

Chapter 2

Guide to the GTAP Data Base

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The GTAP Data Base is the global data base representing the world economy for a given reference year — 2004 and 2007 for the GTAP 8 Data Base. The files comprising the GTAP Data Base are packaged with two alternative aggregation packages. The GTAP Data Base includes all the data files in the data packages, except for the time series trade data. It comprises four files: sets, parameters, main data, and energy volume data. All the files are header array files (a GEMPACK binary format) (Harrison and Pearson, 1998). GTAP 8 Data Base has one additional data file, namely, CO2 emissions data and another meta-data file.

This chapter provides a guide to the components of the five GTAP Data Base files. It also covers the concordances for the 57 sectors and 129 regions of the GTAP 8 Data Base. Details about sources and construction of the individual components such as domestic data bases (or I-O tables), international data sets, and parameters, are provided in subsequent chapters.

2.1 GTAP Sets File

Table 2.1 shows the arrays in the sets file. The array H1 is a list of regions. H2 lists *traded commodities*, so called because these goods and services can be traded between regions. In this, they contrast with the primary factors or *endowment commodities*, listed in H6: land, unskilled labor, skilled labor, capital, and natural resources. Capital is specified in array H9 as the *capital endowment commodity*, for convenience in implementing the investment theory of the model.

The arrays H7 and H8 divide the endowment commodities into two groups. The *mobile* endowment commodities (H8) are perfectly mobile across industries within each region; the *sluggish* endowment commodities (H7) are imperfectly mobile or immobile. In the standard data base, skilled and unskilled labor and capital are classed as mobile, and land and natural resources as sluggish. This is suitable for long-run simulations. For short-run simulations, users may wish to move capital from H8 to H7, to treat it as sluggish rather than mobile.

The remaining arrays are provided for convenience in implementing the theoretical structure of the GTAP Model. The *non-savings commodities*, array H3, comprise the endowment commodities, the traded commodities, and an investment good. The *demanded commodities*, H4, comprise endowment and traded commodities; the *produced commodities*, H5, comprise traded commodities and the investment good. Finally, array MARG lists the margin commodities.

Table 2.1 Arrays in the GTAP Sets File

Name	Dimension	Description
H1	r	Regions
H2	t	Traded commodities
H3	$s+m+t+1$	Non-saving commodities
H4	$s+m+t$	Demanded commodities
H5	$t+1$	Produced commodities
H6	$s+m$	Endowment commodities
H7	s	Sluggish endowment commodities
H8	m	Mobile endowment commodities
H9	1	Capital endowment commodity
MARG	g	Margin commodities
TAR	2	Types of tariffs
DEC	5	Types of domestic support payments
PYS	5	Domestic support payment base types
AGRI	12	Agricultural commodities
DREG	38	Regions with domestic support data

g number of margins commodities (sectors)

m number of primary factors perfectly mobile across industries

r number of regions

s number of primary factors not perfectly mobile across industries

Users of the GTAP Model should note that the derived arrays H3, H4, and H5 are obsolete as of gtap.tab release 5.1 (they are now derived internally in the solution program). Also obsolete are the sluggish and mobile endowment commodity arrays H7 and H8; the sluggish/mobile distinction is indicated with a parameter, SLUG (section 2.3). The header TAR is newly introduced in GTAP 8 Data Base, showing the components of tariff available in the dataset in the new additional data header VTTS. The new headers DEC, PYS, AGRI and DREG show the sets relevant for the new additional domestic support data headers named PAYD and PYRT.

2.2.1 GTAP Regions

In the standard GTAP 8 Data Base, there are 57 commodities and 129 regions. The commodity detail and concordance is the same as in the GTAP 7 Data Base. The regional detail has significantly increased from the 113 regions in GTAP 7 through the inclusion of domestic data bases for several new regions and through the revised grouping of composite regions.

Table 2.2 shows the regional definitions used in GTAP 8 Data Base. The 129 regions are defined as aggregates of 244 countries using the GTAP standard country list (see section 2.2.2). The alpha-3 codes defined by the International Organization for Standardization (ISO) are used as country codes for the GTAP primary regions, i.e. regions developed from contributed domestic data bases.

