000)	2,024.6	472.7	87.7	147.7	202.5	103.5
Number of People (000)	11,008.0	3,138.5	749.9	669.4	991.8	555.6
Average Household Size	5.44	6.64	8.55	4.53	4.90	5.37
Cash Income per Household (Tsh/annum)	1,796.6	5,216.4	14,621.8	2,195.2	6,779.3	21,002.6
Subsistence Income per Household (Tsh/annum)	2,592.1	2,433.4	3,031.9	1,127.9	392.3	271.1

Source: Computed from 1976 Household Budget Survey.

Table 6 —Allocation of Value Added to Institutions in the Tanzanian SAM (Values in mTsh)

	Wages Public Unskilled 1	Wages Public Skilled 2	Wages Parastatal Unskilled 3	Wages Parastatal Skilled 4	Wages Formal Private Unskilled 5	Wages Formal Private Skilled 6	Wages Open Unskilled 7	Wages Open Skilled 8
Households								
Rural Poor	42.4	73.8	27.2	29.3	52.2	57.8	4,536.1	157.8
Rural Middle	146.3	254.7	93.9	101.1	106.8	111.7	1,967.4	140.5
Rural Rich	51.9	90.4	33.3	35.9	37.9	39.6	580.7	58.9
Urban Poor	20.0	34.9	12.9	13.8	24.7	27.3	201.1	25.9
Urban Middle	209.2	364.2	134.2	144.5	152.7	159.7	546.1	123.5
Urban Rich	273.7	476.5	175.6	189.1	199.8	208.9	614.8	180.7
Private Enterprises	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public Enterprises	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	743.6	1,294.5	477.1	513.8	574.1	605.1	8,446.1	687.3

	Unincorporated Capital Non-agriculture 9	Unincorporated Capital Agriculture: Cereals 10	Other Staples 11	Other Food Crops 12	Export Crops 13	Livestock, Forestry, Fishing, Hunting 14	Parastatal Capital 15	Formal Private Capital 16
Households								
Rural Poor	1,858.1	150.5	128.5	106.4	37.3	573.6	0.0	0.0
Rural Middle	844.6	34.7	27.6	32.4	48.8	352.0	0.0	0.0
Rural Rich	664.7	10.3	5.0	11.1	14.7	95.7	0.0	0.0
Urban Poor	84.4	3.4	3.1	1.7	0.0	53.1	0.0	0.0
Urban Middle	269.8	1.7	1.1	0.9	0.0	50.6	0.0	0.0
Urban Rich	1,137.6	0.4	0.2	0.3	0.0	0.9	0.0	0.0
Private Enterprises	0.0	0.0	0.0	0.0	0.0	0.0		3,776.2
Public Enterprises	0.0	0.0	0.0	0.0	0.0	0.0	810.8	0.0
Total	4,859.1	200.8	165.5	152.8	100.9	1,126.0	810.8	3,776.2

Source: Computed by author.

Hence lower proportions of total public and parastatal wages were allocated to poor rural and urban households than the averages estimated from the HBS. Skilled wage income of various types were allocated to household groups according to the shares of similar types of total wage income.

Households receive capital income from two distinct sources. First from unincorporated capital, agricultural and non-agricultural, and also as dividends from formal private sector firms. Allocation of agricultural unincorporated capital income presents problems. The reason is that the HBS only reports cash incomes, and then only from all crops and livestock (it also reports income from fishing). However, the bulk of agricultural income in Tanzania accrues from subsistence production. The following method was used to allocate agricultural income to households.

First, from the 1971/72 agricultural census we estimated three size classes (by area) so that the number of households in each class roughly corresponded to the number of poor, middle and rich rural households. This suggested that poor agricultural households were those farming less than two Hectares (Ha) of land, middle those farming two to ten Ha, and rich farming more than 10 Ha. Using these intervals we then estimated from the census the proportions of the total areas in each class cultivated with cereals, other staples, other food crops and export crops. These are exhibited in Table 7. We then allocated the relevant total capital income from each type of agricultural crop product (re. Table 3) to poor, middle, and rich households according to these shares.

We then used the subsistence consumption of the four types of agricultural products derived from the HBS to define the production of urban groups (assumed to be all subsistence production), the remaining being allocated to rural groups. Finally, the derived incomes are compared with subsistence consumption of the three food crop classes as estimated from the HBS and adjusted by trade and transport margins. The final shares (of rural groups) are adjusted so that no group's income from a given crop group (as derived from the IO) is smaller than subsistence consumption.

For livestock (including forestry, fishing, and hunting) we first estimated from the subsistence income from the HBS. The the remaining income (from the SAM) is then allocated according to the HBS computed cash income shares from that source.

Unincorporated capital income is allocated to households according to the HBS estimated proportions of total income from trade enterprise and profession accruing to the six different groups.

