

Uganda

*Isabel Teichmann*¹

1. Introduction

This documentation outlines the steps involved in contributing an input-output (I-O) table of Uganda to the GTAP 8 Data Base. The procedure followed the guidelines established in Huff et al. (2000) and Horridge et al. (2008).

2. Reference Information for the Source Table

The contributed I-O table was derived from the Social Accounting Matrix (SAM) of Uganda for the year 2002 (Uganda SAM 2002), obtained as an excel file from the Uganda Bureau of Statistics (UBoS), Kampala, Uganda.² The contact person at UBoS was Samuel Echoku (e-mail: samuel.echoku@ubos.org), whose help is gratefully acknowledged.

3. Review of the Different Options Available for the Source Table

The Uganda SAM 2002 is the most current Uganda SAM provided by UBoS.³

Another option for the source table would have been the 1999 Uganda SAM prepared by Paul Dorosh and Moataz El-Said, available from the International Food Policy Research Institute (IFPRI) at <http://www.ifpri.org/dataset/uganda-1> (last accessed on 18 August 2011).⁴ However, besides referring to an earlier year than 2002, it also contains less sectoral detail than the Uganda SAM 2002.

4. Description of the Source Table

The Uganda SAM 2002 is based on the System of National Accounts (SNA) 1993. It refers to the year 2002 and is measured in million of Ugandan shillings (Ush). The data is industry by commodity (74 industries, 61 commodities), valued at producers' prices.

4.1 Structure

This subsection describes how the structure of the Uganda SAM 2002 was made consistent with GTAP requirements. It includes details on the transformation from an industry-by-commodity table to a commodity-by-commodity table, the treatment of imports and indirect taxes as well as the classification of final demands and primary factors.

Industry-by-commodity table:

¹ German Institute for Economic Research (DIW Berlin) and Humboldt University Berlin, Germany, e-mail: iteichmann@diw.de

² There was no soft copy available of the documentation for the Uganda SAM 2002.

³ According to UBoS, the 2009/10 supply and use tables are currently being prepared.

⁴ Uganda: Social Accounting Matrix, 1999. 2005. Washington, D.C.: International Food Policy Research Institute (IFPRI) (datasets).

The Uganda SAM 2002 covered 74 industries (see Table 1) and 61 commodity sectors (see Table 5). In the contribution process, the commodity sectors were disaggregated to 65. The underlying non-diagonal I-O table was converted into a commodity-by-commodity table based on the industry technology assumption, i.e. assuming an identical input structure for all commodities produced by an industry (Horridge et al. 2008). The MAKE matrix used for the conversion was taken from the Uganda SAM 2002. It contained a negative entry of -1 million Ush in the cell “Coffee Growing” (industry)/“Growing of Other Horticultural Crops” (commodity). This negative value flow was left unaltered.

Imports:

In the row account “ROW,” the Uganda SAM 2002 reported total imports (Mcif) by commodity. To create separate use matrices of domestic products and imports, an import matrix was constructed and subtracted from the available total use matrix associated with domestic users.⁵ For the derivation of the import matrix, total imports at producers’ prices were allocated across domestic users by calculating the share of these imports in the total domestic use of imports and domestic products (import share) and multiplying it with the total use matrix associated with domestic users (Horridge et al. 2008). The import share was assumed to be constant across all domestic users.

Indirect taxes:

Concerning indirect taxes, the Uganda SAM 2002 contained the accounts (1) “Taxes on production and imports other than VAT,” (2) “Value added taxes – domestic (VAT),” (3) “Import duties; VAT on imports” and (4) “Subsidies on products.” The tax concordance between these accounts and the corresponding GTAP categories is given in Table 2. It involved the following adjustments:

- Since the category “Subsidies on products” had only zero entries, it was deleted.
- In the Uganda SAM 2002, information on import tariffs (MTar) and commodity taxes on imports (MTax) was only available in the combined account “Import duties; VAT on imports.” This combined account was not split and mapped in its aggregate form to MTax, while MTar was entered as a vector of zeros.

Taxes on domestic commodities and imports, ComTax and MTax in the notation of Table 2,⁶ were available in the Uganda SAM 2002 as total domestic and import taxes by commodity. Therefore, the commodity uses at producers’ prices had to be separated into their basic value flows and tax flows, both for domestic commodities and imports. The procedure followed Horridge et al. (2008). First, the domestic and import tax matrices were created by multiplying each the domestic and the import use matrix at producers’ prices with the associated tax rates. Thereby, the domestic and import tax rates referred to the share of taxes in the total values of domestic and import uses at producers’ prices, respectively. It was assumed that all users faced the same tax rates, while zero taxes were levied on changes in stocks (DSTOCK). Second, the domestic and import matrices containing the basic value flows were calculated by subtracting the respective tax matrices from the domestic and import use matrices at producers’ prices.

Final demands:

The final demand categories of the Uganda SAM 2002 were (1) “Households,” separated by region, rural/urban and income class, (2) “Corporations,” (3) “Government and Non-Profit,” (4) “Capital Account” (column) and (5) “ROW” (column). In order to arrive at the final demand concordance between the Uganda SAM 2002 and GTAP categories as outlined in Table 3, the following transformations were made:

⁵ The Uganda SAM 2002 contained no re-exports, neither explicitly nor implicitly.

⁶ MTax from now on refers to import taxes *inclusive* of import tariffs.

- All the different private household categories were aggregated to one private household.
- Not creating any final demand, the account “Corporations” was deleted.
- The account “Government and Non-Profit” covered both government consumption and individual consumption expenditure by non-profit institutions serving households (NPISHs). The latter was separated from government consumption by the procedure described in Section 5 and aggregated with private household consumption. The remainder of the “Government and Non-Profit” vector was mapped to government consumption.
- Separate information on changes in stocks (DSTOCK) was missing since the “Capital Account” column of the Uganda SAM 2002 covered investments *inclusive* of inventories. Therefore, the investment and DSTOCK accounts were disaggregated in the contributed I-O table as detailed in Section 5.

Primary factors:

The accounts of the Uganda SAM 2002 associated with primary factors included (1) “Labor,” separated by skill level, rural/urban and male/female, (2) “Mixed Income,” (3) “Operating Surplus” and (4) “Capital Account” (row). As summarized in the primary factor concordance of Table 4, the following changes were applied to these accounts:

- All the different “Labor” categories were combined in one labor account.
- The two vectors “Operating Surplus” and “Capital Account” (row) were aggregated to a single capital category.
- “Mixed Income” was allocated to both labor and capital in the way described in Section 5.
- Since separate information on land was missing in the Uganda SAM 2002, this category was included as a vector of zeros.

3.2 Sectoral Classification of the Source Data and Mapping to GTAP Sectors

The Uganda SAM 2002 covered 61 commodity sectors. Four additional sectors were introduced in the contribution process. These include Coal, Oil, Gas and Gas Distribution (in the terminology of the second column of Table 5). According to UBoS, these four commodity sectors were non-existent in Uganda in 2002. Therefore, they were added to the Uganda SAM 2002 as separate sectors containing all zeros in domestic production. For the commodity Gas Distribution, also all imports and uses were filled with zeros. The imports and uses of the commodities Coal, Oil and Gas, however, were disaggregated from the “Mining and Quarrying” sector as described in Section 5.

