

H Cameroon

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H.1 Introduction

The Global Trade Analysis Project (GTAP), founded in 1992, is a global network of researchers (mainly from universities, international organizations, or government ministries of economics), who conduct quantitative analyses on international economic policy issues, particularly trade policy. They cooperate to produce a coherent economic database, which covers many sectors and all regions of the world. There is therefore a problem quite regularly in updating this database, particularly because of the enormous differences in the level of development of the statistical systems of the various countries. This problem is more acute in Central Africa, where most countries (Angola, CAR, Congo, Gabon, Equatorial Guinea, Sao Tome and Principe, DRC, Chad), have a very low level of coverage and data availability in the GTAP database. For that reason, ECA, in partnership with ISTA, has recruited one country consultant to collect data for the updating of the GTAP database.

This document describes the transformation of Cameroon's 2017 Supply-Use Table (SUT) into an Input-Output Table (IOT), in preparation for its contribution to the World Trade Analysis Project (GTAP). The document is organized as follows. Section 2 briefly describes the source data. Section 3 discusses the strengths and limitations of the source data. Section 4 describes the treatments used to correct anomalies in the raw data. Section 5 presents the transition from SUT to IOT in GTAP format.

H.2 Data sources

The National Institute of Statistics (NIS) of Cameroon has been producing national accounts regularly for several years, following the conceptual and methodological principles defined in international reference manuals, including the United Nations System of National Accounts (SNA 2008). The NIS of Cameroon has just completed the work of rebasing the series of national accounts, moving from the 2005 base to the 2016 base. Thus, at the time we unmarry this work, there was a series of annual national accounts from 1993 to 2019 in 2016 base. The 2018 and 2019 accounts were still provisional because the rebasing work was still in progress. Thus, the final SUT available was that of the year 2017 according to the new base year (2016).

Cameroon's national accounts are produced using the ERETES Software, using a nomenclature of 100 branches of activity (level 2) and 234 products. However, the SUT is published according to a reduced classification of 44 products and 44 branches of activity. The main gross input is therefore the SUT data for 44 branches of activity constructed from national accounts data for the year 2017. The data are expressed in millions of CFA Francs. At first glance, the raw data from the SUT meet the condition of sectoral equilibrium and contain most of the data ready to be transformed into TES and then converted to GTAP format. This data includes:

1. The resources table which shows domestic output at the basic prices of each industry, total imports, transportation and trade margins, and taxes on domestic and imported goods, by product. The local production matrix is symmetrical, but it is not diagonal. This is because many industries produce more than one product, and many products are produced by more than one industry.
2. The employment table which shows the demand for these 44 products by industry (intermediate consumption), private households, governments, investment, changes in inventories and exports.
3. The matrix of other elements of value added, such as compensation of employees, gross operating surplus, taxes on production, by industry.

In addition, we had the following data from Cameroon's national accounts:

- Two matrices for trade and transport margins on domestic and imported products from 2017
- Two matrices of taxes on the uses of domestic and imported products from 2017.

H.3 Strengths and weaknesses of source data

We have done a number of checks on the data. They include table balancing checks, plausibility of tax rates, margin rates implicit in the data, and industry cost and sales structure. This section discusses data strengths and limitations.

Strengths

As mentioned above, the source data contain detailed data on supply and use for 100 products and industries. They provide most of the data needed for the development of the SUT, read precisely: (a) There are separate national and import matrices with basic values; b) There are separate trade and transport margins on domestic and imported products; and (c) There are separate tax data for domestic and imported products. In addition, the tables are balanced.

Weaknesses

1. The 44-branch and 44-product SUT published by the NIS of Cameroon is not sufficiently detailed to facilitate a transition to GTAP format.
2. For each final application of the Table of Goods, the values of trade margins, transport rates, and taxes and subsidies on products are available by product. However, as far as intermediate consumption is concerned, these different values are available only at the level of the total CI,

and not by industry. However, in order to be able to derive the Table of Uses at basic prices, it is necessary that this passage should also be extended to the elements of intermediate consumption by branch of activity.

3. Some tax rates seem implausible. Consumption tax rates on some goods consumed by households appear to be too high, and rates on domestic goods are often higher than those on imported goods.
4. There are no separate values for capital and mixed income. They are grouped into a single vector of gross operating surplus. This makes the rate of capital in some industries too high and the rate of labor low.

