Chapter 3

What's New in GTAP 10?

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This is the tenth public release of the GTAP Data Base since the Project began in 1992. The Data Base cycle typically begins by updating the data base to a new reference year. In version 10, we continue to expand the time dimension of the GTAP Data Base by adding 2014 to the previous reference years of version 9: 2004, 2007 and 2011. The national data or input-output (I-O) tables are combined with international datasets on macroeconomic aggregates, bilateral trade, energy, and protection for the new reference years. Interim releases of GTAP are constructed as significant updated datasets become available. Improvements are also made in data sourcing, scope, and methodology. Part III of this volume provides detailed information on the sources and procedures employed in the construction of the GTAP 10 Data Base. This chapter provides a summary of the changes that have been made since the GTAP 9 Data Base. Table 3.1 at the end of the chapter provides a quick comparison with previous versions of the GTAP Data Base.

3.1   Domestic Data

3.1.1   New and Updated Regions

In version 10, each regional economy is represented by 65 sectors, an increase from the previous 57 sectors' representation available since GTAP 6. These 65 sectors are redefined using the latest CPC and ISIC classifications (See Chapter 2 for concordances). Tajikistan is a new primary region added to GTAP 10. Primary regions are the countries for which we have national input-output (I-O) tables. Composite regions are geographical-region-based combinations of countries with no contributed I-O tables. In addition, updated input-output tables for regions that are already in the data base were also incorporated in GTAP 10. Since version 9, 50 more recent I-O tables have been incorporated and are listed in Table 3.2.

Table 3.2. New and updated national country IOTs in GTAP 10.

Countries	I-O (year)	Contributor(s) Last Name
28 EU members	2010	Rueda-Cantuche, Revesz, Saveyn
Argentina	2000	Cicowiecz
Bangladesh	2012	Khondker, Raihan
Canada	2011	Chen
China	2012	Yu
Costa Rica	2011	Monge-Arino, Vargas
Ecuador	2007, 2013	Aguiar
India	2007	Chadha, Pratap
Japan	2011	Suzuki
Kazakhstan	2015	Horridge

Table 3.2. New and updated national country IOTs in GTAP 10.

Countries	I-O (year)	Contributor(s) Last Name
New Zealand	2007	Strutt and Siameja
Norway	2014	Peters, Andrews
Pakistan	2011	Zeshan
Philippines	2006	Corong, Coraton
South Korea	2014	Ko
Sri Lanka	2010	Weerahewa, Weerasooriya, and Bandaralage
Switzerland	2011	van Nieuwkoop
Tajikistan (new in GTAP 10)	2011	Khakimov
Thailand	2010	Apaitan
Tunisia	2005	Balma
Turkey	2012	Biyik and Ozkale,
Uganda	2007	Teichmann
Ukraine	2007, 2013	Chepeliev
Venezuela	2007	Leone, Ferrer, Hernandez

In GTAP 10 we also begin to match I-O tables' base year to their closest GTAP reference year. Table 3.3 shows the countries for which we have more than one I-O table for all four reference years. For the majority of countries in GTAP we still use a single I-O table. We look forward to more frequent contributions so we can capture structural changes over time.

Table 3.3. I-O Table base year allocation across GTAP reference years

Country\GTAP Reference years	2004	2007	2011	2014
Australia	2005	2010	2010	2010
Canada	2003	2011	2011	2011
China	2002	2007	2010	2012
Colombia	2003	2007	2007	2007
Ecuador	2001	2007	2013	2013
India	2003	2007	2007	2007
Japan	2005	2005	2011	2011
Kazakhstan	2004	2004	2015	2015
Norway	2004	2007	2011	2014
Pakistan	2002	2011	2011	2011
Philippines	2000	2006	2006	2006
South Korea	2003	2007	2010	2014
Sri Lanka	2000	2010	2010	2010
Switzerland	2005	2008	2011	2014
Thailand	2005	2005	2010	2010
Turkey	2002	2002	2012	2012
Uganda	2002	2007	2007	2007
Ukraine	2004	2007	2013	2013
Vietnam	2003	2005	2005	2005

For the GTAP Data Base, we collect a lot of non-I-O information at country-level. In earlier releases, prior to version 8, we had 226 standard GTAP countries, which were mapped to different numbers of GTAP regions (113 in version 7, for example). Since GTAP 8, we consider 244 countries listed by the International Organization for Standardization (ISO) using three letter codes. A detailed

listing of the 141 GTAP 10 regions and their country composition is available in Chapter 2.

