Chapter 17

Other source data

17.1 Macroeconomic data

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The 1992 macroeconomic data that was used directly in the FIT process to update the regional input-output tables include the following components of GDP: private consumption, government consumption, and gross capital formation or investment. Per capita GDP data was also used in forming combinations of regions with input-output tables to create the composite regions. Macroeconomic data on GDP and GDP components (private consumption, government consumption, gross domestic fixed investment, stocks, exports, imports) and population data were obtained from the Bank Economic and Social Database (BESD) of the International Economics Department of the World Bank.[1] The BESD is an appropriate source of macroeconomic data for GTAP since it covers a wide range of countries and can generate data that has been reconciled for statistical discrepancies.

The macroeconomic data for individual countries, given in thousands of 1992 US dollars, was mapped to GTAP's regional aggregation scheme. There are some countries for which data on GDP and/or the GDP components were not available from the database. Estimates of the missing data for each of the individual countries were obtained before summing up the macroeconomic data to form the 30 GTAP regions.

For the countries for which GDP data was not available, an estimate of GDP for each individual country was obtained by classifying the country by income range, getting the average 1992 per capita GNP for that income range as given in the 1994 World Development Report, and

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1 The assistance provided by Christian Bach in acquiring the raw macroeconomic data from the World Bank BESD is gratefully acknowledged.

multiplying that with population. Using this method, an estimate of 1992 GDP was obtained for countries such as Cuba which accounts for 23 percent of the total GDP for the Central America and the Caribbean region (CAM); for Iraq, Libya and the Syrian Arab Republic which make up 13 percent of the total GDP of the Middle East and North African region (MEA); for Angola, Liberia, Somalia, and Zaire which comprises 11 percent of the total GDP for Sub-Saharan Africa (SSA); and for 11 countries which account for 22 percent of the total GDP of the Rest of the World region (ROW). The aggregated GDP for each GTAP region was used in estimating GDP per capita and in estimating missing GDP components data.

Within each GTAP region, for the individual countries for which GDP component data was not available from the database, estimates of GDP components were obtained by computing the average share of each GDP component to GDP in that region based on the subtotal from countries in the region with complete data, and then applying the shares to the GDP of that individual country. The GDP component data is then summed up for each GTAP region and expressed in millions of 1992 US dollars. The GTAP regions which include GDP component estimates obtained using this method are: Rest of South Asia (RAS), Central America and the Caribbean (CAM), Former Soviet Union (FSU), Middle East and North Africa (MEA), Sub-Saharan Africa (SSA), and the Rest of the World (ROW).

Table 17.1 Macroeconomic Data (1992 US$ million)

		Gross domestic product	Private consumption	Government consumption	Gross capital formation
AUS	Australia	296,590	184,898	54,915	58,433
NZL	New Zealand	40,881	25,370	6,753	6,748
JPN	Japan	3,662,426	2,090,611	341,521	1,129,079
KOR	Korea, Republic of	307,938	164,923	33,447	112,607
IDN	Indonesia	128,027	76,097	12,183	34,888
MYS	Malaysia	58,014	29,852	7,578	19,901
PHL	Philippines	52,977	39,152	5,116	11,084
SGP	Singapore	48,547	20,855	4,564	18,953
THA	Thailand	111,546	60,925	11,130	43,807
CHN	China, People's Republic of	418,462	222,469	41,120	123,312
HKG	Hong Kong	96,298	58,050	8,291	26,579
TWN	Taiwan	206,584	115,234	36,216	47,999
IND	India	242,355	161,923	27,099	52,130
RAS	Rest of South Asia	86,472	63,895	10,840	15,157
CAN	Canada	563,690	342,027	123,590	106,025
USA	United States	5,937,301	3,996,900	1,050,400	923,500
MEX	Mexico	334,356	237,782	33,202	68,483
CAM	Central America and the Caribbean	79,354	59,136	8,576	14,894
ARG	Argentina	228,779	162,382	31,696	34,794
BRA	Brazil	409,167	255,420	62,115	78,060
CHL	Chile	42,748	26,653	4,018	9,700
RSM	Rest of South America	176,134	127,780	16,187	31,522
E_U	European Union 12	7,053,534	4,275,875	1,341,713	1,423,938
EU3	Austria, Finland, and Sweden	540,132	296,220	129,869	108,145
EFT	EFTA	360,935	204,483	61,224	80,129
CEA	Central European Associates	207,539	119,830	46,562	40,774
FSU	Former Soviet Union	622,157	339,074	94,859	101,179
MEA	Middle East and North Africa	597,948	329,776	127,277	132,618
SSA	Sub Saharan Africa	304,491	203,353	53,647	51,257
ROW	Rest of the World	311,859	220,460	33,230	64,605

17.2 Capital stock and depreciation

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Along with macroeconomic data for 1992, physical capital stock and depreciation data in millions of 1992 US dollars is used in updating the regional input-output tables. GDP and capital stock data given in national currency units for 1990 or an earlier year was obtained from the Nehru and Dhareshwar (1993) database on physical capital stock. After mapping the data to GTAP's regional aggregation scheme, the ratio of 1990 physical capital stock to 1990 GDP for all countries is computed. For countries with missing data, the K/GDP ratio was estimated as the average of the K/GDP ratios for other countries in that region. The global K/GDP ratio was applied to all countries in regions for which single country data was not available, i.e., the Former Soviet Union (FSU), Central European Associates (CEA) and the Rest of the World (ROW). Estimates of physical capital stock in 1992 for each country were obtained by multiplying the 1990 K/GDP ratio to 1992 GDP data given in thousands of US dollars. Depreciation was estimated at 4 percent of the 1992 physical capital stock. The country data on physical capital stock and depreciation were summed up to the 30 GTAP regions and expressed in millions of 1992 US dollars.

