

Israel

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1. Abstract

This chapter documents the Israeli Input-Output Table (IOT) in the format of the GTAP Data Base as a new country table contributed to the GTAP 8 Data Base. We describe the entire process of the IOT development, beginning with a brief historical overview about the development of similar databases for Israel, followed by a description of the data sources used to develop a Social Accounting Matrix (SAM) for Israel as a transitional step to developing the IOT. The third part of the chapter describes the construction process of the SAM focusing on sectoral disaggregation and mapping among the different classifications of data sources. The description of the SAM construction is precise as this topic is comprehensively covered in a separate document (Siddig et al., 2011). The final part of the chapter describes the procedure followed to move the industry-by-commodity SAM into a commodity-by-commodity IOT in the standard format of the GTAP Data Base. We also describe the inconsistencies encountered in the preliminary IOT, particularly with regard to negative payments to capital by three sectors of the SAM as well as the procedures applied to tackle them. Finally, in the annex we provide supplementary tables showing concordance between the original sectors of data sources, the SAM, the IOT, and the standard GTAP 57 sectors.

2. Introduction

The Israeli Input-Output Table (IOT) is based on a Social Accounting Matrix (SAM) for Israel, which was developed by the Agricultural and Food Policy Group at the University of Hohenheim, Germany for the year 2004 and documented in Siddig et al. (2011). The SAM is a part of a larger research project, which aims at analyzing several economic, trade, and labor policies in the context of economic integration of agriculture between Israel and the West Bank. The project is funded by the German research foundation (DFG).

This report gives an overview of the sources and development of the original SAM and describes transformations of the SAM to make it compatible with the IOT format of the GTAP Data Base, Purdue University, USA. The Israeli IOT described here is contributed to the GTAP 8 Data Base in a 43-sector aggregation compared to the standard 57 sectors of the GTAP Data Base.

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3. *Data Sources*

Despite the long history of IOT development in Israel, there is no recently published IOT for this country. The first IOT developed for Israel was published in 1958 by the Israeli Central Bureau of Statistics (ICBS), which was followed by ten more publications of IOTs in the years 1969, 1971, 1973, 1976, 1978, 1981, 1983, 1988, and 1992. The latest IOT is the 1995 IOT, published in 2002 (ICBS, 2002). The 1995 IOT is used as a base for sectoral disaggregation and as a reference for some assumptions to develop the Israeli SAM and IOT for the year 2004. The 1995 IOT provides data in basic prices and purchaser prices and is valued in current prices in millions of New Israeli Shekel (NIS). It consists of 162 Sectors according to the Israeli Classification of Industries (ICBS, 1993).

In addition to the IOTs, the ICBS publishes annual Supply and Use Tables (SUT). The 2004 SUT published in 2009 (ICBS, 2009a) is a major data source for the current IOT. The 2004 SUT provides data on 65 sectors based on the Israeli Classification of Industries at current NIS million considering basic and purchaser prices.

Together with the 1995 IOT and the 2004 SUT, the 2004 SAM recently compiled by Siddig et al. (2011) constitutes the base for developing the 2004 IOT for Israel. This SAM distinguishes 47 sectors with activities separated from commodities, 36 labor force types, 10 household groups, as well as 17 tax accounts in addition to 37 accounts reserved for taxes on production factors. The SAM relies on publications of the Israeli Central Bureau of Statistics (ICBS) as a major source of data. Other sources in Israel include the Central Bank of Israel (CBI) and the Israeli Tax Authority (ITA). Control totals are from the ICBS. ICBS data contains tables on national accounts providing details on Gross Domestic Product (GDP) at factor cost, domestic supply, gross fixed capital formation, the balance of payments, government statistics, and external trade statistics. These data are published within its annual, quarterly, and monthly reports. For a more detailed description, see the SAM documentation (Siddig et al., 2011).

Two other SAMs exist for Israel. The first, developed by Palatnik (2009), refers to the year 1995 and the second, developed by Faitelson (2011), is an updated version for the year 2004. Both SAMs provide data on 18 sectors and commodities with a major focus on energy sectors.