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Table 2.2 Regions in GTAP 8 Data Base

No.	Code	Description	Code	Member Countries
1	AUS	Australia	AUS	Australia
			CCK	Cocos (Keeling) Islands
			CXR	Christmas Island
			HMD	Heard Island and McDonald Islands
			NFK	Norfolk Island
2	NZL	New Zealand	NZL	New Zealand
3	XOC	Rest of Oceania	ASM	American Samoa
			COK	Cook Islands
			FJI	Fiji
			FSM	Micronesia Federated States of
			GUM	Guam
			KIR	Kiribati
			MHL	Marshall Islands
			MNP	Northern Mariana Islands
			NCL	New Caledonia
			NIU	Niue
			NRU	Nauru
			PLW	Palau
			PNG	Papua New Guinea
			PYF	French Polynesia
			SLB	Solomon Islands
			TKL	Tokelau
			TON	Tonga
			TUV	Tuvalu
			VUT	Vanuatu
			WLF	Wallis and Futuna
			WSM	Samoa
			PCN	Pitcairn
			UMI	United States Minor Outlying Islands
4	CHN	China	CHN	China
5	HKG	Hong Kong	HKG	Hong Kong
6	JPN	Japan	JPN	Japan
7	KOR	Korea Republic of	KOR	Korea Republic of
8	MNG	Mongolia	MNG	Mongolia
9	TWN	Taiwan	TWN	Taiwan

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No.	Code	Description	Code	Member Countries
10	XEA	Rest of East Asia	MAC	Macao
			PRK	Korea Democratic Peoples Republic of
11	KHM	Cambodia	KHM	Cambodia
12	IDN	Indonesia	IDN	Indonesia
13	LAO	Lao People's Democratic Republic	LAO	Lao People's Democratic Republic
14	MYS	Malaysia	MYS	Malaysia
15	PHL	Philippines	PHL	Philippines
16	SGP	Singapore	SGP	Singapore
17	THA	Thailand	THA	Thailand
18	VNM	Viet Nam	VNM	Viet Nam
19	XSE	Rest of Southeast Asia	BRN	Brunei Darussalam
			MMR	Myanmar
			TLS	Timor Leste
20	BGD	Bangladesh	BGD	Bangladesh
21	IND	India	IND	India
22	NPL	Nepal	NPL	Nepal
23	PAK	Pakistan	PAK	Pakistan
24	LKA	Sri Lanka	LKA	Sri Lanka
25	XSA	Rest of South Asia	AFG	Afghanistan
			BTN	Bhutan
			MDV	Maldives
26	CAN	Canada	CAN	Canada
27	USA	United States of America	USA	United States of America
28	MEX	Mexico	MEX	Mexico
29	XNA	Rest of North America	BMU	Bermuda
			GRL	Greenland
			SPM	Saint Pierre and Miquelon
30	ARG	Argentina	ARG	Argentina
31	BOL	Bolivia, Plurinational Republic of	BOL	Bolivia, Plurinational Republic of
32	BRA	Brazil	BRA	Brazil
33	CHL	Chile	CHL	Chile
34	COL	Colombia	COL	Colombia
35	ECU	Ecuador	ECU	Ecuador
36	PRY	Paraguay	PRY	Paraguay
37	PER	Peru	PER	Peru

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No.	Code	Description	Code	Member Countries
38	URY	Uruguay	URY	Uruguay
39	VEN	Venezuela	VEN	Venezuela
40	XSM	Rest of South America	FLK	Falkland Islands (Malvinas)
			GUF	French Guiana
			GUY	Guyana
			SUR	Suriname
			SGS	South Georgia and the South Sandwich Islands
41	CRI	Costa Rica	CRI	Costa Rica
42	GTM	Guatemala	GTM	Guatemala
43	HND	Honduras	HND	Honduras
44	NIC	Nicaragua	NIC	Nicaragua
45	PAN	Panama	PAN	Panama
46	SLV	El Salvador	SLV	El Salvador
47	XCA	Rest of Central America	BLZ	Belize
48	XCB	Caribbean	ABW	Aruba
			AIA	Anguilla
			ANT	Netherlands Antilles
			ATG	Antigua & Barbuda
			BHS	Bahamas
			BRB	Barbados
			CUB	Cuba
			CYM	Cayman Islands
			DMA	Dominica
			DOM	Dominican Republic
			GRD	Grenada
			HTI	Haiti
			JAM	Jamaica
			KNA	Saint Kitts and Nevis
			LCA	Saint Lucia
			MSR	Montserrat
			PRI	Puerto Rico
			TCA	Turks and Caicos Islands
			TTO	Trinidad and Tobago
			VCT	Saint Vincent and the Grenadines
			VGB	Virgin Islands British
			VIR	Virgin Islands U.S.