Data processing

1. In the context of this work, given the too aggregated form of the TRE published by the NIS of Cameroon, we have reconstructed a more disaggregated SUT, at level 2 of the classification of the branches of activity of the accounts of Cameroon (100 branches of activity and 100 products). Then, we developed a matrix of passage between the nomenclature of branches of activity level 2 of the NIS of Cameroon and the nomenclature of activities of GTAP. This work was facilitated by the fact that both nomenclatures are inspired by ISIC version 4.
2. The different total values (trade margins, transport margins, product taxes, product subsidies) have been allocated pro rata among the industries for which a value of intermediate consumption is recorded. Thus, the tables containing the details, by industry, of trade margins, transport margins, product taxes, and product subsidies are calculated.
3. the implausible tax rates have been corrected, as well as the tax rates on the consumption of certain products.
4. In order to rebalance the rate of capital and the rate of labour and taking into account that the Cameroonian economy is highly informal, at least some branches of activity, part of the mixed income has been withdrawn from capital and added to the compensation of employees.
5. Transition from TRE to TES in GTAP format

The transition from TRE to TES took place in several stages:

1. First, it was necessary to move the Use Table (which is at purchaser's prices) to basic prices. The following formula was used: $\text{Basic price} = \text{Purchase price} - \text{Trade and transport margins} - \text{VAT and other taxes on products} + \text{Subsidies on products}$.
2. Second, since GTAP prefers output tables on a product-by-product and that our initial SUT was produced by industry, we converted it into a product-by-product table using the technological assumption and procedure described in Horridge et al. (2008).

3. A correspondence table has been developed between the nomenclature of products of Cameroon and the gtap nomenclature. We obtain a TRE of size 31x31. This passage is shown in table 8.21.
4. Finally, the IOT is obtained using the transformation model B, which stipulates a Single Technology per Branch: All products generated by a branch have the same input structure, namely that of the branch itself.

Table 8.21: Concordance against GTAP

Code TES	Code GTAP	Description
d_A01	c.b	Cane & Beet: sugar crops
	gro	Other Grains: maize (corn), sorghum, barley, rye, oats, millets, other cereals
	ocr	Other Crops: stimulant; spice and aromatic crops; forage products; plants and parts of plants used primarily in perfumery, pharmacy, or for insecticidal, fungicidal or similar purposes; beet seeds (excluding sugar beet seeds) and seeds of forage plants; natural rubber in primary forms or in plates, sheets or strip, living plants; cut flowers and flower buds; flower seeds, unmanufactured tobacco; other raw vegetable materials nec
	osd	Oil Seeds: oil seeds and oleaginous fruit
	pdr	Rice: seed, paddy (not husked)
	pfb	Fibres crops
	v.f	Veg & Fruit: vegetables, fruit and nuts, edible roots and tubers, pulses
	wht	Wheat: seed, other
d_A02	ctl	Cattle: bovine animals, live, other ruminants, horses and other equines, bovine semen
	fsk	Fishing: hunting, trapping and game propagation including related service activities, fishing, fish farms; service activities incidental to fishing
	oap	Other Animal Products: swine; poultry; other live animals; eggs of hens or other birds in shell, fresh; reproductive materials of animals; natural honey; snails, fresh, chilled, frozen, dried, salted or in brine, except sea snails; edible products of animal origin n.e.c.; hides, skins and furskins, raw; insect waxes and spermaceti, whether or not refined or coloured
d_A03	frs	Forestry: forestry, logging and related service activities
d_B05	coa	Coal: mining and agglomeration of hard coal, lignite and peat
	gas	"Gas: extraction of natural gas, service activities incidental to oil and gas extraction excluding surveying (part)"
	oil	"Oil: extraction of crude petroleum, service activities incidental to oil and gas extraction excluding surveying (part)"
d_B06	oxt	Other Mining Extraction (formerly omn): mining of metal ores; other mining and quarrying
d_C07	b.t	Beverages and Tobacco products
	cmt	"Cattle Meat: fresh or chilled; meat of buffalo, fresh or chilled; meat of sheep, fresh or chilled; meat of goat, fresh or chilled; meat of camels and camelids, fresh or chilled; meat of horses and other equines, fresh or chilled; other meat of mammals, fresh or chilled; meat of mammals, frozen; edible offal of mammals, fresh, chilled or frozen"
	mil	Milk: dairy products
	oap	Other Animal Products: swine; poultry; other live animals; eggs of hens or other birds in shell, fresh; reproductive materials of animals; natural honey; snails, fresh, chilled, frozen, dried, salted or in brine, except sea snails; edible products of animal origin n.e.c.; hides, skins and furskins, raw; insect waxes and spermaceti, whether or not refined or coloured