In the SAM, government income derives from net indirect taxes on production, consumption and imports, direct taxes, and transfer from public enterprises and the rest of the world. All this income in the SAM is aggregated under one account. Since, however, it might be useful to have the indirect and direct portion of the various taxes separately, Table A.3 in Appendix A gives in details the various sources of government revenue.

Table 7 — Proportions of Total Area Cultivated by Different Types of Crops and Size Classes

	Farm Size (Ha)			
	<2	2-10	>10	Total
	(Percentages)			
Total Cultivated Area	47.8	42.1	10.1	100.0
Area in Cereals	51.6	37.4	11.0	100.0
Area in Other Staples	54.5	38.5	7.0	100.0
Area in Other Crops	45.7	40.4	13.9	100.0
Area in Export Crops	37.0	48.4	14.6	100.0
Number of Farms (000)	1,978.7	378.2	77.6	100.0

Source: Computed from the 1971/77 Agricultural Census (URT, 1974).

6. OTHER SOURCES OF HOUSEHOLD INCOME, CURRENT SPENDING AND SAVINGS

Apart from factor income, households receive income from a variety of other sources. These include transfers from other households, the government and the rest of the world, distributed profits from private enterprises, and interest from banks (namely income from parastatals). Table 8 summarizes these other income sources.

Private transfers to households were computed from the HBS which reports both remittances and gifts received, as well as transfers given out. Aggregate transfers to households from abroad were taken from Rutayisire and Vos (1991) and allocated to each household class according to its total monetary (cash) income as estimated from the HBS. From the remaining transfers received we netted out transfers given out. This left as net transfer receivers, the rural and urban poor, and the other four groups as net transfer givers. The allocation of the transfers of net givers to the poor groups, given the overall flows, was done with the help of few more assumptions concerning specific flows (e.g. that 80 percent of urban transfers go to the rural poor).

Total transfers from the government to households were computed from the HBS. Interest received from banks was taken from Rutayisire and Vos (1991) and was allocated to households according to their share in total bank deposits. The total bank deposits were derived from the HBS on the basis of households' changes in deposits in 1976.

Total distributed profits to households from private formal sector enterprises was determined as a balancing item between total household expenditure, including saving, and total income from other sources. It must be noticed that capital income of households from non-agricultural unincorporated business, and distributed profits from formal private enterprises, are substitutes as far as household income is concerned. They are both part of income from business activity, and the allocation between the two depends on the assumptions made about the relative sizes of the informal and formal private sectors. However, one thing that must be noticed is that total household income from business (both formal and non-agricultural informal) as estimated in the SAM is much larger than what is given in the HBS (7,076.4 Tsh versus 3,374.5 mTsh). This provides indirect evidence to the known fact that households in most countries underreport their business income in household budget surveys. It, nevertheless, turned out that the allocation of private enterprise income to households computed by the above residual method, was quite similar to what would have been obtained if the HBS shares of business income accruing to households was used.

Table 9 details current household expenditures. Total household consumption of goods and services was taken from the revised IO, and allocated to household classes according to expenditure shares computed from the HBS.

Table 8 — Other Income Source of Household Income in the Tanzanian SAM (Figures in mTsh)

	Transfers from Households												
	Rural Poor	Rural Middle	Rural Rich	Urban Poor	Urban Middle	Urban Rich	Private Enterprises	Public Enterprises (Interest Income)	Government	Rest of World	Total Transfers Plus Interest	Income from Value Added Distribution[1]	Total Household Income
Income Receiving Household Class													
Rural Poor	0.0	0.0	1.5	0.0	8.0	17.2	891.9	4.0	0.0	39.9	962.5	7,831.1	8,793.6
Rural Middle	0.0	0.0	0.0	0.0	0.0	0.0	372.7	4.6	8.9	27.4	413.7	4,262.5	4,676.2
Rural Rich	0.0	0.0	0.0	0.0	0.0	0.0	273.9	4.9	10.2	14.2	303.2	1,730.0	2,033.2
Urban Poor	0.0	15.9	17.7	0.0	2.0	4.3	25.2	0.3	7.4	3.6	76.3	506.3	582.7
Urban Middle	0.0	0.0	0.0	0.0	0.0	0.0	56.3	1.9	3.8	15.2	77.2	2,158.2	2,235.4
Urban Rich	0.0	0.0	0.0	0.0	0.0	0.0	597.3	9.3	34.8	24.3	665.8	3,458.7	4,124.6
Total	0.0	15.9	19.2	0.0	10.0	21.5	2,217.3	25.0	65.1	124.7	2,498.7	19,946.9	22,445.5

Source: Computed by author.

[1] From Table 6.

