

Costa Rica

Marco V. Sánchez and Carlos Ludena

1. Introduction

This document describes the steps behind the creation of the first Input-Output (I-O) table of Costa Rica for the Global Trade Analysis Project (GTAP).¹ The GTAP I-O table for Costa Rica is based on a Social Accounting Matrix (SAM) for the year 2002 built by Sánchez (2006) under the auspices of the Sub-regional Office of the Economic Commission for Latin America and the Caribbean (ECLAC) in Mexico. The 2002 SAM was constructed using data from the Department of National Accounts of the Central Bank of Costa Rica which proactively reviewed the SAM building process and approved the final product.

This document is divided into 4 sections. The next section explains the data and the construction of the 2002 SAM, its particular characteristics and its salient economic features. Section 3 describes the process of building the GTAP ready Data Base, outlining some of the assumptions made about the structure of the source data so it could be consistent with GTAP specifications. Finally, section 4 describes briefly the sectoral aggregation and breakdowns.

2. Source Data

2.1 Data Characteristics

The SAM of Costa Rica has a commodity (product)-by-industry (activity) format, and includes 78 commodities and 41 activities. Its units are denominated in millions of local currency units (*colones*) in nominal terms at 2002 purchasers' prices. Table 1A provides a list of the 78 commodities, Table 2A expands this list and provides more detail on the commodity-group composition, and Table 3A lists the activities (or industries) in the original 2002 SAM. The commodity aggregation of Costa Rican SAM sectors to adapt it in compliance with the corresponding GTAP sectoral breakdown is outlined in Table 4A. Finally, Table 5A provides the concordance between the Costa Rican I-O commodity data and the GTAP sector classification (GSC2) and Table 6A provides a summary diagram of the procedures followed to convert the source data to the GTAP format.

¹ The preparation of the I-O table for GTAP was facilitated by resources from the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), the Department of Economic and Social Affairs of the United Nations (UN-DESA) and Germany's international cooperation agency GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit). The original table and Social Accounting Matrix (SAM) was prepared with the auspices of ECLAC as mentioned in the text. The inclusion of Costa Rica into GTAP is the result of a collaborative effort of the International Trade and Integration Division of ECLAC and the Development Policy and Analysis Division of UN-DESA to facilitate improved quantitative trade and macroeconomic policy analysis in Central America.

2.2 Construction of Costa Rica's SAM

The SAM for Costa Rica was built by Sánchez (2006), following a “top-down approach.” The cells in the SAM were initially determined by a “relatively” aggregated subset of national accounts, to later on estimate a subset of more disaggregated information that allows re-calculating the initial total aggregates, which act as control in the estimation process (Thorbecke, 2003). That is, Sánchez (2006) first constructed a macroeconomic matrix with the goal of later on estimating a “microeconomic” matrix, with an important level of disaggregation of factor and institutional income flows.

For the purpose of this technical note, we only discuss the steps that we considered relevant in the adaptation of the I-O table for GTAP and omit those aspects of the Costa Rican SAM that were not included in the data for the GTAP Data Base.

Macroeconomic SAM

Following the format of a conventional SAM, the macroeconomic SAM of Costa Rica –the column and row totals of which served as controls in the whole estimation process – was constructed using a Supply and Use (SU) table for 2002, in millions of *colones*; several shares on institutional transfers, most of which were estimated from an Integrated Economic table for 2000²; the 2002 current account of the Balance of Payments; and the 2002 fiscal accounts. All this information was provided by the Central Bank of Costa Rica, except for the fiscal accounts which were provided by the Ministry of Finance.³ The macroeconomic SAM of Costa Rica was fully consistent with the national accounts of Costa Rica for the year 2002.

Microeconomic SAM

The shift from the macroeconomic SAM to the final “microeconomic” SAM was performed on the basis of building various intermediate disaggregated SAMs. The SU table for 2002 was the main source of information in building the final SAM, once some critical adjustments had been implemented. These adjustments included the treatment of the CIF and FOF adjustment, direct purchases that are not directly linked with any commodity, financial intermediation services indirectly measured (FISIM), and foreign-exchange differential.

The use of the adjusted SU table for 2002 combined with miscellaneous pieces of information on intermediate consumption by activity from the Central Bank of Costa Rica and some cells of the macroeconomic SAM (i.e., flows of income and outlays of institutions, including the rest of the world) led to the construction of the first intermediate disaggregated SAM. This SAM was unbalanced owing to two limitations of the original SU table: inventory changes were not fully distributed across commodities and there was no full account of all intermediate-consumption transactions across activities. The SAM was balanced by solving a constrained minimization problem based on the cross entropy method described in Robinson et al. (2001).⁴

The first fully balanced, intermediate disaggregated SAM was further opened up various times to, in the following order: (i) disaggregate the agricultural sector; (ii) classify labor by skill level, occupational category, and sex; (iii) split up the non-government domestic institution account into accounts for enterprises, urban households, and rural households; and (iv) classify

² The Central Bank of Costa Rica kindly provided these data indicating however that these were preliminary as various adjustments were pending to fully close the table.

³ For more detail on data sources, please see Annex 1 of Sánchez (2006).

⁴ A total of 3,836 cells of the SAM were constrained (fixed) in the balancing process.

the “rest of the world” account by trading partner. The final product was a fully balanced, 2002 SAM with 155 rows and 155 columns.