Table 17.2 Capital Stock and Depreciation (1992 US$ million)

		Capital Stock	Depreciation
AUS	Australia	1,027,049	41,082
NZL	New Zealand	143,005	5,720
JPN	Japan	12,088,694	483,548
KOR	Korea, Republic of	706,058	28,242
IDN	Indonesia	260,626	10,425
MYS	Malaysia	158,812	6,352
PHL	Philippines	149,444	5,978
SGP	Singapore	167,301	6,692
THA	Thailand	252,487	10,099
CHN	China, People's Republic of	991,254	39,650
HKG	Hong Kong	281,374	11,255
TWN	Taiwan	392,752	15,710
IND	India	568,057	22,722
RAS	Rest of South Asia	165,108	6,604
CAN	Canada	1,528,744	61,150
USA	United States	16,107,373	644,295
MEX	Mexico	985,638	39,426
CAM	Central America and the Caribbean	217,381	8,695
ARG	Argentina	759,924	30,397
BRA	Brazil	1,296,040	51,842
CHL	Chile	97,979	3,919
RSM	Rest of South America	580,473	23,219
E_U	European Union 12	21,142,688	845,708
EU3	Austria, Finland, and Sweden	1,748,437	69,937
EFT	EFTA	1,345,984	53,839
CEA	Central European Associates	606,409	24,256
FSU	Former Soviet Union	1,817,879	72,715
MEA	Middle East and North Africa	1,790,889	71,636
SSA	Sub Saharan Africa	921,377	36,855
ROW	Rest of the World	839,562	33,582

17.3 Primary factor shares for agriculture

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Elsewhere in this document, it has been pointed out that, unlike the other sectors, the cost shares in the agricultural sectors have been obtained from secondary sources. This was deemed to be important due to the key role of land in agricultural production, as well as the highly volatile nature of returns to farming. In "bust" years net returns, after deducting intermediate input costs and labor expenses, are negative. This is not acceptable from a modeling point of view, so we have turned to outside studies of agricultural cost structures to specify the share of agricultural value-added which is attributable to land, labor and capital. This share is assumed to be the same for all farm sectors. Of course this assumption is invalid. However, it is often very difficult to allocate input costs for multirproduct farms (e.g., a combined grain-livestock farm). Future versions of the data base may attempt such splits. However, it is important for readers with an interest in disaggregated analyses of agriculture to recognize this limitation in the version 3 data base.

Table 17.3 reports the results of a cursory survey of primary factor cost shares in the published literature. It is evident from this table that we did not have original information for all regions in version 3. Missing entries are matched with some "similar" region for which these data are available. The sources cited in Table 17.3 (and detailed in the list of references at the end of the chapter), represent a mix of econometric studies (e.g.., Ball for the USA), and models (e.g.., Higgs for Australia). We recognize that this is a very partial list, and we look forward to further improvements and additions as GTAP contributors see fit to provide these.

Table 17.3 Primary Factor Splits in Agriculture

		Primary Factor Cost Shares		
GTAP Region	Source	Land	Labor	Capital
1 Australia	Higgs	29	56	15
2 New Zealand	same as Australia	29	56	15
3 Japan	Kuroda	32	51	17
4 South Korea	Ban	51	40	09
5 Indonesia	GREEN	51	42	07
6 Malaysia	GREEN	51	42	07
7 The Philippines	Crisostomo, and Barker	41	66	04
8 Singapore	same as Taiwan	38	54	08
9 Thailand	GREEN	51	42	07
10 P.R. China	Martin	29	59	12
11 Hong Kong	same as Taiwan	38	54	08
12 Taiwan	Lee, and Chen	38	54	08
13 India	GREEN	29	59	12
14 Ro South Asia	Haley	28	39	33
15 Canada	Narayanan, and Kizito	23	39	39
16 U.S.A.	Ball	20	38	42
17 Mexico	same as South America	28	47	25
18 Central America & the Caribbean	same as South America	28	47	25
19 Argentina	Haley	28	47	25
20 Brazil	Brandao et al.	16	24	60
21 Chile	Haley	28	47	25
22 Ro South America	Haley	28	47	25
23 EU-12	Henrichsmeyer, & Ostermeyer-Schlöder	11	68	21
24 EU-3	GREEN	27	35	38
25 EFTA	GREEN	27	35	38
26 Central European Associates	GREEN	35	53	12
27 FSU	GREEN	28	60	12
28 Middle East & North Africa	Haley	11	57	32
29 Sub Saharan Africa	Haley	12	72	16
30 Ro World	GREEN	40	40	20

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