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No.	Code	Description	Code	Member Countries
49	AUT	Austria	AUT	Austria
50	BEL	Belgium	BEL	Belgium
51	CYP	Cyprus	CYP	Cyprus
52	CZE	Czech Republic	CZE	Czech Republic
53	DNK	Denmark	DNK	Denmark
54	EST	Estonia	EST	Estonia
55	FIN	Finland	FIN	Finland
			ALA	Aland Islands
56	FRA	France	FRA	France
			GLP	Guadeloupe
			MTQ	Martinique
			REU	Reunion
57	DEU	Germany	DEU	Germany
58	GRC	Greece	GRC	Greece
59	HUN	Hungary	HUN	Hungary
60	IRL	Ireland	IRL	Ireland
61	ITA	Italy	ITA	Italy
62	LVA	Latvia	LVA	Latvia
63	LTU	Lithuania	LTU	Lithuania
64	LUX	Luxembourg	LUX	Luxembourg
65	MLT	Malta	MLT	Malta
66	NLD	Netherlands	NLD	Netherlands
67	POL	Poland	POL	Poland
68	PRT	Portugal	PRT	Portugal
69	SVK	Slovakia	SVK	Slovakia
70	SVN	Slovenia	SVN	Slovenia
71	ESP	Spain	ESP	Spain
72	SWE	Sweden	SWE	Sweden
73	GBR	United Kingdom	GBR	United Kingdom
74	CHE	Switzerland	CHE	Switzerland
75	NOR	Norway	NOR	Norway
			SJM	Svalbard and Jan Mayen
76	XEF	Rest of EFTA	ISL	Iceland
			LIE	Liechtenstein
77	ALB	Albania	ALB	Albania
78	BGR	Bulgaria	BGR	Bulgaria
79	BLR	Belarus	BLR	Belarus
80	HRV	Croatia	HRV	Croatia

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No.	Code	Description	Code	Member Countries
81	ROU	Romania	ROU	Romania
82	RUS	Russian Federation	RUS	Russian Federation
83	UKR	Ukraine	UKR	Ukraine
84	XEE	Rest of Eastern Europe	MDA	Moldova Republic of
85	XER	Rest of Europe	AND	Andorra
			BIH	Bosnia and Herzegovina
			FRO	Faroe Islands
			GIB	Gibraltar
			MCO	Monaco
			MKD	Macedonia the former Yugoslav Republic of
			SMR	San Marino
			SRB	Serbia
			GGY	Guernsey
			IMN	Isle of Man
			JEY	Jersey
			MNE	Montenegro
			VAT	Holy See (Vatican City State)
86	KAZ	Kazakhstan	KAZ	Kazakhstan
87	KGZ	Kyrgyzstan	KGZ	Kyrgyzstan
88	XSU	Rest of Former Soviet Union	TJK	Tajikistan
			TKM	Turkmenistan
			UZB	Uzbekistan
89	ARM	Armenia	ARM	Armenia
90	AZE	Azerbaijan	AZE	Azerbaijan
91	GEO	Georgia	GEO	Georgia
92	BHR	Bahrain	BHR	Bahrain
93	IRN	Iran Islamic Republic of	IRN	Iran Islamic Republic of
94	ISR	Israel	ISR	Israel
95	KWT	Kuwait	KWT	Kuwait
96	OMN	Oman	OMN	Oman
97	QAT	Qatar	QAT	Qatar
98	SAU	Saudi Arabia	SAU	Saudi Arabia
99	TUR	Turkey	TUR	Turkey
100	ARE	United Arab Emirates	ARE	United Arab Emirates
101	XWS	Rest of Western Asia	IRQ	Iraq
			JOR	Jordan

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No.	Code	Description	Code	Member Countries
			LBN	Lebanon
			PSE	Palestinian Territory Occupied
			SYR	Syrian Arab Republic
			YEM	Yemen
102	EGY	Egypt	EGY	Egypt
103	MAR	Morocco	MAR	Morocco
104	TUN	Tunisia	TUN	Tunisia
105	XNF	Rest of North Africa	DZA	Algeria
			LBY	Libyan Arab Jamahiriya
			ESH	Western Sahara
106	CMR	Cameroon	CMR	Cameroon
107	CIV	Cote d'Ivoire	CIV	Cote d'Ivoire
108	GHA	Ghana	GHA	Ghana
109	NGA	Nigeria	NGA	Nigeria
110	SEN	Senegal	SEN	Senegal
111	XWF	Rest of Western Africa	BEN	Benin
			BFA	Burkina Faso
			CPV	Cape Verde
			GIN	Guinea
			GMB	Gambia
			GNB	Guinea-Bissau
			LBR	Liberia
			MLI	Mali
			MRT	Mauritania
			NER	Niger
			SHN	Saint Helena, ASCENSION AND TRISTAN DA CUNHA
			SLE	Sierra Leone
			TGO	Togo
112	XCF	Central Africa	CAF	Central African Republic
			COG	Congo
			GAB	Gabon
			GNQ	Equatorial Guinea
			STP	Sao Tome and Principe
			TCD	Chad
113	XAC	South Central Africa	AGO	Angola