Table 9 — Household Current Expenditures in the Social Accounting Matrix (Figures in mTsh)

		Household Group						
		Rural Poor	Rural Middle	Rural Rich	Urban Poor	Urban Middle	Urban Rich	All Households
Private Consumption								
Cereals	1	1,210.6	362.7	76.7	56.3	95.9	72.5	1,874.7
Other Staples Crops	2	1,185.7	237.4	60.5	44.5	60.1	46.6	1,634.8
Other Food Crops	3	788.2	271.1	75.4	39.0	105.7	106.7	1,386.0
Export Crops	4	8.0	6.1	2.3	0.9	4.8	5.1	27.3
Livestock, Forestry, Fishing, Hunting	5	844.9	409.7	108.4	75.9	201.6	198.2	1,838.6
Manufactured Food	6	599.8	394.4	152.0	63.9	251.3	299.4	1,760.8
Other Consumer Goods	7	556.9	343.7	133.0	28.9	80.7	90.0	1,233.2
Intermediate and Capital Goods	8	445.2	263.5	113.6	29.1	113.9	185.8	1,151.0
Household Industries	9	521.4	262.7	53.0	23.9	37.7	20.1	918.8
Construction	10	11.5	4.7	1.6	0.6	1.8	2.6	22.8
Commerce	11	979.9	632.2	207.2	91.3	314.5	350.1	2,575.2
Transport and Communication	12	453.6	398.5	264.9	36.6	224.6	480.7	1,858.8
Health, Education	13	120.8	60.7	48.1	2.0	8.1	30.9	270.5
Other Services	14	34.6	28.5	19.0	7.3	53.1	120.1	262.6
Public Administration	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Private Consumption		7,760.9	3,675.8	1,315.6	500.3	1,553.7	2,008.7	16,815.1
Transfers to								
Rural Poor				1.5		8.0	17.2	26.7
Rural Middle								
Rural Rich								
Urban Poor			15.9	17.7		2.0	4.3	39.9
Urban Middle								
Urban Rich								
Total Transfers		0.0	15.9	19.2	0.0	10.0	21.5	66.6
Payments to								
Government		561.1	491.9	335.0	50.1	345.5	785.2	2,568.8
Rest of World		206.5	137.5	124.0	18.7	70.4	212.8	770.0
Savings		265.1	355.0	239.3	13.6	255.8	1,096.2	2,225.0
Total Current Expenditure		8,793.6	4,776.2	2,033.2	582.7	2,235.4	4,124.5	22,445.5

Source: Computed by author.

Since the HBS does not report expenditures according to the IO industry classification, we had to reclassify its expenditure categories.

Total household current payments to the government are composed of import duties (58.4 mTsh), other indirect taxes (964.4 mTsh), direct taxes (861.0 msTsh) and other fees and fines (685.0 mTsh). Allocation of the first two items to households was done in proportion to total monetary consumption of households from the HBS, while allocation of the last two items was done in proportion to total taxes and fines paid by households as given in the HBS.

Payments to the rest of the world consist of consumer good imports and other transfers. The total was taken from Rutayisire and Vos (1991), and is composed of imports (579 mTsh) from the IO and other transfers (191 mTsh), which in turn has been computed by Rutayisire and Vos (1991) as a residual from the NA. This was allocated to the two classes of rich households in (rural and urban) in proportion to their total monetary expenditures, as reported in the HBS.

Savings of households was computed as follows. First, from the HBS we computed the ratio of reported savings to total reported income (subsistence and monetary) for each household class. This gave average savings rates that increase as the income class of the household progresses (2.97 percent for rural poor, 7.5 and 11.56 percent for rural middle and rural rich, 2.28 percent for urban poor, and 11.37 and 26.51 percent for urban middle and urban rich respectively). Since savings are equal to income minus other current expenditure, then given total current expenditure for each household class, its savings can be computed by multiplying expenditure by $\alpha/(1-\alpha)$ where α is the average savings rate indicated above. This is the method utilized here. It turned out that total household savings computed in this fashion was smaller than what was estimated by Rutayisire and Vos (1991) using a similar method (2,225 mTsh versus 2,621.5 mTsh).

7. CURRENT ACCOUNT OF ENTERPRISES, GOVERNMENT AND THE REST OF THE WORLD

Table 10 details the current accounts of the non-household institutions in the SAM. The gross operating profit of private formal sector enterprises is distributed to households, as payments to public enterprises (basically interest on loans from banks), as taxes to the government, and as interest payments to the rest of the world. The same holds for public enterprises except that payments to government are both taxes and distributed profits. Public enterprises interest to banks is netted out, since the current operations of banks are included in those of public enterprises. However, interest payments to households and private firms on bank deposits are shown.

Government payments to rest of the world are basically interest on external debt. Transfers from abroad to public enterprises and government refer to grants from abroad.

The source of the expenditures on commodities is the revised IO table, while for the interinstitutional transfers, the major source was Rutayisire and Vos (1991).

