



***A Global Multi-sector Multi-region Foreign Direct Investment  
Database for GTAP***

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# **A Global Multi-sector Multi-region Foreign Direct Investment Database for GTAP**

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## **Introduction**

A global bilateral multi-region multi-sector foreign direct investment (FDI) stocks and flows database was contributed to the Center for Global Trade Analysis by Houssein Guimbard, Christophe Gouel and David Laborde from *CEPII (Centre d'Etudes Prospectives et d'Informations Internationales)* as a result of a project initiated by DG Trade of the European Commission. Contrary to other data sources on FDI this database is fully consistent, balanced and suitable for use in CGE work. The construction of this database is entirely documented in Guimbard, Gouel and Laborde (2007).

This document describes the steps used to convert this database into GTAP v7 sectoral and regional aggregation format. Accordingly, the final FDI stocks and flows database is bilateral with 113 regions and 57 sectors and base year 2004.

## **Source data**

The contributed bilateral FDI stocks and flows database had 226 regions and 26 sectors with 2004 as the base year. The database has been built using several sources such as IMF, UNCTAD, OECD, Eurostat and wiiw (The Vienna Institute for International Economic Studies). The construction process involved two main stages: first, missing values have been replaced with econometric estimates that originate from a gravity equation with respect to FDI relations and second, the FDI matrix is balanced and the different sources are reconciled using entropy techniques. For further details on the construction of the database refer to Guimbard, Gouel and Laborde (2007).

## **Regional aggregation and sectoral disaggregation**

Our goal is to convert the contributed FDI database into a regional/sectoral format that is consistent with the current version of the GTAP Data Base.

First, the initial 226 regions have been aggregated into GTAP regions 113 using the concordance <https://www.gtap.agecon.purdue.edu/databases/regions.asp?Version=7.21>.

Second, we disaggregate the original 26 sectors into 57 GTAP sectors based on a simple share-based allocation using the capital part of GTAP Data Base variable EVFA, i.e. the value of purchase of capital by firms at agent's prices. Alternatively, other variables could be used but in our sectoral disaggregation we assume that the capital part of EVOA is a proxy of the sectoral capital stock of the FDI recipient country. In version 1, the database was disaggregated using the variable VOM, i.e. the value of output at market prices, which is a proxy of the output and the sales/cost share of foreign affiliates. The use of capital rental instead is based on the idea that investors are most likely to invest in the disaggregated sectors which account for a higher share of the capital of the aggregated sector. One noticeable impact of this change was to raise the share of FDI in the forestry sector in line with the higher capital rentals.

Table 1 presents the sectoral breakdown of the contributed FDI database, while Table 2 summarizes the sectoral concordance between the 57 GTAP sectors and the original 26 sectors. Sectors of the original data that do not have a direct mapping to a GTAP sector (such as CHEM and OMAN) have been disaggregated using shares provided by Philippa Dee (Australian National University).

**Table 1 Original sectoral aggregation**

<b>Nr.</b>	<b>Code</b>	<b>Description</b>
1	AGR	Agriculture and fishing
2	MING	Mining and quarrying
3	FOOD	Food products
4	TEXT	Textiles and wearing apparel
5	WPPP	Wood, publishing and printing
6	P_C	Refined petroleum and other treatments
7	CHEM	Chemical products
8	RPP	Rubber and plastic products
9	METP	Metal products
10	OME	Mechanical products; Medical, precision and optical instruments, watches and clocks
11	ELE	Office machinery and computers; Radio, TV and communications equipment
12	MVH	Motor vehicles
13	OTN	Other transport equipments
14	OMAN	Manufacturing nec
15	EGW	Electricity, gas and water
16	CNS	Construction
17	TRD	Trade and repairs; Hotels and restaurants
18	OTP	Land transport; Supporting and auxiliary transport activities; activities of travel agencies
19	WTP	Water transport
20	ATP	Air transport
21	CMN	Post and telecommunications
22	OFI	Financial intermediation, except insurance and pension funding; Activities auxiliary to financial intermediation
23	ISR	Insurance and pension funding, except compulsory social security
24	OBS	Real estate and business services
25	OSER	Other services
26	DWE	Dwellings

**Table 2 Sectoral concordance: GTAP to original sectors**

<b>Nr.</b>	<b>GTAP code</b>	<b>GTAP sector description</b>	<b>Original sectors</b>
1	PDR	Paddy rice	AGR
2	WHT	Wheat	AGR
3	GRO	Cereal grains nec	AGR
4	V_F	Vegetables, fruit, nuts	AGR
5	OSD	Oil seeds	AGR
6	C_B	Sugar cane, sugar beet	AGR
7	PFB	Plant-based fibers	AGR
8	OCR	Crops nec	AGR
9	CTL	Bovine cattle, sheep and goats, horses	AGR
10	OAP	Animal products nec	AGR
11	RMK	Raw milk	AGR
12	WOL	Wool, silk-worm cocoons	AGR
13	FRS	Forestry	AGR
14	FSH	Fishing	AGR
15	COA	Coal	MING
16	OIL	Oil	MING
17	GAS	Gas	MING
18	OMN	Minerals nec	MING
19	CMT	Bovine meat products	FOOD
20	OMT	Meat products nec	FOOD
21	VOL	Vegetable oils and fats	FOOD
22	MIL	Dairy products	FOOD
23	PCR	Processed rice	FOOD
24	SGR	Sugar	FOOD
25	OFD	Food products nec	FOOD
26	B_T	Beverages and tobacco products	FOOD
27	TEX	Textiles	0.89TEXT + 0.11CHEM***
28	WAP	Wearing apparel	TEXT
29	LEA	Leather products	OMAN
30	LUM	Wood products	WPPP
31	PPP	Paper products, publishing	WPPP
32	P_C	Petroleum, coal products	P_C
33	CRP	Chemical, rubber, plastic products	0.7CHEM + 0.3RPP***
34	NMM	Mineral products nec	OMAN
35	I_S	Ferrous metals	METP
36	NFM	Metals nec	METP
37	FMP	Metal products	METP
38	MVH	Motor vehicles and parts	MVH
39	OTN	Transport equipment nec	OTN
40	ELE	Electronic equipment	ELE

41	OME	Machinery and equipment nec	$0.75\text{OME}+0.25\text{OMAN}^{***}$
42	OMF	Manufactures nec	OMAN
43	ELY	Electricity	EGW
44	GDT	Gas manufacture, distribution	EGW
45	WTR	Water	EGW
46	CNS	Construction	CNS
47	TRD	Trade	TRD
48	OTP	Transport nec	OTP
49	WTP	Water transport	WTP
50	ATP	Air transport	ATP
51	CMN	Communication	CMN
52	OFI	Financial services nec	OFI
53	ISR	Insurance	ISR
54	OBS	Business services nec	OBS
55	ROS	Recreational and other services	OSER
56	OSG	Public Administration, Defense, Education, Health	OSER
57	DWE	Dwellings	DWE

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\*\*\*We would like to thank Philippa Dee (Australian National University) for providing us estimates for the sectoral breakdown

The final FDI stocks and flows database is consistent with the current regional and sectoral aggregation of the GTAP Data Base.

## References

Guimbard, Gouel and Laborde (2007). *Forthcoming*