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No.	Code	Description	Code	Member Countries
			COD	Congo the Democratic Republic of the
114	ETH	Ethiopia	ETH	Ethiopia
115	KEN	Kenya	KEN	Kenya
116	MDG	Madagascar	MDG	Madagascar
117	MWI	Malawi	MWI	Malawi
118	MUS	Mauritius	MUS	Mauritius
119	MOZ	Mozambique	MOZ	Mozambique
120	TZA	Tanzania United Republic of	TZA	Tanzania United Republic of
121	UGA	Uganda	UGA	Uganda
122	ZMB	Zambia	ZMB	Zambia
123	ZWE	Zimbabwe	ZWE	Zimbabwe
124	XEC	Rest of Eastern Africa	BDI	Burundi
			COM	Comoros
			DJI	Djibouti
			ERI	Eritrea
			MYT	Mayotte
			RWA	Rwanda
			SDN	Sudan
			SOM	Somalia
			SYC	Seychelles
125	BWA	Botswana	BWA	Botswana
126	NAM	Namibia	NAM	Namibia
127	ZAF	South Africa	ZAF	South Africa
128	XSC	Rest of South African Customs Union	LSO	Lesotho
			SWZ	Swaziland
129	XTW	Rest of the World	ATA	Antarctica
			ATF	French Southern Territories
			BVT	Bouvet Island
			IOT	British Indian Ocean Territory

2.2.2 GTAP Standard Countries

A group comprised of 244 countries formed the set of standard countries in the construction of the GTAP 8 Data Base. The identification of a set of standard countries is key to achieving the goal of regional flexibility in the data base construction process. Regional flexibility is attained when new regions can readily be added to the data base by simply including the new region(s) in a list of

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regions and a mapping file used in the data construction process and supplying the additional country's input-output table.

To achieve regional flexibility, contributors of international data sets to GTAP are encouraged to provide the data on a country basis rather than on a GTAP region basis. This facilitates revision of the GTAP regional classification without having to go back to the data contributors for new, reclassified source data. The contributed data is then mapped or transformed to apply to the set of standard countries. A mapping between the standard set of countries and the set of GTAP regions is then used to aggregate the data (see table 2.2). The mapping file is revised when a new region is introduced in the GTAP Data Base.

The country composition of the set of standard countries for GTAP 8 is such that it omits no significant economies and it captures all significant information from the contributed international data sets. We obtain a GDP estimate for each standard country for use as a scaling factor in aggregating data sets.

2.2.3 GTAP Sectoral Classification (GSC2)

Tables 2.3 and 2.4 show the sectoral definitions used in the GTAP 8 Data Base. We define the GTAP agricultural and food processing sectors by reference to the Central Product Classification (CPC), as shown in table 2.3. The other GTAP sectors are defined by reference to the International Standard Industry Classification (ISIC), as shown in table 2.4. We use the ISIC for most sectors, because it is the reference point for sectoral classification in most I-O statistics. But for agriculture and food processing, the ISIC does not provide the detail we need, so we use instead the CPC. The CPC was developed by the Statistical Office of the United Nations to serve as a bridge between the ISIC and other sectoral classifications (UN 1990, 1991).

Table 2.3 GSC2 Sectors defined by Reference to the CPC

GSC2 No.	Code	CPC Code	Description
1	pdr	0113	Rice, not husked
		0114	Husked rice
2	wht	0111	Wheat and meslin
3	gro	0112	Maize (corn)
		0115	Barley
		0116	Rye, oats
		0119	Other cereals
4	v_f	012	Vegetables
		013	Fruit and nuts
5	osd	014	Oil seeds and oleaginous fruit
6	c_b	018	Plants used for sugar manufacturing
7	pfb	0192	Raw vegetable materials used in textiles
8	ocr	015	Live plants; cut flowers and flower buds; flower seeds and fruit seeds; vegetable Seeds
		016	Beverage and spice crops
		017	Unmanufactured tobacco
		0191	Cereal straw and husks, unprepared, whether or not chopped, ground, pressed, or

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Table 2.3 GSC2 Sectors defined by Reference to the CPC

