

Chapter 8.E

Representative Table and Composite Regions

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This chapter describes three sets of regional groupings that are used in the construction of the GTAP Data Base, namely: the representative region, geographic regions, and composite regions. Input- output (I-O) tables are constructed for the representative region and for composite regions. A classification of the global economy into a few large geographic regions is used to construct I-O tables for composite regions and in filling in missing macroeconomic data (see chapter 6).

8.E.1 Representative Table

The representative table is an I-O table created as a linear combination of the set of I-O tables which have full sectoral disaggregation. Ideally, the regions comprising the representative table should represent the broad spectrum of economic development and geographic location of the regions in the data base. Table 8.E.1 provides the list of 48 regions whose I-O tables form the representative I-O table used in GTAP 10.

The representative I-O table is used in several stages in the data base construction process. In the initial stage of checking contributed I-O tables, cost and use shares calculated from an I-O table submitted to GTAP are compared to those from the representative table to identify highly unusual shares and possible errors in the contributed I-O table. Once an I-O table is found to be acceptable and is included in the GTAP data construction process, the I-O table undergoes an initial cleaning procedure where the representative table is used as the source of scaling factors which are then used in revising abnormal or infeasible values in the initial I-O table.

The representative table is also used in the I-O table disaggregation procedure (chapter 8.C). For sectors that are not split in the original I-O table, the structure of production, intermediate usage, and consumption are adapted from the representative table. This is true for the non- agricultural sectors. We use agricultural I-O data for disaggregating agriculture (see chapter 8.A).

8.E.2 Geographic Regions

In the GTAP 10 Data Base, the global economy is represented by 141 regions, 121 of which are countries for which national I-O data are available (referred to as primary regions) and 20 are composite regions.

Dividing the global economy into a fewer number of geographic regions is useful in certain aspects of the data base construction. In generating a complete macroeconomic dataset, for each geographic region, averages of the shares of GDP aggregates to total GDP for countries with available data are used for filling in estimates of the GDP aggregates for countries with missing data (see chapter 6). As discussed in the next section, geographic regions are also used in the construction of I-O tables for composite regions.

Table 8.E.1 Primary Regions Included in the Representative I-O Table

GTAP Regions		GTAP Regions		GTAP Regions	
AUS	Australia	CYP	Cyprus	MLT	Malta
NZL	New Zealand	CZE	Czech Republic	NLD	Netherlands
JPN	Japan	DEU	Germany	POL	Poland
KOR	Korea	DNK	Denmark	PRT	Portugal
TWN	Taiwan	ESP	Spain	ROU	Romania
KHM	Cambodia	EST	Estonia	SVK	Slovakia
SGP	Singapore	FIN	Finland	SVN	Slovenia
BGD	Bangladesh	FRA	France	SWE	Sweden
USA	United States	GRC	Greece	GBR	United Kingdom
MEX	Mexico	HRV	Croatia	BWA	Botswana
COL	Colombia	HUN	Hungary	MDG	Madagascar
BRA	Brazil	IRL	Ireland	MOZ	Mozambique
URY	Uruguay	ITA	Italy	MWI	Malawi
AUT	Austria	LVA	Latvia	TZA	Tanzania
BEL	Belgium	LTU	Lithuania	ZAF	South Africa
BGR	Bulgaria	LUX	Luxembourg	ZMB	Zambia

The set of 19 geographic regions given in table 8.E.2 are used in constructing the macroeconomic dataset. Table 8.E.3 provides a mapping between the 19 geographic groups and the 244 standard countries.

Table 8.E.2 Geographic Regions used in GTAP Data Construction

Region Code	Description	Region Code	Description
OCEN	Oceania	NEUR	Northern Europe
EAAS	Eastern Asia	WEUR	Western Europe
SEAS	South-eastern Asia	EEUR	Eastern Europe
STAS	Southern Asia	SEUR	Southern Europe
CEAS	Central Asia	NAFR	Northern Africa
WEAS	Western Asia	WAFR	Western Africa
NAMR	North America	CAFR	Central Africa
CARB	Caribbean	EAFR	Eastern Africa
CAMR	Central America	SAFR	Southern Africa
SAMR	South America		

Because of the constraint imposed by the unavailability of a single I-O table for any of the countries included in a geographic region such as the Caribbean, a smaller set of 15 geographic regions is used in constructing the composite regions. This was done by classifying the Caribbean, Central America, and South America together as the larger Latin America region and defining the larger Sub-Saharan Africa region as composed of Eastern Africa, Central Africa, Western Africa, and Southern Africa.

