

Chapter 9.D

Services Trade Data

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9.D.1 Introduction

This chapter documents the contribution to the GTAP Data Base 9. Starting with GTAP 7, the quality of the services data reported is determined with reliability indices developed by Gehlhar (1996).

Prior to GTAP Data Base 7, total imports and exports of services are collected from the International Monetary Fund balance of payments statistics data. The bilateral trade matrix and rebalancing was constructed using amongst others a RAS procedure and bilateral trade flows in goods.¹ These bilateral data are thus constructed and it would be desirable to obtain a statistical base for constructing the bilateral flows.

In the past, statistical databases focusing on services were lacking, but this seems to be changing now. Good statistical measurement of services trade is becoming more and more important now that trade in services is getting the attention of policymakers. In 1995 many countries decided to liberalise services trade according to the General Agreement for Trade in Services (GATS). At the request of GATS and UNCTAD, the Interagency Task Force on Statistics of International Trade in Services (TFSITS) was established.

The objectives of the Task Force are to elaborate the statistical requirements of the General Agreement on Trade in Services (GATS). A Manual on Statistics of International Trade in Services (MSITS) was published in 2002 and the revised version, the MSITS 2010 was adopted by the UN Statistical Commission at its 41st session in 2010 and published in 2011.

The Task Force is convened by the Organisation for Economic Cooperation and Development (OECD), and consists of Eurostat, International Monetary Fund (IMF), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Statistics Division (UNSD), the World Tourism Organization (UNWTO) and the World Trade Organization (WTO).

The main methodological references used for the production of statistics on international trade in services are the International Monetary Fund (IMF)'s fifth balance of payments manual (BPM5) and the United Nations' manual on statistics of international trade in services.

In section 2 we present an overview of the available Bilateral Services Trade. As outlined in Van Leeuwen and Lejour, 2006 we use the method of Gehlhar (1996) to check the reliability of

¹ For more information, please refer to Chapter 15 of GTAP Data Base 6 documentation (Dimaranan, 2006).

the reporting country for the cases were two observations available for the same bilateral flow. This is described in section 3.

9.D.2 *Data sources*

Bilateral services trade data are collected from two sources, the UN Service Trade website and EUROSTAT's International trade in services. This results in matrices for exports and imports information by reporting country for 45 countries (see Appendix Table 9.D.A.1) and sector classification of Table 9.D.2.1.

Table 9.D.2.1. Sector coverage

Code	Description
s200	TOTAL SERVICES
s205	TRANSPORTATION
s206	Sea transport
s210	Air transport
s214	Other transport
s236	TRAVEL
s245	COMMUNICATION SERVICES
s249	CONSTRUCTION SERVICES
s253	INSURANCE SERVICES
s260	FINANCIAL SERVICES
s262	COMPUTER AND INFORMATION SERVICES
s266	ROYALTIES AND LICENSE FEES
s268	OTHER BUSINESS SERVICES
s287	PERSONAL, CULTURAL AND RECREATIONAL SERVICES
s291	GOVERNMENT SERVICES, N.I.E.
s981	OTHER COMMERCIAL SERVICES total minus 205 (transport) and 236 (travel)

9.D.3 *The Gehlhar Method for Establishing Reliability*

Gehlhar (1996) has developed a method for reconciling bilateral merchandise trade data for the GTAP Data Base. This methodology is needed when there is discrepancy between the data reported by trading partners. According to this methodology, transaction data are reliable if the values of the reporting countries deviate less than 20%. An arbitrary reporting exporter trades with dozens of countries in a particular good. Some of the transactions are reliable according to the definition above and some are not. By aggregating the values of the reliable transactions of the reporters and comparing the aggregate to total reported exports for that particular good Gehlhar constructs reliability indices of the exporters. This is done for every reporting exporting and importing country per good item. The higher the index, the larger the share of reliable transactions, and the more reliable the reporter is. If the index for the reporting exporter is higher than for the reporting importer, the reported trade flow from the exporter is considered to be the most reliable.

We use the same method to identify the most reliable reporters for all available services sectors.² We also use the criterion of 20% as indication for a reliably reported flow. This threshold is arbitrary. In first instance, we experimented with a lower number because some biases in reporting that occur in merchandise trade are not (or less) relevant in services trade, such as the classification of trade and transportation costs. However in that case only a few flows were considered to be reliable.

