

B Services Trade Data

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B.1 Introduction

Prior to GTAP 11, trade in services data was based on unilateral services trade information from the IMF, which we had to bilateralize in-house (McDougall 2002; McDougall and Hagemeyer 2006; Lejour, Leeuwen, and McDougall 2010). This data was bilateralized using the RAS method in versions 3, 4 and 5, then improved by using additional sources such as OECD and Eurostat, versions 6 to 10.

B.2 Data Sources

In GTAP 11, we take advantage of a recently developed dataset provided by the OECD and WTO called the Balanced Trade in Services (BaTiS) (Liberatore and Wettstein 2021), which provides an initial bilateralization and does not need to be reconciled. The starting point for BaTiS is the trade in services dataset developed jointly by the WTO and the United Nations Conference on Trade and Development (WTO-UNCTAD). BaTiS provides time series data from 2005 to 2019 covering 200 economies and the services sectors are classified into 12 service categories based on the 2010 extended balance of payments services (EBOPS) classification (Liberatore and Wettstein 2021), see Table 10.1.¹

Table 10.1: Balanced Trade in Services (BaTiS) Classification

No.	Code	Description
1	SA	Manufacturing services on physical inputs owned by others
2	SB	Maintenance and repair services n.i.e.
3	SC	Transport
4	SD	Travel
5	SE	Construction
6	SF	Insurance and pension services
7	SG	Financial services
8	SH	Charges for the use of intellectual property n.i.e.
9	SI	Telecommunications, computer, and information services
10	SJ	Other business services
11	SK	Personal, cultural, and recreational services
12	SL	Government goods and services n.i.e.

n.i.e. Not included elsewhere

¹Since BaTiS is not available for 2004, the earliest reference year for GTAP, we select 2005 which is the closest year for all but two countries. We then apply GDP weights to obtain an estimate for 2004. For Serbia and Montenegro, the earliest available year in BaTiS is 2006.

Some of the sectors in BaTiS are too aggregated for GTAP. In order to disaggregate the sectors in BaTiS, we use another recently developed dataset that focuses on services trade. This is called the Trade in Service data by Mode of Supply (TiSMoS), which provides more detailed information, but is not bilateral (Wettstein et al. 2021). TiSMoS is a dataset produced by the WTO and funded by the Directorate-General for Trade of the European Commission (Wettstein et al. 2021).²

TiSMoS also uses the WTO-UNCTAD-ITC data set as a starting point for the measurement of resident to non-resident transactions. It is developed with the objective of providing another analytical dimension to the information available to the public—namely, the mode of supply dimension. As such, one of TiSMoS dimensions consist on the four modes of supply per General Agreement on Trade in Services (GATS) definition: cross-border supply (mode 1), consumption abroad (mode 2), commercial presence (mode 3), and presence of natural persons (mode 4) for 200 countries or regions during the 2005-2017 period. Furthermore, the sectoral coverage of TiSMoS is very detailed; it covers 55 sectors similar to the extended balance of payments services (EBOPS).

B.3 Procedures

Using bilateral balanced data is convenient, however the sectoral coverage does not map perfectly to GTAP’s 20 services sector. There are 4 services sectors that are not covered by BaTiS: electricity (ely), gas distribution (gdt), water supply (wtr), and ownership of dwellings (dwe). As in previous versions, for these and other energy sectors including electricity and gas distribution, energy trade data is constructed using data from the International Energy Agency (IEA) as documented in Chepeliev 2022. The two remaining sectors (e.g., wtr, dwe) are assumed not to be traded.

In addition, there are two sectors provided in BaTiS that we do not consider: manufacturing services on physical inputs owned by others (SA) and the charges for the use of intellectual property n.i.e. (SH). For the latter (SH), we follow previous treatment that considers royalties to be an income flow rather than a trade flow. As such, this information is discarded because it is considered a factor payment (McDougall and Hagemeyer 2006). For the former, this is also discarded because it is not clear which manufacturing sectors are involved. We note that SA or the manufacturing services on physical inputs owned by others is defined as follows:

Covering the processing, assembly, labelling, packing, and other such processes undertaken by enterprises that do not own the physical inputs concerned.