The savings of public enterprises composed of savings of non-financial public enterprises (698.8 mTsh), and net current operational savings of public financial institutions (189.4 mTsh) (8.4 mTsh for the Bank of Tanzania and 197.8 mTsh for private and state banks), which are compiled from the balance sheets of the Central Bank, private banks, and state banks.

Table 10 — Current Account of Enterprises, Government and the Rest of World (Figures in mTsh)

		Private Enterprises	Public Enterprises	Government	Rest of World	Total
Commodities						
Cereals	1			0.0	0.0	0.0
Other Staples Crops	2			0.0	54.9	54.9
Other Food Crops	3			0.0	2.1	2.1
Export Crops	4			0.0	1,540.3	1,540.3
Livestock, Forestry, Fishing, Hunting	5			0.0	78.3	78.3
Manufactured Food	6			0.0	57.3	57.3
Other Consumer Goods	7			0.0	143.1	143.1
Intermediate and Capital Goods	8			15.7	1,005.3	1,021.0
Household Industries	9			0.0	0.0	0.0
Construction	10			0.0	0.0	0.0
Commerce	11			0.0	549.0	549.0
Transport and Communication	12			0.0	736.4	736.4
Health, Education	13			1,649.5	0.0	1,649.5
Other Services	14			0.0	818.1	818.1
Public Administration	15			2,559.2	0.0	2,559.2
Total Commodities		0.0	0.0	4,224.4	4,984.8	9,209.2
Payments to Households						
Rural Poor		891.9	4.0	0.0	39.9	935.8
Rural Middle		372.7	4.6	8.9	27.4	413.7
Rural Rich		273.9	4.9	10.2	14.2	303.2
Urban Poor		25.2	0.3	7.4	3.6	36.4
Urban Middle		56.3	1.9	3.8	15.2	77.2
Urban Rich		597.3	9.3	34.8	24.3	665.8
Total Transfers to Households		2,217.3	25.0	65.1	124.7	2,432.1
Payments to Other Institutions						
Private Enterprises			21.9			21.9
Public Enterprises		50.5	630.4	332.5	164.8	1,178.2
Government		345.7	440.3		633.2	1,419.2
Rest of World		25.1	33.2	309.7		368.0
Total Current Payments		2,638.6	1,150.8	4,931.7	5,907.5	14,628.6
Total Savings		1,159.6	838.2	502.1	329.7	2,829.6
Total Current Expenditures		3,798.1	1,989.1	5,433.8	6,237.2	17,458.2

Source: Computed by author.

8. THE CAPITAL ACCOUNT OF INSTITUTIONS

Table 11 presents the detail of current capital spending (investment) of all the institutions in the Tanzanian SAM. Total gross fixed capital formation, as estimated from the IO was allocated to investment by households, private and public enterprises, and the government, on the basis of figures in Rutayisire and Vos (1991). The total investment expenditures of households in each commodity or institution were subsequently apportioned to investments of different household groups in proportion to the total investment expenditures by different household groups reported in the HBS.

Capital payments to government are basically indirect taxes paid on purchases of investment goods and imports, while capital payments to rest of the world are capital good imports.

Total investments of the institutions of Table 11 are equal to 5,014.5 mTsh which is equal to total savings of households and other institutions which can be computed from Tables 9 and 10.

Table 11 — Capital Account of Institutions in the Social Accounting Matrix

		Households										
		Rural Poor	Rural Middle	Rural Rich	Urban Poor	Urban Middle	Urban Rich	Private Enterprises	Public Enterprises	Government	Change in Stocks	Total
Commodities												
Cereals	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Staples Crops	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Food Crops	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Export Crops	4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-84.5	-84.5
Livestock, Forestry, Fishing, Hunting	5	35.6	21.9	5.9	3.3	3.1	0.1	0.0	0.0	0.0	171.0	240.9
Manufactured Food	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Consumer Goods	7	0.01	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.7	20.7
Intermediate and Capital Goods	8	.0	1.8	1.1	0.1	0.2	0.9	98.8	48.9	30.1	20.1	202.9
Household Industries	9	0.0	0.0	0.0	0.0	0.0	0.0	11.1	0.0	0.0	0.0	11.1
Construction	10	91.1	162.4	98.8	8.7	15.3	85.7	530.9	336.2	442.2	0.0	1,771.3
Commerce	11	5.3	9.5	5.8	0.5	0.9	5.0	88.2	68.2	65.8	0.0	249.3
Transport and Communication	12	3.6	6.4	3.9	0.3	0.6	3.3	58.8	45.5	43.8	0.0	166.2
Health, Education	13	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other Services	14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Public Administration	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Commodities		136.6	201.9	115.5	12.9	20.1	95.1	787.8	498.8	581.9	127.3	2,577.9
GOVERNMENT		37.8	67.3	40.9	3.6	6.3	35.5	232.8	227.6	162.7	0.0	814.5
REST OF WORLD		76.1	135.6	82.5	7.2	12.8	71.6	405.1	612.9	258.4	0.0	1,662.2
Total Government and ROW		113.9	202.9	123.5	10.8	19.1	107.1	637.9	840.5	421.1	0.0	2,476.7
Total Investments		250.5	404.8	239.0	23.7	39.2	202.2	1,425.7	1,339.3	1,003.0	127.3	5,054.6
Changes in Financial Assets		14.6	-49.8	0.4	-10.2	216.6	894.1	174.2	769.5	1,187.3	0.0	3,196.7
Changes in All Assets		265.1	355.0	293.3	13.6	255.8	1,096.2	1,599.9	2,108.3	2,190.3	127.3	8,251.3

Source: Computed by author.