After mapping the 61 plus 4 commodity sectors in the Uganda SAM 2002 (OSEC) to the 57 GTAP sectors (GSEC), 33 sectors were obtained in the contributed I-O table (SEC). The detailed mapping can be found in Table 5. It was done based on the labelling of the commodity sectors used in the Uganda SAM 2002, the MAKE matrix of the Uganda SAM 2002 and personal conversations with UBoS. For some clarifications, also the *2010 Statistical Abstract* (UBoS 2010) was used.⁷ With respect to the mapping, it is important to note that:

- The OSEC sector RiWhtOth was also mapped to the GTAP sector Cane & Beet (c_b) since the only output of the “Sugar Growing” industry of the Uganda SAM 2002 was RiWhtOth.

⁷ This is the earliest *Statistical Abstract* available online. It covers data back to the year 2005.

- During the contribution process, it turned out that the GTAP sectors Cattle Meat (cmt) and Other Meat (omt) should be mapped to the Livestock sector in the contributed I-O table, instead of ProcFood. Therefore, cmt and omt were associated with OthAnml.
- The OSEC sector AgrSvc was mapped to Cattle (ctl) and Other Animal Products (oap) since AgrSvc was only produced by the industry “Farming of Goats and Other Livestock.”
- The OSEC sector Textile was mapped to both Textiles (tex) and Wearing Apparel (wap) since the major output of the “Manufacture of Wearing Apparel (Except Fur Apparel)” industry was Textile.
- After reconfirming with UBoS, the OSEC sector House of the Uganda SAM 2002 was mapped to both Other Business Services (obs) and Dwellings (dwe) since it included imputed rents of owner occupied dwellings.

4. Description of Applied Constraints

Non-negativity constraints had to be applied to capital gains and investments, and sectoral balance conditions to the three commodity sectors Coal, Oil and Gas. These constraints will be described in Section 5 along with the treatment of the inconsistencies between the Uganda SAM 2002 and GTAP.

5. Description of How Inconsistencies Between Source Table and GTAP Were Dealt With

Inconsistencies between the Uganda SAM 2002 and GTAP requirements arose in the areas of government consumption, investment and changes in stocks, the sectors Coal, Oil and Gas, and value added (both in terms of mixed income and negative capital gains). Except for the treatment of negative capital gains, these inconsistencies were dealt with before diagonalizing the I-O table extracted from the Uganda SAM 2002, i.e. based on the OIND industries of Table 1 and the OSEC commodities of Table 5. Moreover, all the inconsistencies were handled before splitting imports and taxes, and the treatments were applied in the order appearing below.

Government consumption:

As already described, the Uganda SAM 2002 did not contain separate data on government consumption, but only on the aggregate of government consumption and individual consumption expenditure by NPISHs (“Government and Non-Profit”). The vector of government consumption was obtained by splitting out individual consumption expenditure by NPISHs from the “Government and Non-Profit” vector. The disaggregated individual consumption expenditure by NPISHs was then added to private household consumption (Household).

The disaggregation of the “Government and Non-Profit” account of the Uganda SAM 2002 drew on IMF-IFS (2011) data, in particular on private household consumption expenditure *inclusive* of individual consumption expenditure by NPISHs (series code: 74696F..ZF...) and on government consumption expenditure (series code: 74691F..ZF...) for the year 2002 (see Table 6). Based on these data, the relation of private household consumption expenditure *inclusive* of individual consumption expenditure by NPISHs to government consumption expenditure in total household and government consumption was 83.96% to 16.04%. In order to bring the household and government consumption data of the Uganda SAM 2002 into the same relation, the total of 76,598 million Ush had to be deducted from “Government and Non-Profit” consumption and added to private household consumption (see Table 7).

The sectoral allocation of that amount was done in the following way: First, it was assumed that NPISHs consumed the same items like the government, except for “Public Administration and Defence” (PubAdm). Therefore, the 76,598 million Ush had to be subtracted from 849,780 million Ush.⁸ This gave the share of approximately 9.01% to be deducted from the amount of 849,780 million Ush. Second, assuming further that the share of individual consumption expenditure by NPISHs was constant across the remaining commodity sectors, 9.01% were deducted from each non-zero element of “Government and Non-Profit” consumption (except for PubAdm). This resulted in the disaggregated vectors of government consumption *exclusive* of individual consumption expenditure by NPISHs and of individual consumption expenditure by NPISHs (Non-Profit). The latter vector was then added to private household consumption. Table 8 illustrates the changes made to the original SAM for all the sectors where “Government and Non-Profit” consumption was non-zero in the Uganda SAM 2002.

Investment and changes in stocks:

The “Capital Account” (column) of the Uganda SAM 2002 had to be disaggregated into investment and changes in stocks (DSTOCK). In a first step, all the negative entries in the “Capital Account” (column) were put to zero and shifted to the newly created account DSTOCK.⁹ In a second step, changes in stocks were split from the “Capital Account” (column) in a similar way like described for the “Government and Non-Profit” account. Again, the disaggregation was based on IMF-IFS (2011).

Table 9 shows the 2002 values for gross fixed capital formation (series code: 74693E..ZF...), i.e. investment, and changes in inventories (series code: 74693I..ZF...) as given by IMF-IFS (2011). It also displays the shares of gross fixed capital formation (98.16%) and changes in inventories (1.84%) in the sum across both items. Imposing the same target shares for investment and changes in stocks in the Uganda SAM 2002, the total of 48,465 million Ush had to be deducted from the “Capital Account” (column) and added to DSTOCK (see Table 10). The difference of 48,465 million Ush corresponds to approximately 2.00% of 2,424,167 million Ush.¹⁰ Applying this share uniformly to all sectors, the 48,465 million Ush were deducted from all non-zero elements of the “Capital Account” (column) and added to DSTOCK. The obtained “Capital Account” (column) *exclusive* of changes in stocks was then mapped to investment. The changes made to investment and DSTOCK for all the sectors where the “Capital Account” (column) was non-zero in the Uganda SAM 2002 can be found in Table 11.

Coal, Oil and Gas commodities:

Since the Uganda SAM 2002 contained no separate information on the commodities Coal, Oil and Gas, they had to be split out from the “Mining and Quarrying” sector. While there was no domestic production of these commodities in 2002 (according to UBoS), imports and domestic uses of Coal, Oil and Gas had to be disaggregated. The external sources used in this process were UN-Comtrade (2011) and McDougall (1996).

The target values for the disaggregation were the 2002 import shares of Coal (0.13%), Oil (0.10%) and Gas (9.78%) in the total imports of “Mining and Quarrying” derived from UN-Comtrade (2011) and displayed in Table 12. Thereby, total Ugandan imports of “Mining and Quarrying” were calculated as the sum of Uganda’s imports of the GTAP commodities Coal, Oil, Gas and Other Mining (omn). Since the Standard International Trade Classification, Revision 1 (SITC Rev. 1) was

⁸ 849,780 million Ush is the amount of total “Government and Non-Profit” consumption (1,808,821 million Ush) minus “Government and Non-Profit” consumption of PubAdm (959,041 million Ush) in the Uganda SAM 2002.

⁹ The “Capital Account” (column) of the Uganda SAM 2002 contained negative values in four commodity sectors: Coffee, M_Alc, Leather, and PetrCoal.

¹⁰ The latter amount is the sum of the original value for the “Capital Account” (column) from the Uganda SAM 2002 (2,420,211 million Ush) and the value that was added to the “Capital Account” (column) after replacing all negative entries with zeros (3,956 million Ush).

chosen for the UN-Comtrade (2011) data, the mapping between the four GTAP sectors and the four-digit codes of SITC Rev. 1 was based on McDougall (1996).