8.E.3 Composite Regions

The GTAP 10 Data Base includes 121 contributed I-O tables out of 141 regions. The I-O data for these primary regions are used to construct I-O tables for the 20 composite regions which account for the rest of

the economies in the world—i.e., including the Rest of the World (XTW) region which represents remote territories such as Antarctica, Bouvet Islands, British Indian Ocean Territory and French Southern Territories.

It should be noted that although we continue to use the same names as some composite regions in the GTAP 9 Data Base, the composition of some of these regions have changed due to new I-O tables we received, thereby lowering the number of countries remaining in composite regions.

Further we assume here that the average patterns of production, consumption, and savings in any individual country in the 20 composite regions can be approximated by patterns observed in one of its neighboring primary regions.

In constructing an I-O table for a composite region, we start by associating a primary region to each of the member countries in a composite region. The steps involved in the procedure are:

- all the 244 standard countries are matched on the basis of similarity in GDP per capita with a primary region within the same geographic region
- the target total GDP is generated for each composite region; this is the sum of GDP for the individual countries comprising the composite region
- the primary regions matching the countries in the composite region in terms of similarity in GDP per capita are noted and GDP weights (ratio of country GDP to total target GDP) are assigned to each primary region
- the I-O table for each composite region is constructed by combining the I-O data from the primary region tables summed according to the GDP share weights.

The I-O tables for the composite regions are then updated and adjusted to match aggregated regional data on macroeconomic aggregates, trade, protection, and energy in the FIT procedure documented in chapter 15.A.

Table 8.E.3 Geographic Regions and Mapping

OCEN	Oceania	
	American Samoa	ASM
	Australia	AUS
	Cocos (Keeling) Islands	CCK
	Cook Islands	COK
	Christmas Island	CXR
	Fiji	FJI
	Micronesia, Federated States of	FSM
	Guam	GUM
	Heard and McDonald Islands	HMD
	Kiribati	KIR
	Marshall Islands	MHL
	Northern Mariana Islands	MNP
	New Caledonia	NCL
	Norfolk Island	NFK
	Niue	NIU
	Nauru	NRU
	New Zealand	NZL
	Pitcairn	PCN
	Palau	PLW
	Papua New Guinea	PNG
	French Polynesia	PYF
	Solomon Islands	SLB
	Tokelau	TKL
	Tonga	TON
	Tuvalu	TUV
	United States Minor Outlying Islands	UMI
	Vanuatu	VUT
	Wallis and Futuna	WLF
	Samoa	WSM
EAAS	East Asia	
	China	CHN
	Hong Kong	HKG
	Japan	JPN
	Korea, Republic of	KOR
	Macau	MAC
	Mongolia	MNG
	Korea, Democratic People's Republic	PRK
	Taiwan	TWN
SEAS	South East Asia	
	Brunei Darussalam	BRN
	Indonesia	IDN
	Cambodia	KHM
	Lao People's Democratic Republic	LAO
	Myanmar	MMR
	Malaysia	MYS
	Philippines	PHL
	Singapore	SGP
	Thailand	THA
	Timor Leste	TLS
	Viet Nam	VNM

Table 8.E.3 Geographic Regions and Mapping

STAS	South Asia		
		Afghanistan	AFG
		Bangladesh	BGD
		Bhutan	BTN
		India	IND
		Iran, Islamic Republic of	IRN
		Sri Lanka	LKA
		Maldives	MDV
		Nepal	NPL
		Pakistan	PAK
CEAS	Central Asia		
		Kazakhstan	KAZ
		Kyrgyzstan	KGZ
		Tajikistan	TJK
		Turkmenistan	TKM
		Uzbekistan	UZB
WEAS	Western Asia		
		Armenia	ARM
		Azerbaijan	AZE
		Bahrain	BHR
		Cyprus	CYP
		Georgia	GEO
		Iran	IRN
		Iraq	IRQ
		Israel	ISR
		Jordan	JOR
		Kuwait	KWT
		Lebanon	LBN
		Oman	OMN
		Palestinian Territory, Occupied	PSE
		Qatar	QAT
		Saudi Arabia	SAU
		Syrian Arab Republic	SYR
		Turkey	TUR
		United Arab Emirates	ARE
		Yemen	YEM
NAMR	North America		
		Bermuda	BMU
		Canada	CAN
		Greenland	GRL
		Mexico	MEX
		Saint Pierre and Miquelon	SPM
		United States of America	USA