9. THE FLOW OF FUNDS

The flow of funds account exhibits changes in financial assets in the columns and changes in financial liabilities across the rows. It is exhibited in Table 12.

The total amounts of savings of the various institutions was discussed earlier, and shown in Tables 9 and 10, while non-financial investments were exhibited in Tables 11 and 12, and they both sum to 5,054.6 mTsh.

The estimation of the flow of funds starts by utilizing the Bank of Tanzania economic and operations report (Bank of Tanzania, 1982), in order to estimate the flow of funds accounts of the Central Bank, the private banks, and state banks. Households were initially aggregated. The changes in financial assets and liabilities of government were derived from the accounts of banks and public enterprises (parastatals). The accounts of parastatals also gave information on the flow of funds of public enterprises.

The HBS provided several items in the flow of funds of households, such as borrowing from banks and the informal financial sector (loans from family and friends), changes in deposits, and cash held. The changes in private enterprise assets were then estimated as residuals of the various formal financial institutions' lending to the private sector.

The adjustments made by Rutayisire and Vos (1991) to the state bank and government account were also adopted here. This left the household account as the remaining residual account. Two items in total household changes in assets account were residualized. These were household lending to formal private enterprises (new equity), and net lending to the rest of the world (capital flight). Each one of these items was made the residual between the column total of the respective institution and the row total of the same institution. Changes in stocks were treated differently than in Rutayisire and Vos (1991). Here the IO estimated total change in stocks was kept intact in the column account. In the row, the change in stocks of parastatals was taken from the parastatal accounts, while changes in private enterprise stocks were taken as a residual.

Once the flow of funds for all households together was estimated, it was disaggregated to the different household groups, largely on the basis of shares obtained from the HBS. For instance changes in cash, deposits with the National Bank of Commerce (the only private bank), and other banks, could be estimated for each household class. The proportions of the relevant totals were used to allocate the aggregate figures estimated for all households. For lack of information, intrahousehold asset transactions were all netted out to zero. Allocation of household lending to private enterprises was done in proportion to HBS estimated income from private enterprises.

Table 12 — Flow of Funds in the Tanzanian Social Accounting Matrix (Figure in mTsh)

		Households						
	Total Savings	Rural Poor	Rural Middle	Rural Rich	Urban Poor	Urban Middle	Urban Rich	Private Enterprises
Total Real Investments		250.5	404.8	239.0	23.7	39.2	202.2	1,425.7
Changes in Liabilities								
Households								
Rural Poor	265.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rural Middle	355.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rural Rich	239.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Urban Poor	13.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Urban Middle	255.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Urban Rich	1,096.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Private Enterprises	1,159.6	172.9	72.3	53.1	4.9	10.9	115.8	0.0
Public Enterprises	648.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Government	502.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Change in Stocks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-98.6
Central Bank	-8.4	53.9	48.8	20.6	41.6	41.6	126.6	64.3
Private Banks	197.8	2.9	18.8	42.6	15.6	15.6	152.7	208.5
Rest of World	329.7	-215.1	-189.6	-116.0	148.6	148.6	498.9	0.0
Total	5,054.6	265.1	355.0	239.3	255.8	255.8	1,096.2	1,599.9

	Public Enterprises	Government	Stock Changes	Central Bank	Private Banks	Rest of World	Total
Total Real Investments	1,339.3	1,003.0	127.3	0.0	0.0	0.0	5,054.6
Changes in Liabilities							
Households							
Rural Poor	0.0	0.0	0.0	0.0	0.0	0.0	265.1
Rural Middle	0.0	0.0	0.0	0.0	0.0	0.0	355.0
Rural Rich	0.0	0.0	0.0	0.0	0.0	0.0	239.3
Urban Poor	0.0	0.0	0.0	0.0	0.0	0.0	13.6
Urban Middle	0.0	0.0	0.0	0.0	0.0	0.0	255.8
Urban Rich	0.0	0.0	0.0	0.0	0.0	0.0	1,096.2
Private Enterprises	0.0	0.0	0.0	0.0	-39.6	50.0	1,599.9
Public Enterprises	0.0	722.2	0.0	0.0	622.2	115.6	2,108.8
Government	0.0	0.0	0.0	232.9	861.4	593.9	2,190.3
Change in Stocks	225.9	0.0	0.0	0.0	0.0	0.0	127.3
Central Bank	-41.4	-9.1	0.0	0.0	53.8	80.6	432.4
Private Banks	585.0	474.2	0.0	-269.2	0.0	82.8	1,514.4
Rest of World	0.0	0.0	0.0	468.7	16.6	0.0	922.9
Total	2,108.8	2,190.3	127.3	432.4	1,514.4	922.9	

Source: Computed from data in Rutayisire and Vos (1993) and author's calculations.