To include Costa Rica into the GTAP Data Base, we only used the first fully balanced, intermediate disaggregated SAM; that is, that disaggregating the agricultural sector. The other accounts breakdown for labor, non-government domestic institutions, and trade by trading partner was not needed for the purposes of the adaptation to the GTAP setup.

3. I-O Table Construction for GTAP

The information recorded in the 2002 Costa Rican SAM constructed by Sánchez (2006) was transformed in order to set it up in the GTAP format following the guidelines in Huff et al. (2000). The main steps followed for this purpose are explained in this section.

3.1 Make Matrix

Because the GTAP Data Base is set up in a commodity by commodity format, the multi-product (commodity by industry) make matrix for Costa Rica had to be converted into a single-product (commodity by commodity) table. We diagonalized the make matrix by moving values of a commodity j across industries i to industry j . That is, we aggregated the product of each of the various industries which produce the same commodity to yield a sector that produces a single commodity. As a consequence, there was no longer room for secondary production in the Costa Rican matrix.

3.2 Use Matrix

3.2.1 Value Added to ORANIG Factors (Labor, Capital and Land)

Value added in the source data accounted for labor and capital. Value added for land was set to zero for all sectors, since the information available did not account for this factor neither would it permit us to calculate shares as to separate the portion that presumably belongs to land rents which was then considered as part of the capital factor remuneration (i.e., net operating surplus). Three sectors legally recorded a negative return to capital: that is, “Coffee,” “Basic Grains,” and “Financial Intermediation.”⁵ This posed a problem as the GTAP setup does not allow for negative entries in factor remuneration.

We adjusted the aforementioned negative returns in capital factor income to turn them into positive values using sector-specific, average factor-income shares from SAMs estimated for Guatemala and Nicaragua (Table 1). The values of capital factor income relative to labor factor income were adjusted such that these would resemble the factor-income structure implied by the average shares in Table 1. Changes in inventories were accordingly and proportionally adjusted to maintain overall accounting consistency and also reproduce the initial values of aggregate demand and supply for the relevant commodities.

⁵ The negative return to capital for “Financial Intermediation” resulted from duly allocating the FISIM across the relevant activity in the original SU table (see Sánchez, 2006: 31). “Coffee” and “Basic Grains,” on the other hand, are sectors that recorded a capital loss in 2002 as a reflection of which these activities’ operating surplus is negative in the national accounts. The two sectors oversupplied the market by means of which they pushed prices down such that their revenue was not enough to cover production costs.

Table 1. Shares of Labor and Capital in Value Added

Country	Factor	Coffee	Basic Grains	Financial Intermediation
Costa Rica ¹	Labor	65	72	44
	Capital	35	28	56
Guatemala	Labor	64	63	47
	Capital	36	37	53
Nicaragua	Labor	66	80	41
	Capital	34	20	59

¹ Shares for Costa Rica correspond to the average share of Guatemala and Nicaragua.

Source: SAMs from Guatemala (SEGEPLAN, 2006) and Nicaragua (Sánchez and Vos, 2006).

Finally, value added was transformed to commodity space by applying commodity shares of total output within the same industry j from the make matrix to distribute values by commodity from industry i to industry j in value added.

3.2.2 Re-exports

GTAP does not explicitly record re-exports in its data base. For this reason, re-exports that had been recorded in the initial I-O table for Costa Rica were eliminated. Specifically, re-exports were subtracted from total exports and total imports (including import duties) using our own estimated re-export shares by commodity.⁶

3.2.3 Construction of the Tax Matrix

There are four types of taxes registered in the 2002 SAM for Costa Rica: a) net taxes on goods and services (including VAT, special consumption taxes and subsidies), b) tariffs, c) net indirect taxes on production activities, and d) direct income taxes on domestic non-government institutions. The first two are vectors indexed by commodity, and the last one is a vector indexed by industry or activity. Only the first two taxes are used for the construction of the tax matrix for the GTAP adaptation. Net indirect taxes on production are used to estimate total output as further explained below (see section 3.6).

Using the data previously described, a tax matrix was estimated by allocating all tax vectors across intermediate and final demand (excluding the change in stocks and exports), using a coefficients matrix of shares of intermediate and final demand in total demand by commodity. Finally, the row of import tariffs was transformed into a matrix using the coefficients matrix of shares of intermediate and final demand in total demand for commodities. This was later on added to the import component of the Use Matrix including taxes (UP).

3.2.4 Use Matrix With Tax (UP) and Without (UF) Taxes

The Use Matrix was also transformed from a commodity-by-industry matrix into a commodity-by-commodity matrix. To perform this change, we applied commodity shares of total output within the same industry j according to the make matrix in order to distribute values by commodity from industry i to industry j in the Use Matrix. We aggregated each of the various industries which consumed a given commodity x to yield the intermediate use of that commodity, each of the various industries which consumed another given commodity y to yield the intermediate use of that same commodity, and so on. These new sectors have a cost structure that

⁶ The shares used are the following: 2.09%, for fuels and basic chemical substances; 0.31%, for machinery and equipment; 1.03% for the temporary-admission *maquila*; and, 20.45% for the free trade zone.

is a share-weighted sum of the cost structure of the parent industries that produce these commodities (in the make matrix).