Table 8.E.3 Geographic Regions and Mapping

LMAR	Latin America		
	CARB	Caribbean	
		Aruba	ABW
		Anguilla	AIA
		Netherlands Antilles	ANT
		Antigua & Barbuda	ATG
		Bahamas	BHS
		Barbados	BRB
		Cuba	CUB
		Cayman Islands	CYM
		Dominica	DMA
		Dominican Republic	DOM
		Guadeloupe	GLP
		Grenada	GRD
		Haiti	HTI
		Jamaica	JAM
		Saint Kitts and Nevis	KA
		Saint Lucia	LCA
		Montserrat	MSR
		Martinique	MTQ
		Puerto Rico	PRI
		South Georgia and the South Sandwich Islands	SGS
		Turks and Caicos	TCA
		Trinidad and Tobago	TTO
		Saint Vincent and the Grenadines	VCT
		Virgin Islands, British	VGB
		Virgin Islands, U.S.	VIR
	CAMR	Central America	
		Belize	BLZ
		Costa Rica	CRI
		Guatemala	GTM
		Honduras	HND
		Nicaragua	NIC
		Panama	PAN
		El Salvador	SLV
	SAMR	South America	
		Argentina	ARG
		Bolivia	BOL
		Brazil	BRA
		Chile	CHL
		Colombia	COL
		Ecuador	ECU
		Falkland Islands (Malvinas)	FLK
		French Guiana	GUF
		Guyana	GUY
		Peru	PER
		Paraguay	PRY
		Suriname	SUR
		Uruguay	URY
		Venezuela	VEN

Table 8.E.3 Geographic Regions and Mapping

WEUR	Western Europe		
		Austria	AUT
		Belgium	BEL
		France	FRA
		Germany	DEU
		Liechtenstein	LEI
		Luxembourg	LUX
		Monaco	MCO
		Netherlands	NLD
		Switzerland	CHE
NEUR	Northern Europe		
		Denmark	DNK
		Estonia	EST
		Faroe Islands	FRO
		Finland	FIN
		Iceland	ISL
		Ireland	IRL
		Latvia	LVA
		Lithuania	LTU
		Norway	NOR
		Sweden	SWE
		United Kingdom	GBR
SEUR	Southern Europe		
		Albania	ALB
		Andorra	AND
		Bosnia and Herzegovina	BIH
		Croatia	HRV
		Gibraltar	GIB
		Greece	GRC
		Italy	ITA
		North Macedonia	MKD
		Malta	MLT
		Portugal	PRT
		San Marino	SMR
		Serbia and Montenegro	SCG
		Slovenia	SVN
		Spain	ESP
EEUR	Eastern Europe		
		Belarus	BLR
		Bulgaria	BGR
		Czech Republic	CZE
		Hungary	HUN
		Moldova, Republic of	MDA
		Poland	POL
		Romania	ROM
		Russian Federation	RUS
		Slovakia	SVK
		Ukraine	UKR

Table 8.E.3 Geographic Regions and Mapping

NAFR		Northern Africa	
		Algeria	DZA
		Egypt	EGY
		Libyan Arab Jamahiriya	LBY
		Morocco	MAR
		Tunisia	TUN
SSAF		Sub-Saharan Africa	
	WAFR	Western Africa	
		Benin	BEN
		Burkina Faso	BFA
		Cote d'Ivoire	CIV
		Cape Verde	CPV
		Ghana	GHA
		Guinea	GIN
		Gambia	GMB
		Guinea-Bissau	GNB
		Liberia	LBR
		Mali	MLI
		Mauritania	MRT
		Niger	NER
		Nigeria	NGA
		Senegal	SEN
		Saint Helene	SHN
		Sierra Leone	SLE
		Togo	TGO
	SAFR	Southern Africa	
		Botswana	BWA
		Lesotho	LSO
		Namibia	NAM
		Swaziland	SWZ
		South Africa	ZAF
	EAFR	Eastern Africa	
		Burundi	BDI
		Comoros	COM
		Djibouti	DJI
		Eritrea	ERI
		Ethiopia	ETH
		Kenya	KEN
		Madagascar	MDG
		Mozambique	MOZ
		Mauritius	MUS
		Malawi	MWI
		Mayotte	MYT
		Reunion	REU
		Rwanda	RWA
		Sudan	SDN
		Somalia	SOM
		Seychelles	SYC
		Tanzania, United Republic of	TZA
		Uganda	UGA
		Zambia	ZMB
		Zimbabwe	ZWE

Table 8.E.3 Geographic Regions and Mapping

CAFR	Central Africa	
	Angola	AGO
	Central African Republic	CAF
	Cameroon	CMR
	Congo, the Democratic Republic of	COD
	Congo	COG
	Gabon	GAB
	Equatorial Guinea	GNQ
	Sao Tome and Principe	STP
	Chad	TCD