First, the obtained import shares were used to split out Coal, Oil and Gas from imports (Mcif) and import taxes (MTax)¹¹ of the “Mining and Quarrying” sector of the Uganda SAM 2002 (Table 13). Second, the resulting imports at producers’ prices were allocated to domestic users.¹² Thereby, Coal and Oil imports were completely shifted to the PetrolM industry. The reason for doing so was that PetrolM was one of the two industries producing the commodity PetrCoal, which, in turn, was assumed to be made of Coal and Oil inputs.¹³ Since Gas imports at producers’ prices (2,896.7 million Ush) exceeded the total amount of “Mining and Quarrying” inputs used by the PetrolM industry (976 million Ush), Gas imports needed to be treated in a different way than Coal and Oil imports. Due to the lack of better knowledge, it was decided to allocate the Gas imports uniformly across all domestic users where “Mining and Quarrying” was non-zero. The allocation was based on the share of Gas imports at producers’ prices (3.99%) in the total domestic use of “Mining and Quarrying” (72,523.8 million Ush). Third, after imposing balancing conditions for Coal, Oil and Gas to equate imports at producers’ prices with total domestic use,¹⁴ the obtained values for Coal, Oil and Gas were subtracted from “Mining and Quarrying,” leaving this sector to capture only Other Mining (omn).

Value added (Mixed income):

The allocation of the Uganda SAM 2002 account “Mixed Income” to capital and labor proceeded in two steps. First, in those industries of the Uganda SAM 2002 where mixed income was negative, it was shifted entirely to capital.¹⁵ Second, for the remaining industries, mixed income was split according to the shares of capital and labor in total value added created by capital and labor only, i.e. excluding mixed income.¹⁶ Step two could not be carried out for the industry Cereals, however, since both capital and labor were zero for this industry in the Uganda SAM 2002. Therefore, the “Mixed Income” split for Cereals was based on the average shares of capital and labor in the industries RiceG and WheatG. These two industries were chosen on the grounds of the MAKE matrix, which showed that the output they produced was captured by the same commodity category, RiWhtOth, like part of the output of the Cereals industry. The allocation of “Mixed Income” to capital and labor for all the industries where mixed income was non-zero in the Uganda SAM 2002 is summarized in Table 14.

Value added (Negative capital gains):

After diagonalizing the I-O table extracted from the Uganda SAM 2002, negative capital gains were found in the following ten commodity sectors: Cotton, Forest, Textile, Wood, PetrCoal, Motor,

¹¹ In the contributed I-O table, import taxes are *inclusive* of import tariffs.

¹² The allocation was restricted to domestic users since there was no domestic production of Coal, Oil and Gas, and since re-exports are not allowed in the GTAP database. This means that the vectors Exports and ComTax had to be filled with zeros.

¹³ The other industry in the Uganda SAM 2002 producing PetrCoal was Wood. This industry, however, used hardly any “Mining and Quarrying” inputs (2.4 million Ush, as opposed to 976 million Ush used by the PetrolM industry).

¹⁴ The balancing conditions had to be imposed since rounding errors led to small imbalances in the newly created sectors. In particular, total sales of Coal, Oil and Gas minus their respective imports at producers’ prices did not add up to an exact zero. The rounding errors were minimized when the balancing adjustment was made in the MTax account only. However, a small imbalance remained in the Gas sector. It was eliminated by the Center by putting domestic Gas sales to zero in order to equate them exactly with zero domestic Gas production.

¹⁵ The four industries with negative mixed income were FlowerG, Wood, Motor and Warehouse.

¹⁶ As it turned out during the contribution process, allocating all mixed income to capital would have created too large capital shares compared to the representative and previous tables. Allocating mixed income completely to labor would have introduced a negative entry in the labor demand by one industry in the Uganda SAM 2002. Moreover, it would also have led to inconsistent labor shares.

Finance, Social, Private and OthSvc.¹⁷ For these values, non-negativity constraints had to be imposed. Since it was assumed that the negative capital gains were not chronic, but due to some special circumstance, they were replaced by “normal” capital gains and balance was restored by adjusting the DSTOCK account. The reason for not assuming that the government was subsidizing the losses was that the account “Subsidies on products” was filled with zeros.

The calculation of the “normal” capital gains associated with a commodity proceeded as follows: First, the “normal” capital share in total value added was extracted from (1) the capital shares of commodities mapped to the same sector in the contributed I-O table (see Table 5 for the mapping), (2) the capital shares of industries producing the respective commodity and (3) the 1992 I-O table of Uganda used in previous GTAP versions (Uganda I-O table 1992).¹⁸ When information from (1) was used, the capital shares were taken from the diagonalized I-O table extracted from the Uganda SAM 2002, while the capital shares were taken from the non-diagonalized version when the information came from (2). Second, based on the corresponding “normal” labor shares and the actual labor values obtained from the diagonalized I-O table, the “normal” value added was calculated. Third, the “normal” value added served as the basis to obtain the “normal” capital gains by applying the “normal” capital shares to it. While the imposed “normal” capital shares and their calculation can be found in Table 15, the “normal” capital gains are given in Table 16.

6. *Deviations Between the Supplied Table and Those Required for GTAP*

The contributed I-O table does not substantially deviate from the GTAP requirements. In particular, there are no deviations with respect to sign constraints and sectoral balance conditions.¹⁹ However, it is important to note the following:

6.1 *Structure*

The Uganda SAM 2002 did not have any information on the primary factor land. Therefore, land was included as a vector of zeros.

Separate information on import duties was not available in the Uganda SAM 2002. Instead, import duties were aggregated with commodity taxes on imports in the account “Import duties; VAT on imports.” In the contributed I-O table, import duties were not separated out. Thus, the MTax vector includes both commodity taxes on imports and import duties, while the MTar vector was filled with zeros.

In the contributed I-O table, there are 31 ridiculous tax rates, all associated with the domestic input commodity PetrCoal (in terms of the OSEC sectors, see Table 5) or, equivalently, PC (in terms of the SEC sectors). These ridiculous tax rates were not removed since they came directly from the Uganda SAM 2002.²⁰ Due to the high tax rates on domestic PetrCoal, it could not be deviated from the

¹⁷ Before diagonalizing the extracted I-O table, negative capital gains appeared in the industries CottonM, Wood, Printing, ElectroM, Motor, Financial, Recreation and OthActiv, whereby the negative value in Motor was due to the treatment of “Mixed Income.”

¹⁸ Note that the Uganda I-O table 1992 allocated “the returns to subsistence agriculture, self-employed labor and other non-wage labor” to labor (Blake 2002, p. 11-Q-2). Moreover, the capital/labor ratios of the Uganda I-O table 1992 sometimes quite significantly deviated from the capital/labor ratios extracted from the Uganda SAM 2002, regardless of the above-described treatment of mixed income and even in sectors unaffected by mixed income. Therefore, the Uganda I-O table 1992 was given least priority in obtaining “normal” capital shares.

¹⁹ A small imbalance in the Gas sector was eliminated by the Center (see Section 5, footnote 13).

²⁰ In the Uganda SAM 2002, total domestic production of PetrCoal at producers’ prices was 13,611 million Ush and the amount of “Value added taxes – domestic (VAT)” (ComTax) levied on PetrCoal was 13,271 million Ush. This resulted in a tax rate of 97.5%.

assumption of uniform tax rates across all users and zero taxes on DSTOCK when performing the tax split (cp. Section 3 a). Applying a higher tax rate to one sector and lower tax rates to the other sectors would have created a negative basic value flow in the sector with the higher tax burden.