To estimate the Use Matrix including taxes (UP) we first incorporated the values of the column vector for “trade and transportation margins” into the commodity “trade” of the modified commodity-by-commodity Use Matrix. This adjustment captured margins across commodities, and allowed to maintain the balance between sales and costs. To produce the Use Matrix excluding taxes (UF), we subtracted the values of the tax and tariff matrices estimated from the UP matrix. As further indicated in what follows, these two matrices needed to be split up to separate domestic use from import use.

3.2.5 Separating Domestic and Import Uses

GTAP requires the separation of import and domestic use for both UP and UF matrices. However, for Costa Rica, imports in the 2002 SAM are accounted only as a row of total imports by commodity. To separate domestic use from import use in the UP and UF matrices, we first estimated a share matrix of intermediate and final demand use by product (excluding exports, allocated entirely into domestic use). In this shares matrix, for each row of the total Use Matrix, we computed the percentage of the row total allocated to each sector. That is, the total use of a commodity by each activity in intermediate and final demand. This procedure implicitly assumes that imports have the same use pattern as domestic commodities. Though not the best approach (particularly when there is a lot of re-exportation), this was deemed to be a good approximation to construct the import matrix considering the data and information available.

The import matrix (including import duties) was estimated using the shares matrix and the vector of imports, by multiplying each commodity total by the appropriate percentage for each sector across intermediate and final demand. That is, an import matrix was created by means of pro-rating the totals across uses by applying the structure implied by the total Use Matrix. Domestic use (tax excluded) was estimated by subtracting the import matrix from the UF matrix. As explained before, all exports were included in the domestic Use Matrix as re-exports are not allowed in the GTAP Data Base.

To estimate tax-inclusive domestic and import use matrices, we first split the matrix of net taxes into domestic and import taxes. For that, we first estimated a share matrix of import use in total use, which was calculated by dividing the values of the import Use Matrix (excluding taxes) by the UF matrix. The use of this share matrix enabled estimation of two tax matrices: one for domestic use and another for import use. These two matrices were subsequently added to the corresponding domestic and import use (tax excluded) to calculate both domestic and import use, tax inclusive.

Finally, the resulting domestic and import tax matrices were finally subtracted from the matrices for domestic and import uses with taxes (UP) to obtain those without taxes (UF).

3.2.6 Output (OP) and Imports, Duty Free (MF)

To obtain a vector of output of sector i non-commodity net indirect tax included (vector “OP” in GTAP notation), we added the total sum of domestic and imports intermediate use by commodity (column-wise), total value added by commodity, and other production taxes. Finally, to produce a vector of imports by commodity with import duties excluded (vector “MF” in GTAP notation) we removed import duties from the vector of total imports by commodity (tax excluded).

4. *Commodity Aggregation and Breakdown*

Costa Rica's 78 commodities were merged into 36 commodities (Table 4A), while maintaining overall accounting consistency. The main purpose of this new commodity aggregation was to map multiple Costa Rican commodity groups into single GTAP sectors. Only *dwellings* (*dwe*) could not be directly mapped to any sector of the Costa Rican matrix due to a lack of data. Consequently, zero values had to be assigned to this sector.

Finally, the mapping and sectoral split of the 36 aggregated sectors of the derived Costa Rica I-O table into the 57 GSC2 sectors was performed at the GTAP Center, using the cost structure of their "GTAP Representative Table" and the agriculture I-O split procedure (Dimaranan and McDougall, 2002, chapter 13). Table 5A shows the mapping from the 36 aggregated sectors to GTAP 57 sectors.

References

- Dimaranan, B.V. and R.A. McDougall. 2002. *Global Trade, Assistance, and Production: The GTAP 5 Data Base*. Center for Global Trade Analysis, Purdue University.
- Huff, K., R. McDougall, and T. Walmsley. 2000. "Contributing Input-Output Tables to the GTAP Data Base", GTAP Technical Paper No. 1, January 2000.
- Robinson, S., A. Cattaneo, and M. El-Said. 2001. "Updating and Estimating a Social Accounting Matrix Using Cross Entropy Methods", *Economic Systems Research* 13(1): 47-64.
- Sánchez C., M.V. 2006. "Matriz de contabilidad social (MCS) 2002 de Costa Rica y los fundamentos metodológicos de su construcción" Serie Estudios y Perspectivas No. 47. Sede Subregional de la CEPAL en México.
- Sánchez C., M.V. and Rob Vos. 2006. "Construcción de una Matriz de Contabilidad Social (MCS) para Nicaragua." Appendix A3 in "*Impacto del CAFTA en el crecimiento, la pobreza y la desigualdad en Nicaragua: Una evaluación ex-ante usando un modelo de equilibrio general computable dinámico*". Managua: Ministerio de Fomento, Industria y Comercio and UNDP.
- SEGEPLAN. 2006. "Matriz de Contabilidad Social para Guatemala, 2001". The Hague. Institute of Social Studies. February.
- Thorbecke, E. 2003. "Towards a Stochastic Social Accounting Matrix for Modelling", *Economic Systems Research* 15(2): 185-96.