GSC2 No.	Code	CPC Code	Description
			in the form of pellets; swedes, mangolds, fodder roots, hay, lucerne (alfalfa), clover, sainfoin, forage kale, lupines, vetches and similar forage products, whether or not in the form of pellets
		0193	Plants and parts of plants used primarily in perfumery, in pharmacy, or for insecticidal, fungicidal or similar purposes
		0194	Sugar beet seed and seeds of forage plants
		0199	Other raw vegetable materials
9	ctl	0211	Bovine cattle, sheep and goats, horses, asses, mules, and hinnies, live
		0299	Bovine semen
10	Oap	0212	Swine, poultry and other animals, live
		0292	Eggs, in shell, fresh, preserved or cooked
		0293	Natural honey
		0294	Snails, live, fresh, chilled, frozen, dried, salted or in brine, except sea snails; frogs' legs, fresh, chilled or frozen
		0295	Edible products of animal origin n.e.c
		0297	Hides, skins and furskins, raw
		0298	Insect waxes and spermaceti, whether or not refined or colored
11	rmk	0291	Raw milk
12	wol	0296	Raw animal materials used in textile
13	frs	03	Forestry, logging and related service activities
19	cmt	21111	Meat of bovine animals, fresh or chilled
		21112	Meat of bovine animals, frozen
		21115	Meat of sheep, fresh or chilled
		21116	Meat of sheep, frozen
		21117	Meat of goats, fresh, chilled or frozen
		21118	Meat of horses, asses, mules or hinnies, fresh, chilled or frozen
		21119	Edible offal of bovine animals, swine, sheep, goats, horses, asses, mules or hinnies, fresh, chilled or frozen
		2161	Fats of bovine animals, sheep, goats, pigs and poultry, raw or rendered; wool grease
20	omt	21113	Meat of swine, fresh or chilled
		21114	Meat of swine, frozen
		2112	Meat and edible offal, fresh, chilled or frozen, n.e.c.
		2113	Preserves and preparations of meat, meat offal or blood
		2114	Flours, meals and pellets of meat or meat offal, inedible; greaves
		2162	Animal oils and fats, crude and refined, except fats of bovine animals, sheep, goats, pigs and poultry
21	vol	2163	Soya-bean, ground-nut, olive, sunflower-seed, safflower, cotton-seed, rape, colza and mustard oil, crude
		2164	Palm, coconut, palm kernel, babassu and linseed oil, crude
		2165	Soya-bean, ground-nut, olive, sunflower-seed, safflower, cotton-seed, rape, colza and mustard oil and their fractions, refined but not chemically modified; other oils obtained solely from olives and sesame oil, and their fractions, whether or

Table 2.3 GSC2 Sectors defined by Reference to the CPC

GSC2 No.	Code	CPC Code	Description
			not refined, but not chemically modified
		2166	Maize (corn) oil and its fractions, not chemically modified
		2167	Palm, coconut, palm kernel, babassu and linseed oil and their fractions, refined but not chemically modified; castor, tung and jojoba oil and fixed vegetable fats and oils (except maize oil) and their fractions n.e.c., whether or not refined, but not chemically modified
		2168	Margarine and similar preparations
		2169	Animal or vegetable fats and oils and their fractions, partly or wholly hydrogenated, inter-esterified, re-esterified or elaidinised, whether or not refined, but not further prepared
		217	Cotton linters
		218	Oil-cake and other solid 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; degreas; residues resulting from the treatment of fatty substances or animal or vegetable waxes
22	mil	22	Dairy products
23	pcr	2316	Rice, semi- or wholly milled
24	sgr	235	Sugar
25	ofd	212	Prepared and preserved fish
		213	Prepared and preserved vegetables
		214	Fruit juices and vegetable juices
		215	Prepared and preserved fruit and nuts
		2311	Wheat or meslin flour
		2312	Cereal flours other than wheat or meslin
		2313	Groats, meal and pellets of wheat
		2314	Cereal groats, meal and pellets n.e.c.
		2315	Other cereal grain products (including corn flakes)
		2317	Other vegetable flours and meals
		2318	Mixes and doughs for the preparation of bakers' wares
		232	Starches and starch products; sugars and sugar syrups n.e.c.
		233	Preparations used in animal feeding
		234	Bakery products
		236	Cocoa, chocolate and sugar confectionery
		237	Macaroni, noodles, couscous and similar farinaceous products
		239	Food products n.e.c.
26	b_t	24	Beverages
		25	Tobacco products