6.2 Sectoral Classification

The GTAP sector Textiles (tex) could not be separately identified. Together with the GTAP sector Wearing Apparel (wap), it is mapped to the TexWap sector in the contributed I-O table (see Table 5).

7. Comment on Quality of the I-O Data

The Uganda SAM 2002 contained detailed information on 16 different types of labor (the categories being separated by unskilled/semi-skilled/skilled/high-skilled, rural/urban and male/female) and 32 household categories (separated by Central/Eastern/Northern/Western region, rural/urban and four income classes). This information got lost due to the aggregation into one labor category and one household category.

Moreover, the Uganda SAM 2002 was detailed on agricultural sectors important for the Ugandan economy, such as beans, matoke, potatoes, and cassava. This sectoral detail also disappeared after the mapping to the GTAP sectors.

References

Blake, A. (2002), "GTAP 5 Data Base Documentation - Chapter 11.Q: Uganda," GTAP Resource 763, online available at (last accessed on 18 August 2011): https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=763

- Horridge, M., R. McDougall, B. Narayanan and T. L. Walmsley (2008), "Exercises in Contributing I-O Tables to the GTAP Data Base," GTAP Resource 2850, online available at: https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=2850 (last accessed on 14 August 2011).
- Huff, K., R. McDougall and T. Walmsley (2000), "Contributing Input-Output Tables to the GTAP Data Base," GTAP Technical Paper No. 1, Release 4.2, online available at: https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=304 (last accessed on 14 August 2011).
- IMF-IFS (2011), Country Table Uganda, International Financial Statistics, International Monetary Fund, June 2011, CD-ROM.
- McDougall, R. (1996), "Concordances - four-digit SITC merchandise trade concordance to GTAP," GTAP Resource 324, online available at (last accessed on 18 August 2011): https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=324
- UBoS (2010), *2010 Statistical Abstract*, Uganda Bureau of Statistics, online available at: <http://www.ubos.org/index.php?st=pagerelations2&id=31&p=related%20pages%202:Abstracts> (last accessed on 12 August 2011).
- Uganda I-O table 1992, electronic database, Center for Global Trade Analysis, Purdue University, contributed by A. Blake.
- Uganda SAM 2002, electronic database, Uganda Bureau of Statistics, Kampala, Uganda, 2002.
- UN-Comtrade (2011), United Nations Commodity Trade Statistics Database, online available at: <http://comtrade.un.org/db/dqBasicQueryResults.aspx?cc=????&px=S1&r=800&y=2002&p=0&rg=1&so=9999&rpage=dqBasicQuery&qt=n> (last accessed on 18 August 2011).

Appendix

Table 1: List of 74 industries in Uganda SAM 2002

#	Industries	OIND
1	Maize Growing	MaizeG
2	Rice, Upland Growing	RiceG
3	Wheat Growing	WheatG
4	Root Tubers	Root
5	Cotton Growing	CottonG
6	Tobacco Growing - Flue-Cured	TobacGFlue
7	Tobacco Growing - Fire-Cured	TobacGFire
8	Tobacco Growing - Air-Cured	TobacGAir
9	Simsim & Sunflower Growing	SimG
10	Groundnuts Growing	GroundG
11	Cereals	Cereals
12	Sugar Growing	SugarG
13	Beans Growing	BeansG
14	Growing Flowers & Horticultural Crops	FlowerG
15	Coffee Growing	CoffeeG
16	Tea Growing	TeaG
17	Cocoa Growing	CocoaG
18	Vanilla Growing	VanillaG
19	Matoke Growing	MatokeG
20	Passion Fruits & Other Tree Crops	Passion
21	Farming of Cattle; Dairy Farming	CattleF
22	Farming of Goats and Other Livestock	GoatF
23	Poultry Farming	PoultryF
24	Forestry, Logging and Related Service Activities	Forest
25	Fishing, Operation of Fish Hatcheries and Fish Farms	Fishing
26	Mining and Quarrying	Mining
27	Processing and Preserving of Fish and Fish Products	FishP
28	Vegetable and Animal Oils & Fats	OilsFats
29	Manufacture of Dairy Products	DairyM
30	Manufacture of Sugar and Jaggery	SugarM
31	Coffee and Tea Processing	CoffeeP
32	Distilling and Manufacture of Malt	Distill
33	Manufacture of Soft Drinks; Production of Mineral Waters	SoftM
34	Manufacture of Tobacco Products	TobacM
35	Manufacture of Starches	StarchM
36	Cotton and Associated Activities	CottonM
37	Manufacture of Textiles	TextileM
38	Manufacture of Wearing Apparel, Except Fur Apparel	WearingM
39	Manufacture of Apparel, Leather and Footwear	ApparelM
40	Wood & Wood Products	Wood
41	Manufacture of Paper and Paper Products	PaperM
42	Printing Activities	Printing
43	Manufacture of Petroleum and Chemical Products	PetrolM
44	Manufacture of Rubber and Plastic Products	RubberM
45	Manufacture of Metal Products	MetalM
46	Manufacture of Clay and Ceramics	ClayM
47	Manufacture of Cements and Related Products	CementM
48	Manufacture of Electronics, etc.	ElectroM

Table 1 (cont'd): List of 74 industries in Uganda SAM 2002

#	Industries	OIND
49	Production, Collection and Distribution of Electricity	Electric
50	Collection, Purification and Distribution of Water	Water
51	Building	Building
52	Civil Engineering	CivilE
53	Motor Repair and Spare Parts	Motor
54	Retail Services	Retail
55	Wholesale Services	Whole
56	Repair of Personal Households and Other Services	Repair
57	Hotels, Bars and Restaurants	Hotels
58	Railway Transport	Rail
59	Land Passenger Transport	Land
60	Freight Transport by Road	Freight
61	Air Transport	Air
62	Warehousing and Supporting Transport Activities	Warehouse
63	Post and Courier Services	Post
64	Telecommunications	Telecom
65	Financial Services	Financial
66	Real Estate Activities	RealE
67	Other Computer Related Activities	OthComp
68	Other Business Services	OthBusin
69	Public Service Activities	Public
70	Education Services	Education
71	Health Services	Health
72	Social Services	Social
73	Recreation & Entertainment	Recreation
74	Other Activities	OthActiv

Source: Uganda SAM 2002 (The industry abbreviations OIND were introduced by the contributor.)

Table 2: Tax concordance

Uganda SAM 2002 category	GTAP category
Taxes on production and imports other than VAT	Indirect taxes of production (ProdTax)
Value added taxes – domestic (VAT)	Commodtiy tax on domestic goods (ComTax)
Import duties; VAT on imports*	Commodity taxes on imports (MTax)
-	Import tariffs (MTar)

* Despite its mapping to MTax, this vector still includes import tariffs.

- Not available.