Appendix

Table 1A. Commodity classification in Costa Rica

No.	Product Name	Product Name (in Spanish)
1	Corn	Maíz en grano
2	Paddy rice	Arroz con cáscara
3	Potato	Papa
4	Beans	Fríjol
5	Cabbage	Repollo
6	Tomato	Tomate
7	Chayote	Chayote
8	Plantain	Plátano
9	Heart Palm	Palmito
10	Cassava	Yuca
11	Onions	Cebolla y cebollín
12	Carrots	Zanahoria
13	Banana	Banano
14	Pineapple	Piña
15	Orange	Naranja
16	Melon	Melón
17	Oil palm	Palma africana
18	Madagascar dragon tree	Marginata
19	Flowers	Flores
20	Coffee, not roasted	Café en fruta
21	Cacao	Cacao en grano, crudo o tostado
22	Raw tobacco	Tabaco sin elaborar
23	Sugar Cane	Caña de azúcar
24	Other agriculture	Otros agrícolas
25	Bovine cattle, live	Ganado bovino, vivo
26	Pigs, live	Ganado porcino, vivo
27	Poultry, live	Aves de corral, vivas
28	Raw milk	Leche sin elaborar
29	Eggs, fresh	Huevos frescos
30	Forestry	Madera
31	Fishing	Pescado, fresco o refrigerado
32	Minerals	Minerales
33	Electric Energy	Energía eléctrica
34	Natural water	Agua natural
35	Meat (includes bovine, pigs, poultry)	Carnes (incluye vacuno, porcino, aves)
36	Fish, crustaceans, and other marine products	Pescado, crustáceos y otros productos marinos
37	Processed Fruit and Vegetable Products	Envasado y conservados de frutas y verduras
38	Animal and vegetable oils and fats	Aceites y grasas animales y vegetales
39	Dairy products	Productos lácteos
40	Milling products, except coffee	Productos de molinería, excepto beneficiado de café
41	Coffee, golden	Café oro
42	Bakery products	Productos de panadería
43	Sugar	Azúcar
44	Cacao, chocolate and sugar confectionary	Cacao, chocolate y artículos de confitería
45	Other food products	Productos alimenticios diversos
46	Prepared food for animals	Alimentos preparados para animales

Table 1A. Commodity classification in Costa Rica

47	Beverages and tobacco	Bebidas y Tabaco
48	Textiles and wearing apparel	Textiles y prendas de vestir
49	Leather and leather products, including footwear	Productos de cuero y sucedáneos de cuero, incluye calzado
50	Wood and wood products, including furniture	Madera y productos de la madera, incluidos los muebles
51	Paper and paper products	Papel y cartón, y productos de papel y cartón
52	Fuels and basic chemical substances	Combustibles y sustancias químicas básicas
53	Fertilizers and pesticides	Abonos y plaguicidas
54	Synthetic resins and plastic products	Resinas sintéticas y materias plásticas
55	Paint, varnishes and similar products	Pinturas, barnices y lacas
56	Pharmaceutical and medical products	Productos farmacéuticos y medicamentos
57	Soap and cleaning products, perfumes and other beauty products	Jabón y preparados de limpieza, perfumes y preparados de tocador
58	Other chemical products	Otros productos químicos
59	Tires and rubber products	Llantas y productos de caucho
60	Non metallic mineral products, except refined oil, coal and mineral products	Productos minerales no metálicos, exceptuando los derivados del petróleo y el carbón, y la minería
61	Basic metals	Metales básicos
62	Metal products	Productos metálicos
63	Machinery and equipment	Maquinaria y equipo
64	Reconstruction, repair and maintenance of vehicles and transport material	Reconstrucción, reparación y mantenimiento de vehículos y material de transporte
65	Other manufactures, small enterprises and independent workers	Otros manufacturados, pequeña industria y trabajadores independientes
66	Temporary admission (Maquila)	Admisión temporal (maquila)
67	Free Trade Zone	Zona franca
68	Construction	Construcción
69	Trade and transport services, warehousing, mail and telecommunications	Comercio y servicios de transporte, almacenamiento, correos y telecomunicaciones
70	Hotel and restaurant Services	Servicios de hotelería y en restaurantes
71	Financial and Insurance Services	Servicios de intermediación financiera y seguros
72	Research and Development Services	Servicios de investigación y desarrollo
73	Public Administration Services	Servicios de administración pública
74	Education Services	Servicios de enseñanza
75	Medical and dental services	Servicios médicos y odontológicos
76	Social Assistance Services	Servicios de asistencia social
77	Sewage and waste management, cleaning services and other environmental protection services	Alcantarillado y eliminación de desperdicios, servicios de saneamiento y otros servicios de protección al medio ambiente
78	Other Services	Otros servicios

Table 2A. Detailed Commodity classification (in Spanish) in Costa Rica's 2002 SAM

No.	Product (in Spanish)
1	Maíz en grano
2	Arroz con cáscara
3	Papa
4	Frijol
5	Repollo
6	Tomate
7	Chayote
8	Plátano
9	Palmito
10	Yuca
11	Cebolla y cebollín
12	Zanahoria
13	Banano Banano Banano criollo
14	Piña
15	Naranja
16	Melón
17	Palma africana
18	Marginata
19	Flores
20	Café en fruta
21	Cacao en grano, crudo o tostado
22	Tabaco sin elaborar
23	Caña de azúcar
24	Otros Agrícolas Grupo otros Producción de activos cultivados Servicios agrícolas en general
25	Ganado bovino, vivo
26	Ganado porcino, vivo
27	Aves de corral, vivas
28	Leche sin elaborar
29	Huevos frescos
30	Madera
31	Pescado, fresco o refrigerado
32	Minerales Minerales no ferrosos, oro Piedra, arena y arcilla Sal Minerales N.C.P., piedra pómez y diatomita
33	Energía eléctrica
34	Agua natural
35	Carnes (incluye vacuno, porcino, aves)
36	Pescado, crustáceos y otros productos marinos
37	Envasado y conservados de frutas y verduras