3.1.2 Agricultural Production Targeting

The input-output tables of several countries, especially the OECD members, are pre-adjusted to match agricultural production statistics by sector for each reference year. This was done initially for the EU countries to more accurately reflect the shares of each member to total agricultural production in the EU and to more accurately reflect domestic support payments. The agricultural production targets for the EU were contributed by the European Commission's Joint Research Center. Table 3.4 lists the 47 countries for which I-O tables are pre-adjusted to match agricultural production data for all reference years. OECD supplied GTAP with the agricultural production targets for these countries. More details about this is available online in chapter.

Table 3.4. Countries subject to Agricultural Production Targeting

OECD Countries	Non-OECD Countries
28 EU members	Brazil
Australia	China
Canada	Chile
Japan	Colombia
Mexico	Costa Rica
New Zealand	Indonesia
Norway	Israel
South Korea	Kazakhstan
Switzerland	Philippines
Turkey	Russia
USA	South Africa
	Ukraine
	Vietnam

3.2 International Datasets: Sources and Procedure Changes

3.2.1 Macroeconomic Data

Macroeconomic aggregates (GDP, private consumption, government consumption, and investment) are used in updating the input-output tables to common reference years 2004, 2007, 2011 and 2014. The primary source of macroeconomic data used in the GTAP 10 Data Base is the World Bank.

3.2.2 Trade Data

As in previous versions of the GTAP Data Base, reconciled bilateral merchandise trade data, based on data from COMTRADE, was contributed by Mark Gehlhar of U.S. Department of Interior. Documentation on the reconciliation procedure is available online. Significant improvements that had been made to the bilateral services trade data in GTAP 7 as a result of the efforts of Nico van Leeuwen and Arjan Lejour from the CPB, have been further carried forward to GTAP 10 Data Base, for 2004, 2007, 2011 and 2014.

Prior to GTAP 7, bilateral services trade had been estimated based on IMF data. Since the GTAP 7 Data Base, bilateral data on services trade was obtained for the OECD countries and this is now combined with the IMF data to significantly improve the quality of the estimated bilateral services trade data.

3.2.3   Protection Data

Domestic Support

Domestic support data for 2004, 2007, 2011 and 2014 from the OECD PSE/CSE database are incorporated in the GTAP 10 Data Base. Five domestic support categories are considered- output subsidies, input subsidies, land-based payments, labor- based payments and capital-based payments. This data gives us the breakup of activity-specific, group-generic and activity-generic payments. For the EU, the JRC provided this data for 2011 and 2014. Hans Jensen (then at FOI) provided this data for all the EU-27 countries in 2007 and EU-25 countries in 2004.

Domestic support data are now available for the following OECD countries: Australia, Canada, European Union (EU28), Iceland, Japan, Korea, Mexico, Norway, Switzerland, Turkey, and the United States. The non-OECD member economies covered in the domestic support dataset for all four years are: Brazil, China, Indonesia, Kazakhstan, Russia, Ukraine, South Africa, Israel and Chile.

Agricultural Export Subsidies

Aziz Elbehri of the Food and Agriculture Organization of the United Nations (FAO), with inputs from David Laborde (IFPRI) and Hans Jensen, contributed agricultural export subsidy data for 2004, calculated from country notifications to the WTO and "Financial report on the European Agricultural Guidance and Guarantee Fund". For 2011 and 2014, Jayson Beckman (ERS/USDA) contributed these subsidies using the same sources and procedures as before. For 2007, David Laborde contributed a much richer export subsidy data, based on a bilateral and disaggregated-sector-level monthly export subsidy and bilateral trade dataset, for 36 exporting countries, 15 GTAP sectors (in agriculture and manufacturing) and 230 importing countries. We continue to use a common agricultural export subsidy rate for the EU member countries.

MFA Export Tax Equivalents

Estimates of the export tax equivalent (ETE) of the export quotas on textiles and clothing (wearing apparel) exports under the Agreement on Textiles and Clothing (ATC) were provided by Joseph Francois and Julia Wörz. For Canada and the EU15, the ETE estimates are for 2003 and for the USA, the ETE estimates are for 2004. For 2007, all of these ETE's are zero, given the phasing out of MFA quotas, but quotas on Chinese exports remain in US, Canada and EU. We extrapolated ETEs from 2004 data to 2007 for China, based on the extent to which the quotas for Chinese exports were allowed to grow in each of these countries.