Source: Own contribution based on Uganda SAM 2002

Table 3: Final demand concordance

Uganda SAM 2002 category	GTAP category
Central Rural Q1	Private household consumption (Household)
Central Rural Q2	
Central Rural Q3	
Central Rural Q4	
Central Urban Q1	
Central Urban Q2	
Central Urban Q3	
Central Urban Q4	
Eastern Rural Q1	
Eastern Rural Q2	
Eastern Rural Q3	
Eastern Rural Q4	
Eastern Urban Q1	
Eastern Urban Q2	
Eastern Urban Q3	
Eastern Urban Q4	
Northern Rural Q1	
Northern Rural Q2	
Northern Rural Q3	
Northern Rural Q4	
Northern Urban Q1	
Northern Urban Q2	
Northern Urban Q3	
Northern Urban Q4	
Western Rural Q1	
Western Rural Q2	
Western Rural Q3	
Western Rural Q4	
Western Urban Q1	
Western Urban Q2	
Western Urban Q3	
Western Urban Q4	
Government and Non-Profit*	
Government and Non-Profit*	Government consumption (Government)
Capital Account (column account)	Investment
	Changes in stocks (DSTOCK)
ROW (column account)**	Exports

* Individual consumption expenditure by NPISHs was aggregated with private household consumption, the remainder with government consumption.

** Note that the Uganda SAM 2002 category “ROW” (row account) was mapped to the GTAP category Imports (Mcif).

Source: Own contribution based on Uganda SAM 2002

Table 4: Primary factor concordance

Uganda SAM 2002 category	GTAP category
Unskilled, rural, male	Labor
Unskilled, rural, female	
Unskilled, urban, male	
Unskilled, urban, female	
Semi-skilled, rural, male	
Semi-skilled, rural, female	
Semi-skilled, urban, male	
Semi-skilled, urban, female	
Skilled, rural, male	
Skilled, rural, female	
Skilled, urban, male	
Skilled, urban, female	
High-skilled, rural, male	
High-skilled, rural, female	
High-skilled, urban, male	
High-skilled, urban, female	
Mixed income*	
Mixed income*	Capital
Operating surplus	
Capital account (row account)	
-	Land

* Mixed income was allocated to both labor and capital.

- Not available.

Source: Own contribution based on Uganda SAM 2002

Table 5: Mapping of commodity sectors in Uganda SAM 2002 to GTAP sectors

#	61 (+ 4*) commodity sectors in Uganda SAM 2002		57 GTAP sectors (GSEC)	33 sectors in contributed I-O table (SEC)	#
	Long name	OSEC			
1	Maize	Maize	gro	Cereals	1
2	Millet and Sorghum	MiSorg	gro		
3	Rice, Wheat, Other Cereals	RiWhtOth	pdr, wht, gro, c_b		
4	Cassava	Cassava	v_f	Vegetab	2
5	Potatoes	Potatoes	v_f		
6	Cotton	Cotton	pfb		
7	Tobacco	Tobacco	ocr		
8	Simsim	Sesame	osd		
9	Sunflower	Sunflw	osd		
10	Groundnuts	GNuts	osd		
11	Beans	Beans	v_f		
12	Growing of Other Horticulture Crops	OthHorti	v_f, ocr, pfb, osd		
13	Flowers and Seeds	FlwSeed	ocr, osd		
14	Coffee	Coffee	ocr		
15	Tea	Tea	ocr		
16	Cocoa and Vanilla	CocVan	ocr		
17	Matoke	Matoke	v_f		
18	Passion Fruits	Passion	v_f		
19	Farming of Animals	Lvstock	ctl, oap	Lvstock	3
20	Other Animal Products	OthAnml	oap, rmk, wol, cmt, omt		
21	Agriculture and Animal Husbandry Service Activities, Except	AgrSvc	ctl, oap		
22	Forestry, Logging and Related Service Activities	Forest	frs	Frs	4
23	Fishing, Operation of Fish Hatcheries and Fish Farms; Services	Fishing	fsh	Fsh	5
24	Mining and Quarrying	Mining	omn	Omn	6
25	Processed Food Products	Food	ofd, sgr, pcr, mil, vol	ProcFood	7
26	Manufacture of Alcoholic Products	M_Alc	b_t	BT	8
27	Manufacture of Soft Drinks; Production of Mineral Waters	M_Soft	b_t		
28	Manufacture of Tobacco Products	M_Tobac	b_t		
29	Manufacture of Textile Products	Textile	tex, wap	TexWap	9
30	Manufacture of Leather, Products and Footwear	Leather	lea	Lea	10
31	Sawmilling and Manufacture of Wood Products	Wood	lum	Lum	11
32	Manufacture Paper, Printing and Publishing	Paper	ppp	Ppp	12
33	Petroleum Refining, Manufacture of Products of Coal	PetrCoal	p_c	PC	13
34	Chemical and Pharmaceutical Products	ChemPhar	crp	Crp	14
35	Manufacture of Rubber and Plastic Products	RubPla	crp		
36	Manufacture of Non Metallic Products	NoMetal	nmm	Nmm	15
37	Manufacture of Metal Products and Equipment	Metal	fmp, ele, ome, i_s, nfm	MetalEqu	16

To be continued on the next page.

Table 5 (cont'd): Mapping of commodity sectors in Uganda SAM 2002 to GTAP sectors

#	61 (+ 4*) commodity sectors in Uganda SAM 2002		57 GTAP sectors (GSEC)	33 sectors in contributed IO table (SEC)	#
	Long name	OSEC			
38	Manufacture and Repair of Motor Vehicles and Ships	Motor	mvh, otn, trd	Motor	17
39	Trade Services	Trade	trd		
40	Hotels, Bars and Restaurants	Hotels	trd		
41	Other Manufacturing N.E.C.	OthManu	omf	Omf	18
42	Electricity Supply	ely	ely	Ely	19
43	Collection, Purification and Distribution of Water	wtr	wtr	Wtr	20
44	Building, Construction and Civil Engineering	Build	cns	Cns	21
45	Railway Transport	Rail	otp	Otp	22
46	Passenger Road Transport	PRoad	otp		
47	Goods Road Transport	GRoad	otp		
48	Other Transport Services	OthTrans	otp		
49	Water Transport	wtp	wtp	Wtp	23
50	Air Transport	atp	atp	Atp	24
51	Telecommunications	Telecom	cmn	Cmn	25
52	Banking and Insurance	Finance	isr, ofi	IsrOfi	26
53	Housing and Real Estate Services	House	obs, dwe	ObsDwe	27
54	Lease Services	Lease	obs		
55	Business Services	Business	obs		
56	Public Administration and Defence	PubAdm	osg	Osg	28
57	Education Services	Edu	osg		
58	Medical Services and Social Work	Medical	osg		
59	Social, Cultural and Recreational Services	Social	ros	Ros	29
60	Private Households With Employed Persons	Private	ros		
61	Other Services	OthSvc	ros		
62	Gas Distribution*	gdt	gdt	Gdt	30
63	Coal*	coa	coa	Coa	31
64	Oil*	oil	oil	Oil	32
65	Gas*	gas	gas	Gas	33

* The sector is not available in the original Uganda SAM 2002, but was disaggregated by the contributor.

Source: Uganda SAM 2002; Own contribution based on Uganda SAM 2002, conversations with UBoS and UBoS (2010)

Table 6: Household and government consumption, 2002, IMF-IFS (2011)

	Million Ush	%
Household consumption expenditure, <i>incl.</i> NPISHs	8,644,490	83.96
Government consumption expenditure	1,651,270	16.04
TOTAL	10,295,760	100.00

Note that the table displays rounded values, whereas any calculations were based on exact values.