If there is only one flow, this flow is considered to be the correct flow. For all other cases, we have estimated bilateral services trade flows.

9.D.4 *Reconciliation with Other Inputs*

We reconcile the bilateral services trade data set so obtained, with a data set on services trade exports and imports, derived from the International Monetary Fund's *Balance of Payments Statistics*, processed as described in McDougall and Hagemeyer (2006). These data have more complete country coverage, and a more detailed services classification, but lack a partner dimension. We proceed as follows:

1. From the services exports and imports data set, construct bilateral trade matrices by pro-rating.
2. For each matrix from step 1, extract the submatrix of trade between countries covered in the bilateral services trade data set, and calculate row and column totals, that is, total exports to and imports from each covered country to each covered partner.
3. Against those row and column totals, balance the matrix for the corresponding service in the bilateral services trade data set.
4. With that balanced matrix, replace the corresponding submatrix in the pro-rata matrix from step 1.

We obtain thus a trade data set in which total exports and imports are as in the services exports and imports data set, and flows between countries not both covered in the bilateral services trade data set are constructed by pro-rating, but flows between countries covered in the bilateral trade data set reflect its bilateral trade patterns.

References

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- Gehlhar, M.J., 1996, *Reconciling Bilateral Trade data for Use in GTAP*, GTAP Technical Paper No. 10.
- McDougall, R.A. and J. Hagemeyer, 2006, *Services Trade Data*, Chapter 15.E in Dimaranan (2006).
- Van Leeuwen, N.I.M. and A.M. Lejour, 2006, *Bilateral services Trade Data and the GTAP Data Base*, CPB Memorandum 160.

² We agreed to use this method after discussions in the GTAP Advisory Board. Lejour et al. (2008) discuss briefly more advanced statistical methods to determine the reliability of a reporter.

Appendix A: List of Available Countries

Table 9.D.A.1: List of available countries as reporters

AUS	Australia
NZL	New Zealand
CHN	China
HKG	Hong Kong
JPN	Japan
KOR	Korea
SGP	Singapore
IND	India
CAN	Canada
USA	United States
MEX	Mexico
BRA	Brazil
AUT	Austria
BEL	Belgium
CYP	Cyprus
CZE	Czech Republic
DNK	Denmark
EST	Estonia
FIN	Finland
FRA	France
DEU	Germany
GRC	Greece
HUN	Hungary
IRL	Ireland
ITA	Italy
LVA	Latvia
LTU	Lithuania
LUX	Luxembourg
MLT	Malta
NLD	Netherlands
POL	Poland
PRT	Portugal
SVK	Slovakia
SVN	Slovenia
ESP	Spain
SWE	Sweden
GBR	United Kingdom
CHE	Switzerland
NOR	Norway
BGR	Bulgaria
HRV	Croatia
ROU	Romania
RUS	Russian Federation
TUR	Turkey
ZAF	South Africa

Table 9.D.A.2: Concordance between services sectors and GTAP's services sectors

Code	Description	GTAP code	GTAP description
s200	TOTAL SERVICES		
s205	TRANSPORTATION		
s206	Sea transport	wtp	Water transport
s210	Air transport	atp	Air transport
s214	Other transport	otp	Transport nec
s236	TRAVEL	trd	Trade
s245	COMMUNICATION SERVICES	cmn	Communication
s249	CONSTRUCTION SERVICES	cns	Construction
s253	INSURANCE SERVICES	isr	Insurance
s260	FINANCIAL SERVICES	ofi	Financial services nec
s262	COMPUTER AND INFORMATION SERVICES	obs	Business services nec
s266	ROYALTIES AND LICENSE FEES	obs	Business services nec
s268	OTHER BUSINESS SERVICES	obs	Business services nec
s287	PERSONAL, CULTURAL AND RECREATIONAL SERVICES	ros	Recreational and other services
s291	GOVERNMENT SERVICES, N.I.E.	osg	Public Administration, Defense, Education, Health
s981	OTHER COMMERCIAL SERVICES total minus 205 (transport) and 236 (travel)	obs	Business services nec