10. CONCLUSION

The construction of a SAM always reveals various sources of inconsistencies between diverse data sources, and the Tanzanian exercise was no exception. The major source of inconsistency appears to be that between the IO table and the NA. It appears, given that the IO implied GDP is about 13 percent higher than that in the NA (with major sources of discrepancy being in private consumption expenditures, agricultural production, manufacturing production, and production of transport and communication), a revision of the Tanzanian NA should be a priority for Tanzanian economic planners. This is especially so since the statistical capability of the country deteriorated substantially during the 1980s.

The detail afforded by the present SAM was obtained with some sacrifice, since in many cases there was no detailed statistics on which to base disaggregation. Nevertheless, it is felt that the available household statistics, which were taken directly from primary sources, provided enough detail to render the SAM a reasonable approximation to the economic flows in Tanzania in 1976.

Table A.1 — Correspondence Between Production Activities of the Social Accounting Matrix (SAM) and the 1976 Input-Output (IO)

No.	SAM Production Sector	Number of Activities in the 1976 IO
1	Cereals	9, 10, 11, 12
2	Other Staples	13, 18
3	Other Food Crops	14, 15, 16, 17
4	Export and Cash Crops	1, 2, 3, 4, 5, 6, 7, 8
5	Livestock, Fishing, Forestry, Hunting	19, 20, 21, 22
6	Food Manufacturing	27-34
7	Other Consumer Good Manufacturing	38, 40, 42, 44
8	Other Manufacturing, Mining Utilities	23-36, 39, 41, 43, 45-58, 59, 60
9	Household Industries	35, 36, 37
10	Construction	61
11	Commerce	62
12	Transport and Communication	64, 65
13	Health and Education	70, 71
14	Other Services	63, 66, 67, 68, 72, 73
15	Public Administration	69

Table A.2 — The Adjusted Input-Output Table used in Constructing the SAM for Tanzania (All Figures in mTsh)

	Cereals	Other Staples	Other Food Crops	Export Crops	Livestock Forestry Fishing Hunting	Food Manufacturing	Consumer Good Manufacturing	Intermediate and Capital Good Manufacturing
	1	2	3	4	5	6	7	8
Cereals	79.3	0.0	0.0	0.0	0.0	288.9	0.0	0.0
Other Staples	0.0	52.3	0.0	0.0	0.0	15.3	0.0	0.1
Other Food Crops	0.0	0.0	45.2	0.0	0.0	74.4	0.0	0.3
Export Crops	0.0	0.0	0.0	88.2	0.0	206.4	189.0	476.3
Livestock, Forestry, Fishing, Hunting	0.0	0.0	0.0	23.5	27.3	25.4	0.0	52.4
Food Manufacturing	0.0	0.0	0.0	0.0	61.2	123.2	0.7	18.3
Consumer Good Manufacturing	2.0	0.0	0.0	12.9	0.0	11.0	90.7	8.2
Intermediate and Capital Good Manufacturing	20.1	0.3	7.5	107.1	20.9	189.8	307.8	749.1
Household Industries	0.0	0.0	0.0	4.4	0.1	0.0	0.0	15.7
Construction	0.0	0.0	0.0	4.8	0.0	0.2	1.2	19.2
Commerce	16.6	0.7	1.3	51.9	29.2	227.8	142.5	444.0
Transport Communication	14.0	0.0	0.0	44.2	25.7	73.0	11.4	84.5
Health Education	0.0	0.0	0.0	0.0	0.0	5.2	3.5	54.3
Other Services	0.4	0.3	0.3	51.5	24.7	168.0	154.1	363.0
Public Administration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Intermediate	132.4	53.6	54.3	388.5	189.0	1409.3	901.0	2285.5
Imports	26.1	1.0	0.0	73.3	43.4	214.8	158.9	1327.0
Wages	1884.2	1537.1	1522.9	1064.9	1342.0	149.5	244.6	525.3
Operating Surplus	263.0	192.4	273.2	537.6	1159.6	462.6	303.8	1303.9
Net Indirect Taxes	-15.5	16.4	-8.3	406.4	36.1	-100.3	37.6	126.7
Gross Output	2290.2	1800.6	1842.1	2470.7	2770.1	2135.8	1645.9	5568.4
GDP at Factor Cost	2147.2	1729.5	1796.1	1602.5	2501.6	612.0	548.4	1829.2
GDP at Market Prices	2131.7	1745.9	1787.8	2008.9	2537.7	511.7	586.0	1955.9