Source: IMF-IFS (2011); Own calculations based on IMF-IFS (2011)

Table 7: Household and government consumption, 2002, Uganda SAM 2002

	Uganda SAM 2002 value	Target value based on IMF-IFS (2011)		Difference (b) – (a)
	Million Ush (a)		Million Ush (b)	
Household consumption expenditure, <i>excl.</i> NPISHs	8,991,685	83.96% of 10,800,506:	9,068,283	76,598
Government consumption expenditure, <i>incl.</i> NPISHs*	1,808,821	16.04% of 10,800,506:	1,732,223	-76,598
TOTAL	10,800,506		10,800,506	

Note that the table displays rounded values, whereas any calculations were based on exact values.

* This is labelled the “Government and Non-Profit” account in the Uganda SAM 2002.

Source: Uganda SAM 2002; Own calculations based on Uganda SAM 2002 and IMF-IFS (2011)

Table 8: Changes due to splitting the “Government and Non-Profit” account

#	OSEC*	Uganda SAM 2002 (Million Ush)			Non-Profit (Million Ush)	Uganda SAM 2002 after the split (Million Ush)		
		Household	Government and Non-Profit	TOTAL		Household	Government	TOTAL
50	atp	0	1,590	1,590	143	143	1,447	1,590
52	Finance	6,315	7,261	13,576	654	6,969	6,606	13,576
55	Business	0	6,207	6,207	559	559	5,647	6,207
56	PubAdm	0	959,041	959,041	0	0	959,041	959,041
57	Edu	568,945	495,326	1,064,271	44,648	613,593	450,678	1,064,271
58	Medical	180,789	324,074	504,863	29,212	210,001	294,862	504,863
59	Social	128,382	15,322	143,704	1,381	129,763	13,941	143,704
	TOTAL	884,431	1,808,821	2,693,252	76,598	961,029	1,732,223	2,693,252

Note that the table displays rounded values, whereas any calculations were based on exact values.

* OSEC refers to the short name of the commodity sectors in the Uganda SAM 2002 (Table 5).

Source: Uganda SAM 2002; Own calculations based on Uganda SAM 2002 and IMF-IFS (2011)

Table 9: Investment and changes in stocks, 2002, IMF-IFS (2011)

	Million Ush	%
Gross fixed capital formation	2,182,000	98.16
Changes in inventories	40,880	1.84
TOTAL	2,222,880	100.00

Note that the table displays rounded values, whereas any calculations were based on exact values.

Source: IMF-IFS (2011); Own calculations based on IMF-IFS (2011)

Table 10: Investment and changes in stocks, 2002, Uganda SAM 2002

	Uganda SAM 2002 value		Target value based on IMF-IFS (2011)		Difference (b) – (a)
	Million Ush	Million Ush (a)		Million Ush (b)	
“Capital Account” (column)	2,420,211 +3,956*	2,424,167	98.16% of 2,420,211:	2,375,702	-48,465
DSTOCK	0 -3,956*	-3,956	1.84% of 2,420,211:	44,509	48,465
TOTAL	2,420,211	2,420,211		2,420,211	

Note that the table displays rounded values, whereas any calculations were based on exact values.

* 3,956 million Ush is the value that was added to the “Capital Account” (column) of the Uganda SAM 2002 after putting the negative entries to zero and shifting them to DSTOCK, resulting in a decrease in the total of DSTOCK by the same amount.

Source: Uganda SAM 2002; Own calculations based on Uganda SAM 2002 and IMF-IFS (2011)

Table 11: Changes due to splitting the “Capital Account” (column)

#	OSEC*	Uganda SAM 2002 (Million Ush)			Uganda SAM 2002 after the split (Million Ush)		
		“Capital Account” (column)	DSTOCK	TOTAL	Investment	DSTOCK	TOTAL
3	RiWhtOth	1,751	0	1,751	1,716	35	1,751
4	Cassava	2,665	0	2,665	2,611	53	2,665
14	Coffee	-47	0	-47	0	-47	-47
19	Lvstock	33,304	0	33,304	32,638	666	33,304
20	OthAnml	3,092	0	3,092	3,031	62	3,092
22	Forest	3,979	0	3,979	3,900	80	3,979
23	Fishing	1,067	0	1,067	1,045	21	1,067
24	Mining	179	0	179	175	4	179
25	Food	123,209	0	123,209	120,746	2,463	123,209
26	M_Alc	-376	0	-376	0	-376	-376
27	M_Soft	1,493	0	1,493	1,463	30	1,493
28	M_Tobac	19,141	0	19,141	18,758	383	19,141
29	Textile	4,005	0	4,005	3,925	80	4,005
30	Leather	-536	0	-536	0	-536	-536
31	Wood	43,173	0	43,173	42,309	863	43,173
32	Paper	1,686	0	1,686	1,653	34	1,686
33	PetrCoal	-2,997	0	-2,997	0	-2,997	-2,997
34	ChemPhar	5,761	0	5,761	5,646	115	5,761
35	RubPla	1,538	0	1,538	1,508	31	1,538
36	NoMetal	23,763	0	23,763	23,287	475	23,763
37	Metal	208,990	0	208,990	204,812	4,178	208,990
38	Motor	151,280	0	151,280	148,256	3,024	151,280
39	Trade	23,204	0	23,204	22,741	464	23,204
40	Hotels	1,693,944	0	1,693,944	1,660,078	33,866	1,693,944
41	OthManu	67,126	0	67,126	65,784	1,342	67,126
44	Build	25	0	25	24	0	25
45	Rail	1,870	0	1,870	1,832	37	1,870
46	PRoad	3	0	3	3	0	3
47	GRoad	7,479	0	7,479	7,329	150	7,479
58	Medical	340	0	340	333	7	340
61	OthSvc	100	0	100	98	2	100
	TOTAL	2,420,211	0	2,420,211	2,375,702	44,509	2,420,211

Note that the table displays rounded values, whereas any calculations were based on exact values.

* OSEC refers to the short name of the commodity sectors in the Uganda SAM 2002 (Table 5).

Source: Uganda SAM 2002; Own calculations based on Uganda SAM 2002 and IMF-IFS (2011)

Table 12: Ugandan imports of Coal, Oil, Gas and Other Mining, 2002, UN-Comtrade (2011)

GTAP sectors	UN-Comtrade (2011), SITC Rev. 1 [4-digit codes]	Imports (US-\$)	Subtotal (US-\$)	%*
Coal	Coal /anthracite, bituminous/ [3214]	6,507	13,192	0.13
	Lignite briquettes and lignite [3216]	170		
	Peat briquettes & peat [3217]	4,793		
	Coke & semi coke of coal, of lignite or of peat [3218]	1,722		
Oil	Petroleum, crude & partly refined [3310]	10,339	10,339	0.10
Gas	Gas, natural [3411]	1,024,088	1,024,130	9.78
	Gas, manufactured [3412]	42		
Other Mining	Natural fertilizers of anim./veget. origin [2711]	170	9,420,671	89.99
	Natural sodium nitrate [2712]	209		
	Natural phosphates, whether or not ground [2713]	1,317		
	Building & monumental stone, rough [2731]	50,346		
	Gypsum, plasters, limestone flux & calcareous st. [2732]	787,449		
	Sand excluding metal bearing sand [2733]	6,473		
	Gravel & crushed stone [2734]	144,981		
	Sulphur, not sublimed, precipitd or colloidal [2741]	17,966		
	Industrial diamonds [2751]	20		
	Natural abrasives [2752]	73,248		
	Natural asphalt & natural bitumen [2761]	1,259,266		
	Clay & other refractory minerals, nes [2762]	60,386		
	Salt [2763]	6,772,967		
	Asbestos, crude, washed or ground [2764]	522		
	Quartz, mica, felspar, fluorspar, cryolite etc. [2765]	47,330		
	Minerals crude, nes [2769]	189,964		
	Ores and concentrates of copper, incl. matte [2831]	3		
	Ores and concentrates of zinc [2835]	822		
	Ores & concentrates of non ferrous base met. nes [2839]	6,756		
	Silver & platinum ores [2850]	336		
	Pearls, not set or strung [6671]	140		
TOTAL		10,468,332	10,468,332	100.00

* The percentages are rounded values. Any further calculations based on these percentages also use the rounded values, not the exact ones.