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Code TES	Code GTAP	Description
	ofd	Other Food: prepared and preserved fish, crustaceans, molluscs and other aquatic invertebrates; prepared and preserved vegetables, pulses and potatoes; prepared and preserved fruits and nuts; wheat and meslin flour; other cereal flours; groats, meal and pellets of wheat and other cereals; other cereal grain products (including corn flakes); other vegetable flours and meals; mixes and doughs for the preparation of bakers' wares; starches and starch products; sugars and sugar syrups n.e.c.; preparations used in animal feeding; lucerne (alfalfa) meal and pellets; bakery products; cocoa, chocolate and sugar confectionery; macaroni, noodles, couscous and similar farinaceous products; food products n.e.c.
	pcr	Processed Rice: semi- or wholly milled, or husked
	sgf	Sugar and molasses
d_C10	vol	"Vegetable Oils: margarine and similar preparations; cotton linters; oil-cake and other residues resulting from the extraction of vegetable fats or oils; flours and meals of oil seeds or oleaginous fruits, except those of mustard; vegetable waxes, except triglycerides; degrass; residues resulting from the treatment of fatty substances or animal or vegetable waxes; animal fats"
d_C15	tex	Manufacture of textiles
	wap	Manufacture of wearing apparel
d_C16	lea	Manufacture of leather and related products
d_C17	lum	Lumber: manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
d_C18	ppp	Paper & Paper Products: includes printing and reproduction of recorded media
d_C19	p.c	Petroleum & Coke: manufacture of coke and refined petroleum products
d_C20	bph	Manufacture of pharmaceuticals, medicinal chemical and botanical products
	chm	Manufacture of chemicals and chemical products
d_C21	rpp	Manufacture of rubber and plastics products
d_C22	nmm	Manufacture of other non-metallic mineral products
d_C23	fmp	Manufacture of fabricated metal products, except machinery and equipment
	i.s	Iron & Steel: basic production and casting
	nfm	Non-Ferrous Metals: production and casting of copper, aluminium, zinc, lead, gold, and silver
d_C24	eeq	Manufacture of electrical equipment
	ele	Manufacture of computer, electronic and optical products
	ome	Manufacture of machinery and equipment n.e.c.
d_C26	myh	Manufacture of motor vehicles, trailers and semi-trailers
	otn	Manufacture of other transport equipment
d_C27	omf	Other Manufacturing: includes furniture
d_D29	ely	Electricity; steam and air conditioning supply
d_E30	wtr	Water supply; sewerage, waste management and remediation activities
d_F31	cns	Construction: building houses factories offices and roads
d_G32	atp	Air transport
	cmn	Information and communication
	otp	Land transport and transport via pipelines
	trd	Wholesale and retail trade; repair of motor vehicles and motorcycles
	whs	Warehousing and support activities
	wtp	Water transport
d_I35	afs	Accommodation, Food and service activities
d_K37	ins	"Insurance (formerly isr): includes pension funding, except compulsory social security"
	ofi	"Other Financial Intermediation: includes auxiliary activities but not insurance and pension funding"
d_L38	dwe	Dwellings: ownership of dwellings (imputed rents of houses occupied by owners)

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Code TES	Code GTAP	Description
	rsa	Real estate activities
d_M39	Obs	Other Business Services nec
d_O41	osg	Other Services (Government): public administration and defense; compulsory social security, activities of membership organizations n.e.c., extra-territorial organizations and bodies
d_P42	edu	Education
d_Q43	hht	Human health and social work
d_R44	ros	Recreation & Other Services: recreational, cultural and sporting activities, other service activities; private households with employed persons (servants)