Import Tariffs

Unlike in the past, we obtained the tariff data in GTAP Data Base directly from the ITC MAcMap data base, which is compiled from primary national customs information, for 2007, 2011 and 2014. Its documentation is available from chapter 10.D of this documentation. For 2004, we continue to use the dataset contributed for version 7 by David Laborde through the joint efforts of ITC and CEPII.

3.2.4 Energy Data

For version 10, the IEA energy volume, taxes and prices data has been incorporated for the years 2004, 2007, 2011 and 2014.

3.2.5 Behavioral Parameters

The GTAP Data Base includes a parameters file that consists of the various behavioral parameters used in the standard GTAP Model. Armington elasticities and Trade elasticities in GTAP 10 Data Base are the same as those in version 9; as such, CDE (Constant Difference Elasticity) parameters were calibrated from expenditure elasticities that are calculated using parameters from the AIDADS model estimated using GTAP data, as reported in Reimer and Hertel (2004).

3.2.6 Other Features

As mentioned in chapter 2, we have five labor categories in this version of the data base. Also, since version 6, we consider estimates of income taxes and factor taxes (payroll, land, etc.) based on data from the IMF Government Financial Statistics. Population data, in millions, is reported in the global flows data file (header POP). This may be useful for use in post-simulation calculations.[1] Reconciled bilateral time series trade data for 1995 to 2017 based on COMTRADE from Mark Gehlhar (U.S. DOI) have been incorporated into the time series trade data.[2]

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[1] Population data is not read in by the current standard version of the GTAP Model file (TAB file).
[2] Since version 9 these data was distributed separately from the standard data base due to the increased size of the distribution file.

Table 3.1: Comparison of features in GTAP 7.1, 8, 9 and 10 Data Base releases

	GTAP 7.1	GTAP 8	GTAP 9	GTAP 10
Reference year(s)	2004	2004, 2007	2004, 2007, 2011	2004, 2007, 2011, 2014
No. of Sectors	57	57	57	65 (new classification)
No. of Regions	112	129	140	141
New Primary Regions	14 since Version 6	16 since version 7.1	11 since version 8	1 relative to version 9
Updated I-O Tables	29 since Version 7	15 since version 7.1	19 since version 8	50 relative to version 9
Regional Classification	Composite regions changed in Version 7: 2 eliminated and 4 created.	New Classification, with 244 GTAP countries	Based on 244 GTAP countries	Based on 244 GTAP countries
Macroeconomic Data	World Bank Data; EU: Eurostat	World Bank & other sources	World Bank & other sources	World Bank & UN Data
Govt. Consumption	International Monetary Fund (IMF)	IMF	IMF	IMF
Trade Data	COMTRADE through ERS, USDA	COMTRADE, by Mark Gehlhar	COMTRADE, by Mark Gehlhar	COMTRADE, by Mark Gehlhar
Domestic Support	New OECD dataset and different methodology.	OECD, revised	OECD	OECD
Export Subsidies	2004 or the latest available	2004: No Change; 2007: New Data from D. Laborde	2004: No Change; 2007: New Data from D. Laborde; 2011 based on 2007	2004: No Change; 2007: New Data from D. Laborde; 2011, 2014 based on WTO Notifications processed by J. Beckman
MFA Export Tax Equivalent	2004, Francois and Wörz	No Change	No Change	No Change
Merchandise Tariffs (including agriculture)	2004, ITC-CEPII MacMAP	2004: No Change; 2007:MacMAPv3 from ITC/CEPII	2004: No Change; 2007, 2011: ITC MacMAP	2004: No Change; 2007, 2011, 2014: ITC MacMAP
Energy Data	2000 energy prices data updated to 2001 using price indices; 2004 IEA energy volume data	2004 & 2007 IEA energy price & volumes data	2004, 2007 & 2011 IEA energy price & volumes data	2004, 2007, 2011 & 2014 IEA energy price & volumes data
Agricultural Factor Split	Updated using new literature	No Change	No Change	No change?

Income & Factor Taxes	Updated with new data from IMF	Updated with new data from IMF	Updated with new data from IMF	Updated with new data from IMF
Demand Elasticities	Updated using GTAP Data	Updated using GTAP Data	Updated using GTAP Data	Updated using GTAP Data
Trade Elasticities	No change	No Change	No Change	No Change
Population Data	World Bank Data	World Bank Data	World Bank Data	World Bank Data
Time Series Trade	New data for 1992-2006, by M. Gehlhar	New data from 1995- 2009 by M. Gehlhar	New data from 1995- 2013 by M. Gehlhar	New data from 1995- 2017 by M. Gehlhar