Source: UN-Comtrade (2011); Own calculations based on UN-Comtrade (2011) and McDougall (1996)

**Table 13: Ugandan imports of Coal, Oil, Gas and Other Mining, 2002,
Uganda SAM 2002**

			Mcif (Million Ush)	MTax (Million Ush)	Mcif + MTax (Million Ush)
Mining and Quarrying			27,469.4	2,149.0	29,618.4
Coal	0.13%	=	35.7	2.8	38.5
Oil	0.10%	=	27.5	2.1	29.6
Gas	9.78%	=	2,686.5	210.2	2,896.7
Other Mining	89.99%	=	24,719.7	1,933.9	26,653.6

Note that the table displays rounded values, whereas any calculations were based on exact values.

Source: Uganda SAM 2002; Own calculations based on Uganda SAM 2002, UN-Comtrade (2011) and McDougall (1996)

Table 14: Changes due to the allocation of “Mixed Income”

#	OIND*	Uganda SAM 2002 (Million Ush)				Value-added shares (%)		MI allocation (Million Ush)		Uganda SAM 2002 after allocating MI (Million Ush)		
		MI	L	K	TOTAL	L	K	L	K	L	K	TOTAL
1	MaizeG	96,307	52,638	1,101	150,045	98	2	94,334	1,972	146,972	3,073	150,045
2	RiceG	27,015	12,339	942	40,296	93	7	25,099	1,916	37,438	2,859	40,296
3	WheatG	839	2,164	572	3,575	79	21	664	176	2,828	748	3,575
4	Root	362,206	162,554	0	524,760	100	0	362,206	0	524,760	0	524,760
5	CottonG	8,109	6,422	0	14,531	100	0	8,109	0	14,531	0	14,531
6	TobacGFlue	3,637	3,486	3,637	10,759	49	51	1,780	1,857	5,266	5,493	10,759
7	TobacGFire	5,107	5,156	0	10,263	100	0	5,107	0	10,263	0	10,263
8	TobacGAir	15,289	17,195	15,289	47,773	53	47	8,093	7,196	25,288	22,485	47,773
9	SimG	13,630	7,337	15	20,981	100	0	13,603	27	20,940	41	20,981
10	GroundG	33,449	22,746	0	56,195	100	0	33,449	0	56,195	0	56,195
11	Cereals	116,151	0	0	116,151	86**	14**	99,887	16,264	99,887	16,264	116,151
12	SugarG	8,110	19,145	8,110	35,365	70	30	5,697	2,413	24,842	10,523	35,365
13	BeansG	214,518	87,831	0	302,349	100	0	214,518	0	302,349	0	302,349
14	FlowerG	-287	5,522	11,919	17,155	..	..	0	-287	5,522	11,633	17,155
15	CoffeeG	63,450	34,182	9,555	107,187	78	22	49,588	13,862	83,770	23,417	107,187
16	TeaG	2,752	17,494	630	20,877	97	3	2,657	96	20,151	726	20,877
17	CocoaG	2,680	662	0	3,342	100	0	2,680	0	3,342	0	3,342
18	VanillaG	7,752	4,146	0	11,898	100	0	7,752	0	11,898	0	11,898
19	MatokeG	226,287	89,473	0	315,760	100	0	226,287	0	315,760	0	315,760
20	Passion	12,372	9,424	538	22,334	95	5	11,704	668	21,128	1,206	22,334
21	CattleF	58,133	12,369	78	70,580	99	1	57,769	364	70,138	442	70,580
22	GoatF	105,288	12,858	923	119,069	93	7	98,236	7,052	111,094	7,975	119,069
23	PoultryF	22,600	1,020	0	23,620	100	0	22,600	0	23,620	0	23,620
24	Forest	400,464	1,621	0	402,085	100	0	400,464	0	402,085	0	402,085
25	Fishing	236,767	29,446	10	266,223	100	0	236,686	80	266,132	90	266,223
26	Mining	26,060	6,750	2,507	35,316	73	27	19,002	7,057	25,752	9,564	35,316
27	FishP	2,149	5,201	4,881	12,231	52	48	1,109	1,040	6,310	5,922	12,231
28	OilsFats	41,854	14,850	51,124	107,828	23	77	9,421	32,433	24,271	83,557	107,828
29	DairyM	3,215	2,317	4,690	10,222	33	67	1,063	2,152	3,380	6,842	10,222
32	Distill	16,448	15,509	53,771	85,728	22	78	3,682	12,766	19,191	66,537	85,728
35	StarchM	4,482	732	19	5,233	97	3	4,366	116	5,098	135	5,233
36	CottonM	1,308	9,858	-7,893	3,273	502	-402	6,563	-5,255	16,421	-13,148	3,273
37	TextileM	3,533	2,306	6,857	12,696	25	75	889	2,644	3,195	9,501	12,696
38	WearingM	19,649	2,837	714	23,200	80	20	15,698	3,951	18,535	4,665	23,200
39	ApparelM	2,965	1,211	3,938	8,114	24	76	697	2,268	1,908	6,205	8,114
40	Wood	-89,973	15,981	127,621	-201,613	..	..	0	-89,973	15,981	-217,594	-201,613
48	ElectroM	1,329	1,103	-7,136	-4,703	-18	118	-243	1,572	860	-5,563	-4,703
51	Building	470,771	135,667	454,890	1,061,328	23	77	108,149	362,622	243,816	817,512	1,061,328
53	Motor	-6,734	91,778	3,996	89,039	..	..	0	-6,734	91,778	-2,739	89,039
54	Retail	513,935	149,548	271,040	934,522	36	64	182,739	331,195	332,287	602,235	934,522
55	Whole	130,778	52,420	113,851	297,049	32	68	41,230	89,548	93,650	203,399	297,049

Table 14 (cont'd): Changes due to the allocation of “Mixed Income”

#	OIND*	Uganda SAM 2002 (Million Ush)				Value- added shares (%)		MI allocation (Million Ush)		Uganda SAM 2002 after allocating MI (Million Ush)		
		MI	L	K	TOTAL	L	K	L	K	L	K	TOTAL
56	Repair	17,736	91,772	74,493	184,002	55	45	9,790	7,947	101,562	82,440	184,002
		209,899										
57	Hotels	9	73,022	229,947	512,869	24	76	50,590	159,309	123,612	389,257	512,869
59	Land	25,408	18,442	184,178	228,028	9	91	2,313	23,095	20,755	207,273	228,028
62	Warehouse	-469	7,188	9,970	16,689	..	..	0	-469	7,188	9,501	16,689
		954,081										
66	RealE	1	2,870	5,380	962,331	35	65	331,903	622,178	334,773	627,558	962,331
67	OthComp	2,395	5,369	2,707	10,470	66	34	1,592	803	6,961	3,509	10,470
68	OthBusin	37,563	83,493	51,582	172,638	62	38	23,218	14,344	106,711	65,927	172,638
70	Education	4,006	702,368	148,904	855,278	83	17	3,305	701	705,673	149,604	855,278
71	Health	25,921	118,490	51,067	195,478	70	30	18,114	7,807	136,604	58,874	195,478
73	Recreation	481	27,032	-21,400	6,114	480	-380	2,309	-1,828	29,341	-23,228	6,114
74	OthActiv	67,292	26,675	-6,660	87,307	133	-33	89,685	-22,393	116,360	-29,053	87,307

Note that the table displays rounded values, whereas any calculations were based on exact values.