Table A.2 — continued

	Household Industries	Construction	Commerce	Transport Communication	Health Education	Other Services	Public Administration	Total Intermediate Uses
	9	10	11	12	13	14	15	16
Cereals	23.7	0.0	0.0	0.0	18.7	0.0	4.8	415.5
Other Staples	0.0	0.0	0.0	0.0	20.4	11.4	11.3	110.9
Other Food Crops	222.8	0.0	0.0	0.0	16.7	40.9	53.7	454.1
Export Crops	27.6	0.0	0.0	0.0	0.0	0.0	0.0	987.6
Livestock, Forestry, Fishing, Hunting	197.4	78.9	0.0	0.0	41.8	89.3	76.2	612.3
Food Manufacturing	6.9	0.0	7.9	0.1	9.9	79.0	10.6	317.8
Consumer Good Manufacturing	83.1	0.0	2.5	1.9	2.2	5.0	29.3	248.9
Intermediate and Capital Good Manufacturing	27.8	539.2	151.3	368.2	70.6	279.3	354.3	3193.5
Household Industries	2.6	1.6	0.0	0.8	0.0	0.0	0.0	25.2
Construction	0.0	3.1	15.9	42.1	12.8	97.8	34.3	231.5
Commerce	49.9	205.2	72.9	264.4	57.6	58.1	131.7	1753.7
Transport Communication	17.5	67.6	1647.0	49.0	27.8	75.9	212.9	2350.7
Health Education	0.0	0.0	14.5	1.4	10.1	9.4	37.0	135.5
Other Services	37.9	45.3	319.6	106.0	54.3	176.7	698.5	2200.8
Public Administration	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Intermediate	697.2	940.9	2231.6	833.9	342.9	922.8	1654.8	13037.7
Imports	0.0	264.4	68.7	304.0	218.3	677.0	60.1	3437.0
Wages	49.1	174.9	872.1	1121.9	1397.7	613.4	842.1	13341.6
Operating Surplus	205.6	616.2	1941.6	2824.2	92.7	1016.0	0.0	11192.3
Net Indirect Taxes	3.3	29.2	13.2	28.1	3.9	52.3	2.2	631.3
Gross Output	955.2	2025.6	5127.2	5112.1	2055.4	3281.5	2559.3	41639.9
GDP at Factor Cost	254.7	791.1	2813.7	3946.1	1490.3	1629.4	842.2	24533.9
GDP at Market Prices	258.0	820.3	2826.9	3974.2	1494.2	1681.7	844.4	25165.2

Table A.2 — continued

	Private Consumption	Government Consumption	Exports	Gross Fixed Capital Formation	Changes in Stocks	Gross Output
	17	18	19	20	21	22
Cereals	1874.7	0.0	0.0	0.0	0.0	2290.2
Other Staples	1634.8	0.0	54.9	0.0	0.0	1800.6
Other Food Crops	1386.0	0.0	2.1	0.0	0.0	1842.1
Export Crops	27.3	0.0	1540.3	0.0	-84.5	2470.7
Livestock, Forestry, Fishing, Hunting	1838.6	0.0	78.3	69.9	171.0	2770.1
Food Manufacturing	1760.8	0.0	57.3	0.0	0.0	2135.8
Consumer Good Manufacturing	1233.2	0.0	143.1	0.0	20.7	1645.9
Intermediate and Capital Good Manufacturing	1151.0	15.7	1005.3	182.8	20.1	5568.4
Household Industries	918.8	0.0	0.0	11.1	0.0	955.2
Construction	22.8	0.0	0.0	1771.3	0.0	2025.6
Commerce	2575.2	0.0	549.0	249.3	0.0	5127.2
Transport Communication	1858.8	0.0	736.4	166.2	0.0	5112.1
Health Education	270.5	1649.5	0.0	0.0	0.0	2055.4
Other Services	262.6	0.0	818.1	0.0	0.0	3281.5
Public Administration	0.0	2559.3	0.0	0.0	0.0	2559.3
Total Intermediate	16815.2	4224.5	4984.8	2450.6	127.3	41639.9
Imports	579.0	0.0	0.0	1662.2	0.0	5678.2
Wages	0.0	0.0	0.0	0.0	0.0	13341.6
Operating Surplus	0.0	0.0	0.0	0.0	0.0	11192.3
Net Indirect Taxes	1022.8	0.0	0.0	814.5	0.0	2468.6
Gross Output	18416.9	4224.5	4984.8	4927.3	127.3	74320.7
GDP at Factor Cost						24533.9
GDP at Market Prices						27002.5

Source: URT (1986) and author's adjustments.