The major components of the Israeli economy are presented in Table 1, which illustrates the general aggregated structure and accounts incorporated in the IOT. The components include intermediate demand and final demand. The final demand categories include investment, households and enterprises, government, stock changes, and exports (ROW). In addition, the commodity supply consists of domestic production as well as imports. Data for intermediate consumption are obtained from the SUT 2004 of the ICBS (ICBS, 2009a), while data for the control totals of all other entries in Table 1 are from the NA (ICBS, 2009b). The table shows the data sources from which data are obtained for each cell in the table, with 'NA' indicating the National Accounts (ICBS, 2009b), 'SUT' indicating the 2004 Supply and Use Table (ICBS, 2009a), and "T" indicating the particular table of the NA in each cell.

It is worth mentioning that the construction process of the IOT follows the top down approach, involving the development of a macro-IOT to provide the control totals for the disaggregated table that is developed afterwards.

Value added demand by sector is obtained from the Israeli 2004 SAM (Siddig et al., 2011), where it is calculated as residual within the macro-SAM context.

Table 1: Data-sources of the Israeli macro-IOT for 2004

		Intermediate demand	Final demand				
		Commodities	Investments	Households and enterprises	Government	Stock changes	Rest of the world
Commodities	Domestic Commodities	Intermediate consumption (SUT)	Investment demand (NA: T 1)	Household consumption (NA: T 1)	Government consumption (NA: T 1)	Change in stock (NA: T 1)	Exports (NA: T 1)
	Imports	Imports of goods and services (NA: T 28)					
Value Added	Factors	VA demand (Siddig et al., 2011)					
Tax	Value added tax			Value added tax (NA: T 30 + 24)			
	Export taxes						Export taxes (NA: T 30 + 24)
	Sales taxes	Net taxes on domestic goods (NA: T 30 + 24)					
	Net taxes on production	Net taxes on production (NA: T 30 + 24)					

The remaining part of this section highlights the different components of the economy as specified by the structure of the aggregated IOT (Table 1).

For the intermediate demand, the SUT 2004 provides data on intermediate use at purchaser prices for each sector based on the 65-industry classification. These data are moved to the 43 sectors based on other data sources including coefficients from the 1995 IOT, other surveys, and ICBS publications. The procedures applied to map the 65 sectors of the SUT to the final 43 sectors of the IOT are further described in Section 3.

The elements of final demand, namely investment expenditure, household consumption, stock changes and exports, are based on the NA as control total and are disaggregated using information in the SUT.

Value added (VA) data in the IOT comprises payments to three factors of production: labor, land, and capital. The macro total for the payment for labor is based on the NA, while it is disaggregated among sectors based on the Israeli Labor Force Survey (LFS) of 2004 (ICBS, 2005) and the Statistical Abstract of Israel 2006 (ICBS, 2006) which contains data from the 2004 Business Survey (BS). The LFS provides data on workers employed in 71 sectors. Wages are obtained from the BS, which provides data on wages for different sectors and professions. Accordingly, the information on the physical labor force from the LFS and wages from the BS are used to calculate the value added of labor for each sector included in the current IOT. However, the Israeli LFS contains data only on Israeli employees; hence, the number of Palestinians working in the Israeli economy is obtained from the Palestinian LFS (PCBS, 2005) and the number of workers from the rest of the world is obtained from the annual report 2005 of the Bank of Israel (CBI, 2006). These are used together with data on wages for Palestinian workers obtained from the Palestinian Central Bureau of Statistics (PCBS, 2005, Table 41) and wages for workers from the rest of the world obtained from ICBS (2005b, Table 1.22) to calculate the final labor compensation by each sector. Finally, social insurance payments by employers as published in the NA (ICBS, 2009b, Table 30) are added to the labor compensation.²

There are five types of taxes included in the current IOT of Israel: net taxes on production, value added taxes, sales taxes, export subsidies, and taxes on imports. Major data sources on taxes and subsidies are the NA (ICBS, 2009b, Table 30), General Government Accounts (ICBS, 2007), and OECD. The distribution of the total value for each tax type over the corresponding accounts is based on unpublished data by ICBS and personal communication with ICBS staff.