MI refers to mixed income, L to labor and K to capital.

* OIND refers to the short name of the industries in the Uganda SAM 2002 (Table 1).

** The value-added shares for Cereals were calculated as the simple averages of the labor (capital) shares of the RiceG and WheatG industries.

.. Since negative “Mixed Income” was shifted entirely to capital, the allocation of “Mixed Income” was not based on the value-added shares.

Source: Uganda SAM 2002; Own calculations based on Uganda SAM 2002

Table 15: Calculation of “normal” capital shares

OSEC*	“Normal” capital share (%)	Calculation of “normal” capital share
Cotton	9.81	Since Cotton is mapped to the SEC sector Vegetab in the contributed I-O table (see Table 5), the “normal” capital share for Cotton was calculated as the simple average of the capital shares of the other OSEC commodities mapped to Vegetab, i.e. Cassava (0.05%), Potatoes (0.00%), Tobacco (40.67%), Sesame (0.20%), Sunflw (0.20%), GNuts (0.00%), Beans (0.00%), OthHorti (4.51%), FlwSeed (60.12%), Coffee (22.70%), Tea (3.50%), CocVan (0.00%), Matoke (0.00%), and Passion (5.40%). The capital shares of those 14 commodities were taken from the diagonalized I-O table of the Uganda SAM 2002.
Forest	0.00	The commodity Forest is mainly produced by the industry “Forestry, Logging and Related Service Activities.” Therefore, the capital share (0.00%) of that industry was used as the “normal” capital share for Forest. The capital share was taken from the non-diagonalized I-O table of the Uganda SAM 2002.
Textile	47.64	The commodity Textile is mainly produced by the industries “Cotton and associated activities,” “Wood & wood products,” “Manufacture of textiles” and “Manufacture of wearing apparel, except fur apparel.” The former two industries, however, are associated with negative capital gains in the non-diagonalized I-O table of the Uganda SAM 2002. Therefore, the “normal” capital share for Textile was calculated as the simple average of the capital shares of the latter two industries (74.83% and 20.11%, respectively), taken from the non-diagonalized I-O table, and the extracted “normal” capital share of Wood (47.98%).
Wood	47.98	Since the commodity Wood is mainly produced by the industry “Wood & wood products,” which is associated with negative capital gains in the non-diagonalized I-O table of the Uganda SAM 2002, the “normal” capital share for Wood was taken directly from the Uganda I-O table 1992, sector “lum” (see Blake 2002).
PetrCoal	63.79	The commodity PetrCoal is solely produced by the industries “Wood & wood products” and “Manufacture of petroleum and chemical products.” Since the first industry, however, is associated with negative capital gains in the non-diagonalized I-O table of the Uganda SAM 2002, the “normal” capital share for PetrCoal was calculated as the simple average of the capital share of the latter industry (79.60%), taken from the non-diagonalized I-O table, and the “normal” capital share of Wood (47.98%).
Motor	53.62	The commodity Motor is mainly produced by the industries “Manufacture of metal products,” “Manufacture of electronics, etc.” and “Motor repair and spare parts,” whereby the second industry is associated with negative capital gains in the non-diagonalized I-O table of the Uganda SAM 2002. Therefore, the “normal” capital share for Motor was calculated as the simple average of the capital shares of the first and third industries (75.24% and 4.17%, respectively), taken from the non-diagonalized I-O table, as well as the capital shares of the commodities Trade (61.48%) and Hotels (73.58%), taken from the diagonalized I-O table. Trade and Hotels were included since they are mapped to the same sector like Motor in the contributed I-O table (see Table 5).

To be continued on the next page.

Table 15 (cont'd): Calculation of “normal” capital shares

OSEC*	“Normal” capital share (%)	Calculation of “normal” capital share
Finance	23.16	Since the commodity Finance is mainly produced by the industry “Financial services,” which is associated with negative capital gains in the non-diagonalized I-O table of the Uganda SAM 2002, the “normal” capital share for Finance was taken directly from the Uganda I-O table 1992, sector “finance” (see Blake 2002).
Social	34.48	The commodity Social is mainly produced by the industries “Other business services,” “Public service activities,” “Social services,” “Recreation & entertainment” and “Other activities.” The latter two industries, however, are associated with negative capital gains in the non-diagonalized I-O table of the Uganda SAM 2002. Therefore, the “normal” capital share for Social was calculated as the simple average of the capital shares of the former three industries (38.19%, 12.01% and 53.25%, respectively), taken from the non-diagonalized I-O table.
Private	37.99	The commodity Private is solely produced by the industry “Other activities,” which is associated with negative capital gains in the non-diagonalized I-O table of the Uganda SAM 2002. Therefore, the “normal” capital share for Private was calculated as the simple average of the extracted “normal” capital shares of Social (34.48%) and OthSvc (41.50%). The reason for doing so was that all three commodities are mapped to one sector, Ros, in the contributed I-O table (see Table 5).
OthSvc	41.50	The commodity OthSvc is mainly produced by the industries “Repair of personal households and other services,” “Other business services,” and “Other activities.” The latter industry, however, is associated with negative capital gains in the non-diagonalized I-O table of the Uganda SAM 2002. Therefore, the “normal” capital share for OthSvc was calculated as the simple average of the capital shares of the former two industries (44.80% and 38.19%, respectively), taken from the non-diagonalized I-O table.

Note that the table displays rounded values, whereas any calculations were based on exact values.

* OSEC refers to the short name of the commodity sectors in the Uganda SAM 2002 (Table 5).

Source: Uganda I-O table 1992; Own calculations based on Uganda SAM 2002 and Uganda I-O table 1992

Table 16: Calculation of “normal” capital gains

OSEC*	Diagonalized I-O table extracted from Uganda SAM 2002 (Million Ush)		“Normal” capital share (%)	“Normal” labor share (%)	“Normal” value added (Million Ush)	Diagonalized I-O table with non-negative capital (Million Ush)
	Capital	Labor				“Normal” capital gains
Cotton	-267	14,869	9.81	90.19	16,487	1,617
Forest	-1,776	402,226	0.00	100.00	402,226	0
Textile	-49,295	44,258	47.64	52.36	84,528	40,269
Wood	-158,533	12,723	47.98	52.02	24,459	11,735
PetrCoal	-266	27	63.79	36.21	75	48
Motor	-1,621	4,319	53.62	46.38	9,313	4,993
Finance	-136,253	230,447	23.16	76.84	299,905	69,458
Social	-8,983	70,908	34.48	65.52	108,228	37,320
Private	-6,978	27,946	37.99	62.01	45,066	17,120
OthSvc	-3,767	73,396	41.50	58.50	125,454	52,058

Note that the table displays rounded values, whereas any calculations were based on exact values.

* OSEC refers to the short name of the commodity sectors in the Uganda SAM 2002 (Table 5).

Source: Uganda I-O table 1992; Own calculations based on Uganda SAM 2002 and Uganda I-O table 1992