Table 2A. Detailed Commodity classification (in Spanish) in Costa Rica's 2002 SAM

No.	Product (in Spanish)
38	Aceites y grasas animales y vegetales
39	Productos lácteos
40	Productos de molinería, excepto beneficiado de café
41	Café oro
42	Productos de panadería
43	Azúcar
44	Cacao, chocolate y artículos de confitería
45	Productos alimenticios diversos
46	Alimentos preparados para animales
47	Bebidas y Tabaco Bebidas espirituosas Bebidas malteadas y malta (cerveza) Bebidas gaseosas Cigarrillos, etc
48	Textiles y prendas de vestir Hilados, tejidos y acabados textiles Artículo para la confección con materiales textiles Tapices y alfombras Cordelería Textiles n.c.p. Tejidos de punto Prendas de vestir Curtidoras y talleres de acabado
49	Productos de cuero y sucedáneos de cuero, incluye calzado Productos de cuero y sucedáneos de cuero Calzado, excepto el de caucho o plástico
50	Madera y productos de la madera, incluidos los muebles Madera aserrada y cepillada Productos de madera y corcho n.c.p. Muebles y accesorios, excepto los que son principalmente metálicos
51	Papel y cartón, y productos de papel y cartón Envases y cajas de papel y cartón Artículos de pulpa, papel y cartón Periódicos, revistas, folletos, etc.
52	Combustibles y sustancias químicas básicas Producción de diversos derivados de petróleo y carbón Refinería de petróleo (gasolina, diesel, etc.) y sustancias químicas industriales básicas
53	Abonos y plaguicidas
54	Resinas sintéticas y materias plásticas Resinas sintéticas, materias plásticas, etc. Productos plásticos n.c.p.
55	Pinturas, barnices y lacas
56	Productos farmacéuticos y medicamentos
57	Jabón y preparados de limpieza, perfumes y preparados de tocador
58	Otros productos químicos Productos químicos n.c.p.
59	Llantas y productos de caucho

Table 2A. Detailed Commodity classification (in Spanish) in Costa Rica's 2002 SAM

No.	Product (in Spanish)
	Llantas Productos de caucho n.c.p.
60	Productos minerales no metálicos, exceptuando los derivados del petróleo y el carbón, y la minería Vidrio y productos de vidrio Objetos de barro, loza y porcelana Productos de arcilla para construcción Cemento, cal y yeso Minerales no metálicos n.c.p.
61	Metales básicos Hierro y acero Metales no ferrosos.
62	Productos metálicos Muebles y accesorios, principalmente metálicos Productos metálicos estructurales Cuchillería, herramientas manuales y artículos generales de ferretería Productos metálicos n.c.p., excepto maquinaria y equipo
63	Maquinaria y Equipo Motores y turbinas y sus partes Maquinaria y equipo para la agricultura Maquinaria y equipo especial para industrias, excepto para trabajar los metales y la madera Aparatos y accesorios eléctricos de uso domestico Maquinaria y equipo n.c.p. excepto maquinaria eléctrica Maquinaria de oficina, calculo y contabilidad Maquinaria y aparatos industriales eléctricos Equipo y aparatos de radio, televisión y comunicaciones Equipo profesional y científico, instrumento de medida y control n.c.p.
64	Reconstrucción, reparación y mantenimiento de vehículos y material de transporte Reconstrucción de automóviles Barcos y reparación de barcos Servicios de reparación y mantenimiento de aviones Motocicletas y bicicletas Material de transporte n.c.p.
65	Otros manufacturados, pequeña industria y trabajadores independientes Joyas y artículos conexos Artículos de deporte y atletismo Productos manufactureros n.c.p. Aparatos fotografico e instrumentos de optica Relojes Pequeña industria y trabajadores independientes
66	Admisión temporal (maquila)
67	Zona franca
68	Construcción
69	Comercio y servicios de transporte, almacenamiento, correos y telecomunicaciones Servicios de transporte por ferrocarril Servicio de autobuses Servicio de taxis Servicio de camiones de carga

Table 2A. Detailed Commodity classification (in Spanish) in Costa Rica's 2002 SAM

