

14.10

South Africa

Jayatilleke Bandara and Mark Horridge

14.10.1 Sources of input-output data base

The purpose of this section is to document the sources and procedures adopted in preparing the input-output (I/O) data base for the South African economy for GTAP version 4 data base. The original South African I/O data base was obtained from a single country CGE model of the South African economy - IDC-GEM: "A CGE model of the South African economy", developed by the Industrial Development Corporation of South Africa Limited and Centre of Policy Studies of Monash University (see, Cameran, et al, 1994; Joubert, 1994; Horridge, et al, 1996 and Horridge, et al, 1996). As noted in Cameran, et al, (1994, p.4), "the I/O data base for this model was compiled by Claude van der Merwe of Economic Analysis Systems Pty Ltd, working from Van Seventer, Eckert and de Lange (1992)".

14.10.2 Conversion of the South African I/O data

The I/O data base of the IDC-GEM model was available in a header array file which included domestic and imported intermediate commodity flows, capital flows, trade and transport margins and different taxes associated with different commodity flows. It also contained 65 categories of labor and 24 categories of households. Several steps were taken to incorporate this data base into version 4 of the GTAP data base.

Firstly, we rearranged the original header array file of the IDC-GEM model according to the GTAP data format (with GTAP headers). In this process, detailed matrices of trade and transport margins and taxes were adjusted to relevant commodity flows. Matrices of occupational labor and income distribution were also adjusted to create vectors of aggregate labor and labor earnings. Matrices of commodity flows (domestic and imported) into capital creation were also aggregated as column vectors to be consistent with the GTAP I/O data format.

Secondly, the modified 101 sector I/O data base was mapped into GTAP classification as shown in table 14.10.1. This table shows that some of the industries were required to aggregate and others were required to disaggregate to be consistent with the GTAP I/O format. The aggregation was easier. The disaggregation of the agriculture sector was the main important task.

References

- Cameron, M., et al. 1994. "Simulations with IDC-GEM: A CGE Model of the South African Economy", Paper presented at the 23rd Annual Conference of the Economic Society of Australia, Gold Coast, Queensland, Australia.
- Horridge, J.M., et al. 1995. "The Macroeconomic, Industrial, Distributional and Regional Effects of Government Spending Programs in South Africa, Impact Project General Paper No. G-109, Centre of Policy Studies, Monash University, Melbourne, Australia.
- Horridge, J.M., et al. 1996. "IDC-DGEM: A CGE Model of the South African Economy for Forecasting and Dynamic Policy Analysis", Paper prepared for the International Symposium on Economic Modeling, Oslo, 3-4 July 1996.
- Joulbert, R. 1994. "IDCGEM - A General Equilibrium Model of the South African Economy", Paper prepared for the EBM Research Conference, Johannesburg.

Table 14.10.1 GTAP-South African I/O concordance.

GTAP Sectors		South African I/O Sectors
Code	Description	
pdr	Paddy rice	Agriculture, forestry and fishing
wht	Wheat	Agriculture, forestry and fishing
gro	Cereal grainss n.e.c.	Agriculture, forestry and fishing
v_f	Vegetables, fruit, nuts	Agriculture, forestry and fishing
osd	Oil seeds	Agriculture, forestry and fishing
c_b	Sugar cane, sugar beet	Agriculture, forestry and fishing
pfb	Plant-based fibers	Agriculture, forestry and fishing
ocr	Crops n.e.c	Agriculture, forestry and fishing
ctl	Bovine cattle, sheep & goats, horses	Agriculture, forestry and fishing
oap	Animal products n.e.c	Agriculture, forestry and fishing
rmk	Raw milk	Agriculture, forestry and fishing
wol	Wool silk-worm cocoons	Agriculture, forestry and fishing
for	Forestry	Agriculture, forestry and fishing
fsh	Fishing	Agriculture, forestry and fishing
col	Coal	Coal mining
oil	Oil	Diamond and other mining
gas	Gas	Diamond and other mining
omn	Minerals n.e.c	Diamond and other mining
cmt	Bovine cattle, sheep & goat, horse meat products	Slaughtering, preparing & preserving meat
omt	Meat products n.e.c	Slaughtering, preparing & preserving meat
vol	Vegetable oils and fats	Vegetable and animal oil fats
mil	Dairy products	Dairy products
pcr	Processed rice	Grain mill products
sgr	Sugar	Sugar factories & refineries
ofd	Food products nec	Cocoa, chocolate, & sugar confectionery Other food products Prepared animal feeds
b_t	Beverages & tobacco products	Distilleries & wineries Malt liquors & malt Soft drinks & carbonated waters Tobacco products

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Table 14.10.1 GTAP-South African I/O concordance (continued)

GTAP sectors		South African I/O sectors
tex	Textiles	Wool scouring & cotton ginning Spinning, weaving & finishing of fabrics Make-up textile goods, exc wearing apparel Garment & hosier knitting mills Other knitting mills Carpets & rugs, mats & matting Cordage, rope & twine industries Textiles, not elsewhere classified
wap	Wearing apparel	Wearing apparel
lea	Leather products	Tanneries & leather finishing Leather products and leather substitutes Footwear
lum	Wood products	Wood & wood products exc furniture Furniture
ppp	Paper products, publishing	Pulp, paper & paperboard Paper containers Other pulp, paper & paperboard Printing & publishing
p_c	Petroleum, coal products	Petroleum refineries Miscellaneous products of petroleum & coal
crp	Chemical, rubber, plastic products	Basic chemicals Fertilizers & pesticides Synthetic resins & plastic materials Paints, varnishes, & lacquers Medicinal & pharmaceutical Soap, cosmetics, & toilet preparation Other chemical products Tires & tubes Other rubber products Other plastic products
nmm	Mineral products n.e.c.	Pottery, china, & earthenware Glass & glass products Bricks, tiles, etc. Cement Other non-metallic mineral products
i_s	Ferrous metals	Iron & steel basic industries
nfm	Metals n.e.c.	Non-ferrous metal basic industries
fmp	Metal products	Cutlery, hand tools, & general hardware Furniture & fixtures of metal Structural metal products Other fabricated metal/mach.mvh
mvh	Motor vehicles and parts	Motor vehicles Motor vehicles & parts

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Table 14.10.1 GTAP-South African I/O concordance (continued)

GTAP sectors		South African I/O sectors
otn	Transport equipment n.e.c.	Ship & boat building & repairs Railway equipment Aircraft Other transport equipment
ele	Electronic equipment	Office, computing accounting mach. Radio, TV, & communication equip.
ome	Machinery and equipment n.e.c.	Engines & turbines Agricultural machinery & equip. Metal & woodworking machinery Special industrial mach. & equip. Other machinery & equipment n.e.c. Electrical industrial machinery Electrical appliances & housewares Other elect. apparatus & supplies
omf	Manufactures n.e.c.	Jewelry & related articles Other manufacturing industries
ely	Electricity	Electricity, gas, & steam
gdt	Gas manufacture, distribution	Electricity, gas, & steam
wtr	Water	Water supply
cns	Construction	Building construction Civil engineering & other constr.
t_t	Trade, transport	Wholesale, retail, and motor trade Catering and accomm. services Transport & storage Communication
osp	Financial, business, recreational services	Financial & insurance institutions services Real estate Business services Machinery/equip. renting & leasing Other services profit making Other services non-profit making Goods & services not classified Domestic servants
osg	Public admin and defense, education, health	General administration; Defense Order (police) Education Health Social Other economic services
dwe	Dwellings	Housing