n.e.c. Not elsewhere classified

Table 2.4 GSC2 Sectors defined by Reference to the ISIC, Rev. 3

GSC2 No.	Code	ISIC3 Code	Description
14	fsH	015 05	Hunting, trapping and game propagation including related service Fishing, operation of fish hatcheries and fish farms; service activities incidental to fishing
15	coa	101 102 103	Mining and agglomeration of hard coal Mining and agglomeration of lignite Mining and agglomeration of peat
16	oil	111 112	Extraction of crude petroleum and natural gas (part) Service activities incidental to oil and gas extraction excluding surveying (part)
17	gas	111 112	Extraction of crude petroleum and natural gas (part) Service activities incidental to oil and gas extraction excluding surveying (part)
18	omn	12 13 14	Mining of uranium and thorium ores Mining of metal ores Other mining and quarrying
27	tex	17 243	Manufacture of textiles Manufacture of man-made fibres
28	wap	18	Manufacture of wearing apparel; dressing and dyeing of fur
29	lea	19	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear
30	lum	20	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
31	ppp	21 22	Manufacture of paper and paper products Publishing, printing and reproduction of record media
32	p_c	231 232 233	Manufacture of coke oven products Manufacture of refined petroleum products Processing of nuclear fuel
33	crp	241 242 25	Manufacture of basic chemicals Manufacture of other chemical products Manufacture of rubber and plastic products
34	nmm	26	Manufacture of other non-metallic mineral products
35	i_s	271 2731	Manufacture of basic iron and steel Casting of iron and steel
36	nfm	272 2732	Manufacture of basic precious and non-ferrous metals Casting of non-ferrous metals
37	fmp	28	Manufacture of fabricated metal products, except machinery and equipment
38	mvh	34	Manufacture of motor vehicles, trailers and semi-trailers
39	otn	35	Manufacture of other transport equipment
40	ele	30 32	Manufacture of office, accounting and computing machinery Manufacture of radio, television and communication equipment and apparatus
41	ome	29 31	Manufacture of machinery and equipment n.e.c. Manufacture of electrical machinery and apparatus n.e.c.

Table 2.4 GSC2 Sectors defined by Reference to the ISIC, Rev. 3

GSC2 No.	Code	ISIC3 Code	Description
		33	Manufacture of medical, precision and optical instruments, watches and clocks
42	omf	36	Manufacturing n.e.c.
		37	Recycling
43	ely	401	Production, collection and distribution of electricity
44	gdt	402	Manufacture of gas; distribution of gaseous fuels through mains
		403	Steam and hot water supply
45	wtr	41	Collection, purification and distribution of water
46	cns	45	Construction
47	trd	50	Sales, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel
		51	Wholesale trade and commission trade, except of motor vehicles and motorcycles
		521	Non-specialized retail trade in stores
		522	Retail sale of food, beverages and tobacco in specialized stores
		523	Other retail trade of new goods in specialized stores
		524	Retail sale of second-hand goods in stores
		525	Retail trade not in stores
		526	Repair of personal and household goods
		55	Hotels and restaurants
48	otp	60	Land transport; transport via pipelines
		63	Supporting and auxiliary transport activities; activities of travel agencies
49	wtp	61	Water transport
50	atp	62	Air transport
51	cmn	64	Post and telecommunications
52	ofi	65	Financial intermediation, except insurance and pension funding
		67	Activities auxiliary to financial intermediation
53	isr	66	Insurance and pension funding, except compulsory social security
54	obs	70	Real estate activities
		711	Renting of transport equipment
		712	Renting of other machinery and equipment
		713	Renting of personal and household goods n.e.c.
		72	Computer and related activities
		73	Research and development
		74	Other business activities
55	ros	92	Recreational, cultural and sporting activities
		93	Other service activities
		95	Private households with employed persons
56	osg	75	Public administration and defense; compulsory social security
		80	Education
		85	Health and social work
		90	Sewage and refuse disposal, sanitation and similar activities
		91	Activities of membership organizations n.e.c.
		99	Extra-territorial organizations and bodies

Table 2.4 GSC2 Sectors defined by Reference to the ISIC, Rev. 3

GSC2 No.	Code	ISIC3 Code	Description
57	dwe	n.a.	n.a.

n.a. Not available

n.e.c. Not elsewhere classified

2.3 GTAP Parameters File

The parameters file contains invariant behavioral parameters and switch parameters, arranged in ten arrays, as listed in table 2.5. A detailed description of the parameters and their source data is available in chapter 14 of the documentation.

Table 2.5 Arrays in the GTAP Parameters File

Name	Dimension	Description
ESBD	t	elasticity of substitution between domestic product and imports
ESBM	t	elasticity of substitution between imports from different regions
ESBT	t	elasticity of substitution between composite intermediate inputs
ESBV	t	elasticity of substitution between primary factors in the production of value-Added
ETRE	s	elasticity of transformation between industries for sluggish primary factor Endowments
INCP	$t \times r$	expansion parameter in the CDE consumer demand system
RDLT	1	binary switch mechanism of allocating investment funds
RFLX	r	flexibility of expected net rate of return on capital stock with respect to Investment
SLUG	e	sluggish-mobile switch parameter
SUBP	$t \times r$	substitution parameter in the CDE consumer demand system
PYRT	$5 \times 5 \times 12 \times 38$	domestic support payment rates with appropriate bases in %
PAYD	$5 \times 5 \times 12 \times 38$	domestic support payments of different types/bases in millions of USD

e Number of factor endowments

r Number of regions

s Number of primary factors not perfectly mobile between industries

t Number of tradable commodities (sectors)

New headers PYRT and PAYD are not parameters, but are data that are meant for display/information and not for aggregation or direct use in the standard GTAP Model. The reason for not including this in the standard data file is that they are neither readable by the model nor are they meant for aggregation, since they are available merely for a subset of GTAP sectors (12) and regions (38). PYRT is the OECD domestic support payment rates, shown by types of decoupling, types of payment bases and sectors. PAYD shows the corresponding payments in millions of USD. The decoupling types, as defined by OECD are as follows:

1. Single Commodity Transfers (SCT): These are targeted at specific sectors.
2. Group Commodity Transfers (GCT): These are targeted at groups of sectors.