Only the fee (the manufacturing service) charged by the enterprise undertaking the manufacturing service is included under this item.

But the breakdown by type of manufacturing services (i.e., whether it is assembly or packaging), is unknown, as well as the economic sectors from which it originates (i.e., motor vehicles or machinery).

²Another possible data source is the International Trade in Services Statistics by the OECD, which is bilateral but with emphasis on OECD member countries.

The disaggregation of remaining BaTiS sectors using TiSMoS considers the sum of all modes, except Mode 3. Table 10.2 lists the BaTiS sectors that are disaggregated using TiSMoS. Table 10.2 also includes the concordance between the disaggregated sector and GTAP.

Traveler's expenditures (trvl) is not a sector in GTAP but is accounted for. As in previous versions, traveler's expenditures are allocated as trade among countries using private consumption information (McDougall and Hagemejer 2006). This is a simplifying assumption due to the lack of better data, and the reason why the GTAP Data Base may sometimes report trade in water supply or electricity between distant countries.

Table 10.2: BaTiS sectors subject to disaggregation using TiSMoS

Code	BaTiS	Code	TiSMoS	GTAP
SC	Transport	SC11, SC12	Sea transport (passenger and freight)	wtp
		SC21, SC22	Air transport (passenger and freight)	atp
		SC31, SC32	Other transport (passenger and freight)	otp
		SC13, SC23, SC33	Transport, Other	whs
		SC4	Postal and courier services	cmn
SD	Travel	SDA	Business travel	trvl*
		SDB1	Health-related travel	hht
		SDB2	Education-related travel	edu
		SDB3	Other personal travel	afs
SJ	Other business services	SJ1	Research and development services	obs
		SJ2	Professional and management consulting	obs
		SJ31	Architectural and engineering services	obs
		SJ32	Waste treatment and de-pollution, agricultural and mining services	obs
		SJ33	Operating leasing services	rsa
		SJ34	Trade-related services	trd
SK	Personal, cultural, and recreational services	SJ35	Other business services n.i.e.	obs
		SK1	Audio-visual and related services	ros
		SK21	Health services (personal)	hht
		SK22	Education services (personal)	edu
		SK23	Heritage and recreational services	ros
		SK24	Other personal services	ros

* trvl is not a sector in GTAP, but is a code assigned for the special treatment of traveler's expenditures.

References

- Chepeliev, Maksym (2022). “An Energy Data Base for GTAP”. In: *Global Trade, Assistance, and Production: The GTAP 10 Data Base*. Ed. by Angel Aguiar. Department of Agricultural Economics, Purdue University, West Lafayette, IN. Chap. 11.
- Lejour, Arjan, Nico van Leeuwen, and Robert McDougall (2010). “Services Trade Data”. In: *Global Trade, Assistance, and Production: The GTAP 7 Data Base*. Ed. by Badri Narayanan G. and Terrie L. Walmsley. Department of Agricultural Economics, Purdue University, West Lafayette, IN. Chap. Data. URL: https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=3397.
- Liberatore, Antonella and Steen Wettstein (2021). *The OECD-WTO Balanced Trade in Services database (BPM6 edition)*. OECD-WTO. URL: https://www.wto.org/english/res_e/statis_e/daily_update_e/OECD-WTO_Batis_methodology_BPM6.pdf.
- McDougall, Robert (2002). “Services Trade Data”. In: *Global Trade, Assistance, and Production: The GTAP 5 Data Base*. Ed. by Betina V. Dimaranan and Robert A. McDougall. Department of Agricultural Economics, Purdue University, West Lafayette, IN. Chap. Data. URL: https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=770.
- McDougall, Robert and Jan Hagemeyer (2006). “Services Trade Data”. In: *Global Trade, Assistance, and Production: The GTAP 6 Data Base*. Ed. by Betina V. Dimaranan. Department of Agricultural Economics, Purdue University, West Lafayette, IN. Chap. Data. URL: https://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=1945.
- Wettstein, Steen et al. (2021). *A GLOBAL TRADE IN SERVICES DATA SET BY SECTOR AND BY MODE OF SUPPLY*. WTO. URL: https://www.wto.org/english/res_e/statis_e/daily_update_e/Tismos_methodology.pdf.