4. Sectoral Classification and Disaggregation

The number of sectors in the 2004 SAM, which the IOT is based on, is 47, with the agricultural sectors disaggregated to the maximum possible given data availability constraints. It provides data on 10 agricultural accounts, 25 industrial accounts, and 12 service accounts.

The disaggregation of sectors in the SAM is based on several sources of data and governed by four major industrial classifications. Israel has its own standard classification of industries (SCI) that classifies industries in Israel based on a three-digit disaggregation. This classification was published in 1993 (ICBS, 1993) together with its concordance to the International Standard Industrial Classification (ISIC). The most recent Israeli IOT was published in 2002 for the year 1995 (ICBS, 2002). This IOT provides data on a 65-Industry and a 162-Industry aggregation. The documentation of the IOT provides the mapping of industries between these aggregations and the SCI of 1993 (Siddig et al., 2011).

² See Siddig et al. (2011) for further details.

4.1 *The Procedure of Moving the SUT Sectors to 43 Sectors*

For the 2004 SAM, the major source of industry-related data is the 2004 SUT (ICBS, 2009a). The SUT provides data on 65 sectors, which is similar to the 65-Industry aggregation of the 1995 IOT. The 47 sectors of the SAM are produced out of the 65 sectors of the SUT with additional disaggregation in agriculture and some aggregations in the industrial and services sectors. The 162-industry aggregation of Israel, the ISIC (Rev. 3), the Central Product Classification (CPC), and the commodity classification in the GTAP Data Base are used to move the 65 accounts of the SUT to the 47 sectors of the SAM. More specifically, every sector in the 65-industry aggregation that could be directly allocated to one of the 47 sectors is mapped one-to-one.³ If a sector in the 65-industry aggregation does not correspond directly to one of the 47 sectors (such as some agricultural sectors), a more detailed mapping is applied based on coefficients of the 162-industry aggregation of the 1995 IOT.

Coefficients of the 1995 IOT are used wherever disaggregation of the 65 sectors is required. All SUT data, including output, imports, exports, final consumption, and intermediate consumption, are mapped to 47 sectors: First, the 65 sectors are disaggregated to 162 sectors using the corresponding matrix or vector in the IOT. Hence, a new matrix or vector with 162 sectors is produced for the year 2004. Second, the new matrix or vector is aggregated to 47 sectors.

Because this exercise had to be repeated for several variables and accounts in the SAM, a GEMPACK⁴ code was developed. The code receives two inputs and gives the final 47 sectors matrix or vector of 2004 as an output. The scaling process is based on the mapping of sectors between the three classifications (47, 65, and 162 sectors). The code works as follows:

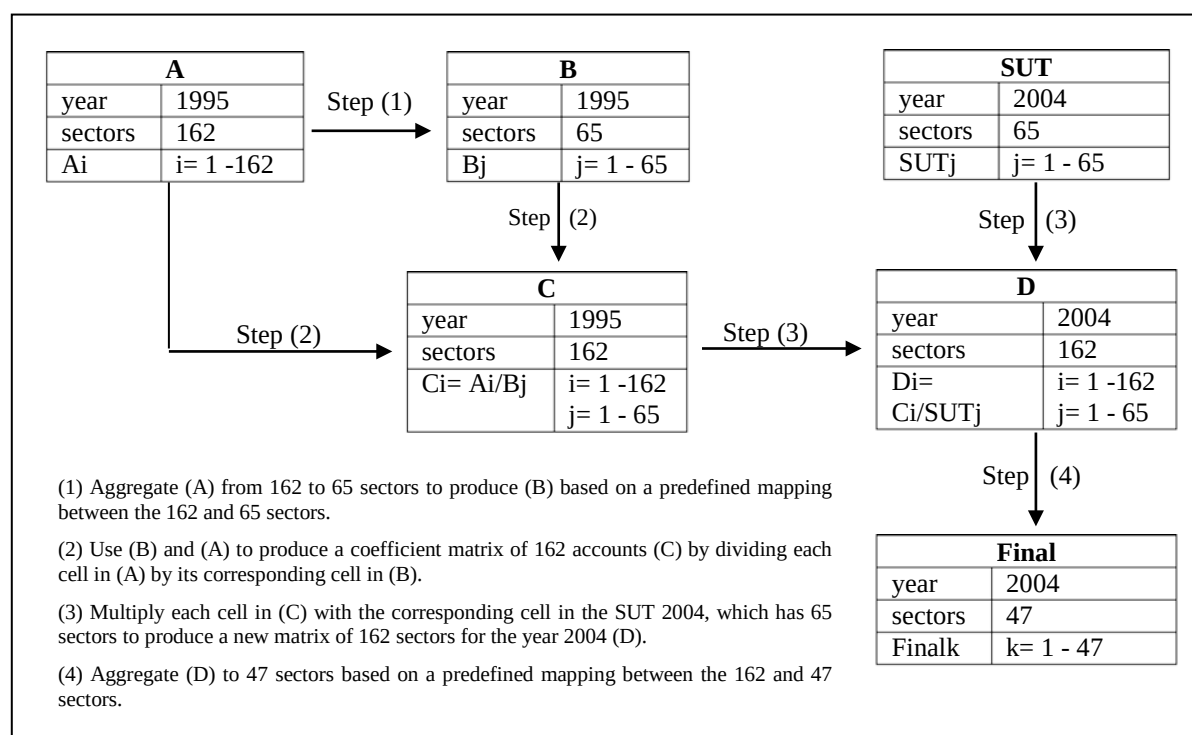
1. Aggregate the 1995 IOT matrix (A) to 65 sectors (matrix B) based on predefined mapping between the 162 and 65 sectors.
2. Use the newly produced 65 sectors matrix (B) together with matrix (A) to produce a coefficient matrix of 162 accounts (C) by dividing each cell in matrix (A) by its corresponding cell in matrix (B) to which it was aggregated in point (1).
3. Multiply each cell in matrix (C) with the corresponding cell in the 2004 SUT, which also has 65 sectors, to produce a new matrix of 162 sectors for the year 2004 (D).
4. Aggregate matrix (D) to 47 sectors based on a predefined mapping between the 162 and 47 sectors.

Figure 1 illustrates the procedures applied in the code to move from the 65 sectors of the SUT to the 47 sectors of the 2004 SAM. For simplicity, the diagram shows an example in which a vector of values is converted into a corresponding vector in the 47 sectors of the 2004 format. Converting matrices follows similar steps.

³ One-to-one mapping means that the sector under consideration remains the same, i.e. without disaggregation or aggregation across the different classifications.

⁴ GEMPACK is software developed by and documented in Harrison and Pearson (1996).

Figure 1: Moving from the 65 Sectors of the SUT to the 47 Sectors of the SAM



Source: Siddig et al. (2011: 19).

This procedure is applied to disaggregate several variables in the SAM including domestic output, imports, government consumption, investment demand by commodity, stock change, and exports of goods and services.⁵ Finally, the obtained 47 sectors of the SAM are aggregated to the 43 sectors of the 2004 IOT to coincide with the GTAP sectors. The mapping between the 2004 IOT, 2004 SAM, 2004 SUT, 1995 IOT, and GTAP-sectors is shown in Table 7 of the Annex.

4.2 Production Factors

For the disaggregation of production factors, and particularly to estimate capital compensation of each sector, labor compensation of the labor force survey is deducted from the Net Domestic Product (NDP) at basic prices, which is published in the NA for an aggregation of 13 sectors (ICBS, 2009b, Table 16). Labor compensation is aggregated to the same 13 sectors and subtracted in each sector to obtain the sectoral capital and land composite as a residual. The share of land and capital compensation in the total VA demand is found to be rather low compared to other OECD member countries (Siddig et al., 2011).