3. All Commodity Transfers (ACT): These are not targeted at any specific sector, but rather transferred to entire agricultural sector. But these are still defined in terms of appropriate bases. In other words, these are targeted at different inputs (intermediate input or factors) or output specifically.
4. Other Transfers to Producers (OTP): These are completely decoupled with sectors as well as inputs/output. These payments are transferred to the entire agricultural sector, without specifically targeting at inputs or output.
5. Total Transfer Payments: This is the sum total of the above payments.

2.4 GTAP Data File

The main data file consists of dollar values of flows of goods and services listed in table 2.6.

Table 2.6 Data Arrays in the GTAP 8 Data File

Name	Dimension	Description
ADRV	$t \times r \times r$	anti-dumping duty
DPSM	r	sum of distribution parameters in the household demand system
EVFA	$e \times p \times r$	primary factor purchases, at agents' prices
EVOA	$e \times r$	primary factor sales, at agents' prices
FBEP	$e \times p \times r$	factor-based subsidies
FTRV	$e \times p \times r$	factor employment tax revenue
ISEP	$t \times p \times r \times d$	intermediate input subsidies
MFRV	$t \times r \times r$	export tax equivalent of MFA quota premium
OSEP	$t \times r$	ordinary output subsidy
POP	r	Population
PURV	$t \times r \times r$	export tax equivalent of price undertakings
SAVE	r	net saving, by region
TFRV	$t \times r \times r$	ordinary import duty
TVOM	$t \times r$	sales of domestic product, at market prices
VDEP	r	capital depreciation
VDFA	$t \times p \times r$	domestic purchases, by firms, at agents' prices
VDPM	$t \times p \times r$	domestic purchases, by firms, at market prices
VDGA	$t \times r$	domestic purchases, by government, at agents' prices
VDGM	$t \times r$	domestic purchases, by government, at market prices
VDPA	$t \times r$	domestic purchases, by households, at agents' prices
VDPM	$t \times r$	domestic purchases, by households, at market prices
VFM	$e \times p \times r$	primary factor purchases, by households, at market prices

Table 2.6 Data Arrays in the GTAP 8 Data File

Name	Dimension	Description
VIFA	$t \times p \times r$	import purchases, by firms, at agents' prices
VIFM	$t \times p \times r$	import purchases, by firms, at market prices
VIGA	$t \times r$	import purchases, by government, at agents' prices
VIGM	$t \times r$	import purchases, by government, at market prices
VIMS	$t \times r \times r$	imports, at market prices
VIPA	$t \times r$	import purchases, by households, at agents' prices
VIPM	$t \times r$	import purchases, by households, at market prices
VIWS	$t \times r \times r$	imports, at world prices
VKB	r	capital stock
VRRV	$t \times r \times r$	export subsidy equivalent of voluntary export restraints
VST	$t \times r$	margin exports
VTWR	$m \times t \times r \times r$	margins by margin commodity
VXMD	$t \times r \times r$	non-margin exports, at market prices
VXWD	$t \times r \times r$	non-margin exports, at world prices
		ordinary export tax
XTRV	$t \times r \times r$	
VTSS	$2 \times t \times r \times r$	value of imports in world prices + specific & advalorem tariff revenue

d = number of trade directions (exports, imports);

e = number of endowment commodities (primary factors);

m = number of margin commodities (sectors);

p = number of produced commodities;

r = number of regions;

t = number of tradable commodities (sectors)

The main data file also includes arrays summarizing the value of revenue generated from protection measures and the subsidy expenditures related to support measures. These values are all in millions of (2004 and 2007) U.S. dollars in the GTAP 8 Data Base.

The protection data is available in the GTAP data file both implicitly and explicitly. Implicitly, the rates of different protection instruments may be calculated from two matrices which refer to two different valuations of the same value flow. Table 2.7 shows the protection measures that may be calculated from the data base and the arrays associated with these measures. The import and export duties calculated from the data base are the comprehensive measures, described in the detailed documentation.

The protection data explicitly declared in the GTAP data file are the revenue values or expenditure values associated with the protection measures. The revenues/expenditures from the different types of import and export instruments are given in separate arrays. These explicit arrays are TFRV, XTRV, MFRV, ADRV, PURV, VRRV, OSEP, ISEP, and FBEP in table 2.6. VTSS is a new header introduced in GTAP 8 Data Base, showing the value of imports in world prices including the tariff revenue data by its components, two of them, namely, specific and ad valorem tariff. Protection rates, including the rTTS rates that correspond to the new data in VTSS, are also explicitly summarized in a tax rates file.