No.	Product (in Spanish)
	Servicios de transporte de carga por carretera Transporte de valores Servicios de cabotaje Servicios de aviación Servicios de almacenamiento y depósito Servicios de estacionamiento Servicios de muelles y puertos Servicios de agencias de viajes, organización de viajes en grupo y guías de turismo Servicios de agencias de aduanas Servicios de correos y telecomunicaciones
70	Servicios de hotelería y en restaurantes Servicios de hotelería y alojamiento análogos Servicios de suministro de comidas
71	Servicios de intermediación financiera y seguros
72	Servicios de investigación y desarrollo
73	Servicios de administración pública
74	Servicios de enseñanza
75	Servicios médicos y odontológicos
76	Servicios de asistencia social
77	Alcantarillado y eliminación de desperdicios, servicios de saneamiento y otros servicios de protección al medio ambiente
78	Otros Servicios Servicios inmobiliarios relativos a bienes raíces propios o arrendados Servicios de arrendamiento o alquiler de automóviles particulares sin conductor Servicios de arrendamiento o alquiler de maquinaria y equipo sin operarios Servicios de consultores en instalación de equipo de informática Servicios jurídicos Servicios de contabilidad, auditoria y teneduría de libros Servicios de arquitectura e ingeniería Servicios de publicidad y otros servicios a empresas Servicios de veterinaria Servicios proporcionados por organizaciones comerciales y profesionales Servicios religiosos Servicios sociales y comunales diversos Servicios de producción y distribución de películas cinematográficas y cintas de video Servicios de proyección de películas Servicios de radio y televisión Teatro y servicios de esparcimiento Servicios de bibliotecas, archivos, museos y otras servicios culturales Servicios de diversión y esparcimiento n.c.p. Servicio de reparación de calzado Servicio de reparación eléctrica Servicios de reparación de autos y motos Otros servicios de reparación n.c.p. Servicio de lavandería Servicio doméstico Servicio de peluquería y salones de belleza

Table 2A. Detailed Commodity classification (in Spanish) in Costa Rica's 2002 SAM

No.	Product (in Spanish)
	Estudios fotográficos Otros servicios n.c.p.

Table 3A. Activity classification in Costa Rica's SAM

No.	Activity	Activity (in Spanish)
1	Coffee cultivation	Café
2	Banana cultivation	Banano
3	Sugar Cane cultivation	Caña de azúcar
4	Basic Grains (rice, beans and corn)	Granos básicos (arroz, frijol y maíz en grano)
5	Other Agriculture	Otra agricultura
6	Raising of bovine cattle	Ganadería de vacuno
7	Other cattle	Resto del sector pecuario
8	Forestry and wood extraction	Silvicultura y extracción de madera
9	Fishing	Pesca
10	Mining	Minería
11	Slaughtering of cattle, meat preparation and conservation	Matanza de ganado preparado y conservado de carne
12	Manufacturing of Dairy Products	Fabricación de productos lácteos
13	Manufacturing and conservation of fruits and vegetables	Envasado y conservación de frutas y legumbres
14	Manufacturing of fish, crustaceans and other marine products	Elaboración de pescado, crustáceos y otros productos marinos
15	Sugar manufacturing	Fábricas y refinerías de azúcar
16	Manufacturing of other food products	Fabricación de otros alimentos de origen industrial
17	Beverages and tobacco	Bebidas y Tabaco
18	Textiles, wearing apparel and leather industries	Textiles, prendas de vestir e industrias del cuero
19	Wood and wood products, including furniture	Industria de la madera y productos de la madera, incluidos los muebles
20	Manufacturing of paper and paper products; printing and publishing	Fabricación de papel y productos de papel; imprentas y editoriales
21	Manufacturing of chemical substances and other chemical products, refined oil and coal products, rubber and plastic	Fabricación de sustancias químicas y de productos químicos, derivados del petróleo y del carbón, de caucho y plásticos
22	Manufacturing of non metallic mineral products, except refined oil and coal products and mining	Fabricación de productos minerales no metálicos, exceptuando los derivados del petróleo y el carbón, y la minería
23	Basic Metal Industries	Industrias metálicas básicas
24	Manufacturing of metal products, except machinery and equipment, transport equipment and vehicles, and other manufacturing industries	Fabricación de productos metálicos, exceptuando maquinaria, equipo y vehículos de transporte, y otras industrias manufactureras
25	Manufacturing of machinery, equipment and transport vehicles	Fabricación de maquinaria, equipo y vehículos de transporte
26	Other manufacturing	Otras industrias manufactureras
27	Temporary admission and maquila	Admisión temporal y maquila
28	Free Trade Zone	Zona Franca
29	Electricity	Electricidad
30	Water	Suministro de Agua
31	Construction	Construcción

Table 3A. Activity classification in Costa Rica's SAM

No.	Activity	Activity (in Spanish)
32	Trade and transport services, warehousing, mail and telecommunications	Comercio y servicios de transporte, almacenamiento, correos y telecomunicaciones
33	Hotels and restaurants	Hoteles y restaurantes
34	Financial intermediation	Intermediación financiera
35	Insurance	Seguros
36	Public Administration and Defense	Administración pública y defensa
37	Sanitation and similar services	Servicios de saneamiento y similares
38	Public and private education	Enseñanza pública y privada
39	Medical and dental services	Servicios médicos odontológicos
40	Other social services and other communal services	Resto de servicios sociales y otros servicios comunales conexos
41	Other services	Otros servicios