Table A.3 — Detail of Tax Income of Government

	Production Taxes							
	Cereals	Other Staples	Other Food Crops	Export Crops	Livestock Forestry Fishing Hunting	Food Manufacturing	Consumer Good Manufacturing	Intermediate and Capital Good Manufacturing
	1	2	3	4	5	6	7	8
Net Indirect Taxes[1]	-17.8	16.4	-8.3	398.8	35.5	-128.1	5.4	58.3
Import Taxes	2.3	0.0	0.0	7.6	0.6	27.8	32.2	68.4
Direct Taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Net Tax Income	-15.5	16.4	-8.3	406.4	36.1	-100.3	37.6	126.7

	Household Industries	Construction	Commerce	Transport Communication	Health Education	Other Services	Public Administration	Total Taxes on Production
	9	10	11	12	13	14	15	
Net Indirect Taxes[1]	3.3	1.7	13.0	17.9	0.4	9.0	0.0	405.5
Import Taxes	0.0	27.5	0.2	10.2	3.5	43.3	2.2	225.8
Direct Taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Net Tax Income	3.3	29.2	13.2	28.1	3.9	52.3	2.2	631.3

	Taxes on Households						
	Rural Poor	Rural Middle	Rural Rich	Urban Poor	Urban Middle	Urban Rich	Total Taxes on Household
Indirect Taxes on Domestic Consumption	344.0	229.1	88.5	31.2	117.3	154.4	964.4
Import Taxes	20.8	13.9	5.4	1.9	7.1	9.3	58.4
Direct Taxes	196.3	248.9	241.2	17.0	221.1	621.5	1546.0
Total Net Tax Income	561.1	491.9	335.0	50.1	345.5	785.2	2568.8

	Direct Taxes on Enterprises		Taxes on Investment	Total Taxes	Income From Rest of World	Total Government Revenue
	Private	Public				
Net Indirect Taxes			738.2	2108.1		2108.1
Import Taxes			76.3	360.5		360.5
Direct Taxes	345.7	440.3		2332.0		2332.0
Total Tax Income	345.7	440.3	814.5	4800.6	633.2	5433.8

Sources: Computed from the SAM and author's calculation.

[1] Indirect taxes minus subsidies.

REFERENCES

Bagachwa, M.S.D., A.H. Sarris, and P. Tinios. 1993. *Small Scale Urban Enterprises in Tanzania: Results from a 1991 Survey*. Working Paper 44. Ithaca, NY: Cornell University Food and Nutrition Policy Program.

Bank of Tanzania. 1982. "Economic and Operations Report for the year ended 30th June, 1982." Dar es Salaam.

Bevan, D., P. Collier, J.W. Gunning, with A. Bigsten, and P. Horsnell. 1990. *Controlled Open Economies: A Neoclassical Approach to Structuralism.* Oxford: Clarendon Press.

Pyatt, G., and A. Roe and Associates. 1977. *Social Accounting for Development Planning with Special Reference to Sri Lanka.* Cambridge: Cambridge University Press.

Pyatt, G., and J.I. Round, eds. 1985. *Social Accounting Matrices: A Basis for Planning. A World Bank Symposium.* Washington, DC: World Bank.

Pyatt, G., and E. Thorbecke. 1976. *Planning Techniques for a Better Future.* Geneva: International Labour Office.

Rutayisire, L., and R. Vos. 1991. "A SAM for Tanzania." Working Paper 39. The Hague: Finance and Development Research Program. Sub-Series on Money Finance and Development. September.

Sarris, A.H. 1990. *A Macro-Micro Framework for the Analysis of the Impact of Structural Adjustment on the Poor in Sub-Saharan Africa.* Monograph 5. Washington, DC: Cornell University Food and Nutrition Policy Program.

Sarris, A.H., and R. van den Brink. 1993. *Economic Policy and Household Welfare During Crisis and Adjustment in Tanzania.* New York: New York University Press.

United Republic of Tanzania. 1974. "Agricultural Census of Tanzania 1971/72." Dar es Salaam: Bureau of Statistics

_____. 1981. "Survey of Employment and Earnings 1975-76." Dar es Salaam: Bureau of Statistics.

_____. 1985. "National Accounts of Tanzania 1976-1984: Sources and Methods. Dar es Salaam" Bureau of Statistics.

_____. 1986. "Input Output Table of Tanzania, 1976." Dar es Salaam: Bureau of Statistics.

United Republic of Tanzania. 1990. "Analysis of Accounts of Parastatal Enterprises 1976-1988." Dar es Salaam: Bureau of Statistics.

_____. 1991. "National Accounts of Tanzania 1976-1990." Dar es Salaam: Bureau of Statistics.

World Bank. 1989. *Tanzania: Public Expenditure Review*. Report No. 7559-TA. Washington DC: World Bank.