Table 2.7 Implicit Protection in the GTAP Data File

Protection Measures	Formula*	Description
Import Duties	VIMS / VIWS	power of import tax (comprehensive)
Export Duties	VXMD / VXWD	power of export tax (comprehensive)
Output Subsidies	VOA / VOM	power of output tax
Intermediate Input Subsidies		
Domestic Inputs	VDFA / VDFM	power of domestic intermediate input tax
Imported Inputs	VIFA / VIFM	power of imported intermediate input tax
Factor-Based Payments	EVFA / (VFM + FTRV)	power of factor-based subsidies

* The difference between the two value flows gives value of revenue or subsidy expenditure.

2.5 GTAP Energy Volumes Data File

As shown in table 2.8, the energy volumes data file includes three arrays reporting the volume of energy purchases by firms and by households and also the volume of bilateral trade in energy products, in millions of tons of oil equivalents. The headers in this file have changed in version 8. The detailed documentation available online describes the construction of the energy data.

Table 2.8 Arrays in the Energy Volumes Data File

Name	Dimension	Description
EC	n	energy commodities
EDF	$n \times p \times r$	volume of domestic input purchases by firms (Mtoe)
EDP	$n \times r$	volume of domestic purchases by households (Mtoe)
EDG	$n \times r$	volume of domestic purchases by government (Mtoe)
EIF	$n \times p \times r$	volume of imported input purchases by firms (Mtoe)
EIP	$n \times r$	volume of imported purchases by households (Mtoe)
EIG	$n \times r$	volume of imported purchases by government (Mtoe)
EXI	$n \times r \times r$	volume of bilateral trade (Mtoe)

n Number of energy commodities (sectors)

r Number of regions

p Number of produced commodities (sectors)

2.6 GTAP CO2 Emissions Data File

This is a new file being made available in GTAP 8 data Base. In the previous versions, this was part of the satellite dataset. In the current version the energy volumes data file explained above

was modified in its structure mainly to accommodate this new structure of CO2 emissions dataset, described in table 2.9.

Table 2.9 Arrays in the CO2 Emissions Data File

Name	Dimension	Description
FC	n	fuel commodities
MDF	$n \times p \times r$	emissions from domestic input purchases by firms (Mt CO2)
MDP	$n \times r$	emissions from domestic purchases by households (Mt CO2)
MDG	$n \times r$	emissions from domestic purchases by government (Mt CO2)
MIF	$n \times p \times r$	emissions from imported input purchases by firms (Mt CO2)
MIP	$n \times r$	emissions from imported purchases by households (Mt CO2)
MIG	$n \times r$	emissions from imported purchases by government (Mt CO2)

n Number of fuel commodities

r Number of regions

p Number of produced commodities (sectors)

2.7 GTAP 8 Data Packages

The GTAP 8 Data Base is available through two aggregation packages, FlexAgg and GTAPAgg (see chapters 4 and 5). A license file that relaxes the 10-sector by 10-region default constraint on the GTAPAgg package is provided to purchasers.

GTAP Data Package pricing and order information, as well as the online documentation, are available on the GTAP website at: <http://www.gtap.agecon.purdue.edu/databases/>.

Users may also be interested in the RunGTAP software. RunGTAP is a graphical user environment developed by Mark Horridge of the Centre of Policy Studies, Monash University, for use in interactively solving the GTAP Model. RunGTAP allows the user to run simulations interactively in a Windows environment using the GTAP general equilibrium model. RunGTAP is freely available on the GTAP website at: <http://www.gtap.agecon.purdue.edu/products/rungtap/>.

References

- Dimaranan, B.V. and McDougall, R.A. (2006). Ch 2, “Guide to the GTAP Data Base” in Dimaranan, B.V. *Global Trade, Assistance, and Production: The GTAP 6 Data Base*, Center for Global Trade Analysis, Purdue University.
- Harrison, W. J. and Pearson, K. R. 1998. An Introduction to GEMPACK, GEMPACK Document No. GPD-1, 4th ed. Melbourne: Centre of Policy Studies and Impact Project, Monash University.
- United Nations. 1990. International Standard Industrial Classification of All Economic Activities, Third Revision, Statistical Paper Series M No. 4, Rev. 3, Sales No. E.91.XVII.7. New York: United Nations Publishing Division.
- United Nations. 1991. Provisional Central Product Classification, Statistical Paper Series M No. 77, Sales No. E.91.XVII.7. New York: United Nations Publishing Division.