Table 4A. Commodity aggregation of Costa Rican SAM sectors

No.	Aggregated Sectors (36)	Original Sectors (78)	No.
1	Corn	Corn	1
2	Paddy rice	Paddy rice	2
3	Fruits and vegetables	Potato Beans Cabbage Tomato Chayote Plantain Heart Palm Cassava Onions Carrots Banana Pineapple Orange Melon	3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16
4	Oil Palm	Oil Palm	17
5	Sugar Cane	Sugar Cane	23
6	Other crops	Madagascar dragon tree Flowers Coffee, not roasted Cacao Raw tobacco Other agriculture	18, 19, 20, 21, 22, 24
7	Bovine Cattle	Bovine Cattle, live	25
8	Other Cattle	Pigs, live Poultry, live Eggs, fresh	26, 27, 29
9	Raw milk	Raw milk	28
10	Forestry	Forestry	30
11	Fishing	Fishing	31
12	Minerals	Minerals	32
13	Electric Energy	Electric Energy	33
14	Natural water	Natural water	34
15	Meat (includes bovine, pigs, poultry)	Meat (includes bovine, pigs, poultry)	35
16	Animal and vegetable oils and fats	Animal and vegetable oils and fats	38
17	Dairy products	Dairy products	39
18	Sugar	Sugar	43
19	Other Food Products	Fish, crustaceans, and other marine products Processed Vegetable and Fruit Products Milling products, except coffee Coffee, golden Bakery Products Cacao, chocolate and sugar confectionary	36, 37, 40, 41, 42, 44, 45, 46

Table 4A. Commodity aggregation of Costa Rican SAM sectors

No.	Aggregated Sectors (36)	Original Sectors (78)	No.
		Other food products Prepared food for animals	
20	Beverages and tobacco	Beverages and tobacco	47
21	Textiles and wearing apparel	Textiles and wearing apparel	48
22	Leather and leather products, including footwear	Leather and leather products, including footwear	49
23	Wood and wood products, including furniture	Wood and wood products, including furniture	50
24	Paper and paper products	Paper and paper products	51
25	Fuels and basic chemical substances	Fuels and basic chemical substances	52
26	Chemical, Rubber and Plastic Products	Fertilizers and pesticides Synthetic resins and plastic products Paint, varnishes and similar products Pharmaceutical and medical products Soap and cleaning products, perfumes and other beauty products Other chemical products Tires and rubber products	53, 54, 55, 56, 57, 58, 59
27	Non metallic mineral products	Non metallic mineral products	60
28	Basic metals	Basic metals	61
29	Metal products	Metal products	62
30	Machinery and equipment	Machinery and equipment	63
31	Other Manufacturing	Reconstruction, repair and maintenance of vehicles and transport material Other manufactures, small enterprises and independent workers Temporary admission (Maquila) Free Zone	64, 65, 66, 67
32	Construction	Construction	68
33	Trade, transport and telecommunications	Trade and transport services, warehousing, mail and telecommunications Hotel and restaurant Services	69, 70
34	Financial and Insurance Services	Financial and Insurance Services	71
35	Business and other services	Research and Development Services Other Services	72, 78
36	Public Administration, Education, Health	Public Administration Services Education Services Medical and dental services Social Assistance Services Sewage and waste management, cleaning services and other environmental protection services	73, 74, 75, 76, 77

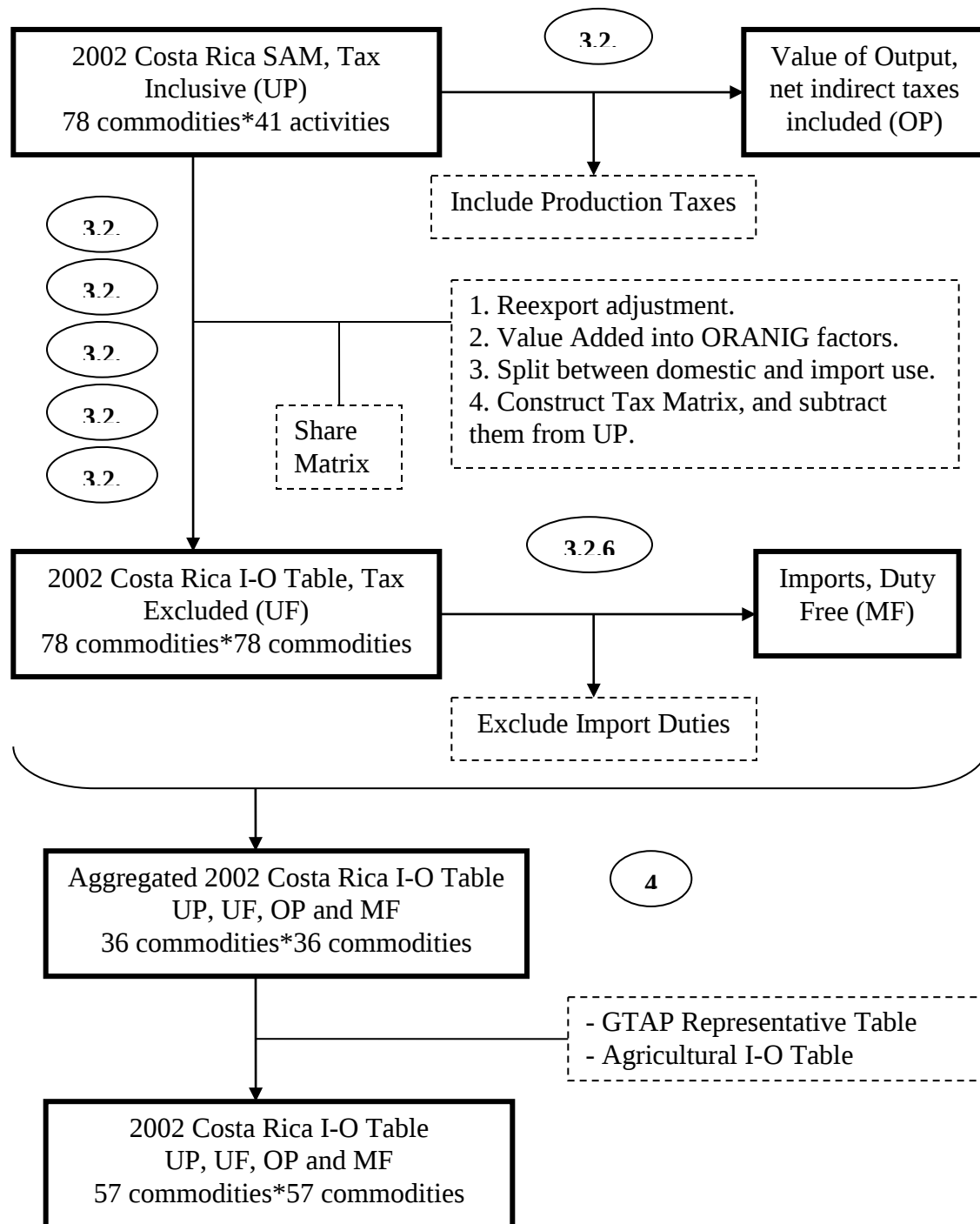
Table 5A. Concordance between GSC2 sectors and Costa Rica's I-O table

SC2 No.	GSC2 code	GSC2 description	Costa Rica commodity name	Costa Rica commodity No.
1	pdr	Paddy rice	Paddy rice	2
2	wht	Wheat	Other crops	6
3	gro	Cereal grains nec	Corn	1
4	v_f	Vegetables, fruit, nuts	Fruits and vegetables	3
5	osd	Oil seeds	Oil palm	4
6	c_b	Sugar cane, sugar beet	Sugar Cane	5
7	pfb	Plant-based fibers	Other crops	6
8	ocr	Crops nec	Other crops	6
9	ctl	Cattle, sheep, goats, horses	Bovine Cattle	7
10	oap	Animal products nec	Other Cattle	8
11	rmk	Raw milk	Raw milk	9
12	wol	Wool, silk-worm cocoons	Bovine Cattle	7
13	for	Forestry	Forestry	10
14	fsh	Fishing	Fishing	11
15	col	Coal	Minerals	12
16	oil	Oil	Minerals	12
17	gas	Gas	Minerals	12
18	omn	Minerals nec	Minerals	12
19	cmt	Meat: cattle, sheep, goats, horse	Meat (includes bovine, pigs, poultry)	15
20	omt	Meat products nec	Meat (includes bovine, pigs, poultry)	15
21	vol	Vegetable oils and fats	Animal and vegetable oils and fats	16
22	mil	Dairy products	Dairy products	17
23	pcr	Processed rice	Other Food Products	19
24	sgr	Sugar	Sugar	18
25	ofd	Food products nec	Other Food Products	19
26	b_t	Beverages and tobacco products	Beverage and Tobacco	20
27	tex	Textiles	Textiles and Wearing Apparel	21
28	wap	Wearing apparel	Textiles and Wearing Apparel	21
29	lea	Leather products	Leather and Leather products	22
30	lum	Wood products	Wood and wood products	23
31	ppp	Paper products, publishing	Paper and paper products	24
32	p_c	Petroleum, coal products	Fuels and basic chemical substances	25
33	crp	Chemical, rubber, plastic prods	Chemical, Rubber and Plastic Products	26
34	nmm	Mineral products nec	Non Metallic Mineral Products	27
35	i_s	Ferrous metals	Basic Metals	28
36	nfm	Metals nec	Basic Metals	28
37	fmp	Metal products	Metal Products	29
38	mvh	Motor vehicles and parts	Machinery and Equipment	30
39	otn	Transport equipment nec	Machinery and Equipment	30
40	ele	Electronic equipment	Machinery and Equipment	30

Table 5A. Concordance between GSC2 sectors and Costa Rica's I-O table

SC2 No.	GSC2 code	GSC2 description	Costa Rica commodity name	Costa Rica commodity No.
41	ome	Machinery and equipment nec	Machinery and Equipment	30
42	omf	Manufactures nec	Other Manufacturing	31
43	ely	Electricity	Electric Energy	13
44	gdt	Gas manufacture, distribution	Electric Energy	13
45	wtr	Water	Natural water	14
46	cns	Construction	Construction	32
47	trd	Trade	Trade, transport and telecommunications	33
48	otp	Transport nec	Trade, transport and telecommunications	33
49	wtp	Sea transport	Trade, transport and telecommunications	33
50	atp	Air transport	Trade, transport and telecommunications	33
51	cmn	Communication	Trade, transport and telecommunications	33
52	ofi	Financial services nec	Financial and Insurance Services	34
53	isr	Insurance	Financial and Insurance Services	34
54	obs	Business services nec	Business and Other Services	35
55	ros	Recreation and other services	Business and Other Services	35
56	osg	PubAdmin/Defence/Health/Education	Public Administration, Education, Health	36
57	dwe	Dwellings	Dwellings	Unmapped

Table 6A. Process of creating Costa Rica's I-O table for the GTAP Data Base



Note: Circled numbers represent the number of the section of this technical note where the corresponding procedure is explained in more detail.