To disaggregate the land and capital compensation from 13 to 162 sectors, which is the first step in moving to the 43 sectors of the IOT, the direct coefficients of other VA (including capital and land) in the 1995 IOT are used (ICBS, 2002, Table 4). These coefficients are aggregated from 162 to 13 sectors and then the shares of the original coefficients in their respective aggregates are calculated. Based on these shares, data for each sector among the 13 main sectors are disaggregated to its corresponding subsectors. Hence, capital-land-compensation values for the 162 sectors are obtained.

⁵ It is important to note that the disaggregation of the 65 sectors into 162 sectors does not disturb the sectoral structure of the economy at large by using old cost structures and income throughout the whole economy. For further details see Siddig et al. (2011).

Finally, the whole matrix of sectors and factors is aggregated from 162 sectors to the 47 sectors of the SAM and then to the 43 sectors of the IOT based on mapping between these two aggregations.

From the land-capital composite, land compensation is subtracted and distributed among the agricultural sectors based on data published by the ICBS assuming that land is relevant only for agricultural sectors. Because there is no free land market in Israel and more than 90% of the land in Israel is owned by the state, we employ the official leasing rates to estimate land compensation. Farmers can lease land on long-term contracts lasting 24 to 99 years through the Israeli Land Administration (Egoz, 1996). Data on agricultural area by usage type are obtained from the Statistical Abstract of Israel 2010 (ICBS, 2010) and FAO (FAO, 2011). Leasing rates are published by the Israeli Ministry of Justice (IMJ, 2010).

Leasing rates for agricultural area are multiplied by the area allocated to each sector to obtain the sectoral land value. For plant production sectors, leasing rates are differentiated according to whether the area is rain-fed or irrigated. Because no information on leasing rates is available for “Forestry” and “Gardening, mixed, and unclassified farming”, the rate for pastures is applied. Finally, the obtained values are deducted from the land-capital composite to differentiate between capital and land by sector. For all non-agricultural sectors, it is assumed that land use is not economically important and thus their payment to land is zero.

4.3 Taxes and Subsidies

Domestic output and import values of each sector according to the 162-industry aggregation are applied to move taxes on domestic products and imports from the 65- to the 47-industry aggregation. In the final IOT, there is one account on taxes on production, which incorporates taxes on production and production subsidies.

Data on export subsidies by exported commodity are obtained from the WTO (2010). Israel reports export subsidies on six commodities, which are the same commodities that have been subsidized since the mid-1990s. Table 2 shows the sectors that received subsidies on exports, the quantities supported, and government outlays in 2004.

Table 2: Sectors receiving export subsidies in Israel in 2004

No.	Sector	Subsidized quantity	Unit	Value (1,000 USD)
1	Fresh flowers	683.00	million pieces	6,161
2	Fruit other than citrus	47.60	1,000 tons	4,347
3	Fresh vegetables	79.30	1,000 tons	7,028
4	Citrus fruits	370.00	1,000 tons	13,779
5	Goose liver	0.27	1,000 tons	996
6	Cotton	41.10	1,000 tons	7,328
Total outlay (1,000 USD)				39,639

Source: WTO (2010).

Based on the information in Table 2, the exchange rate of 4.482 (NIS/USD) in 2004 is used to obtain the NIS values for each sector. The total value obtained for export subsidies is NIS 177.7 million, compared to NIS 249.0 million reported in the NA (ICBS, 2009b). Therefore, shares are calculated for each sector based on the USD values and the total value of NIS 249.0 million is distributed accordingly among the six subsidized sectors. Afterwards, the six supported sectors are mapped to the 43 sectors of the IOT: sectors 1 and 6 to the IOT-sector 4 “OCRPS”, sectors 2, 3, and 4 to the IOT-sector 3 “V_F”, and sector 5 to SAM-sector 7 “OAMO” (Siddig et al., 2011).

In the IOT, value added taxes (VAT) are only levied on consumption by private households, implying that there are no VAT on final demand by the government or on the savings-investment-account (McDonald and Lakatos, 2009).

Sales taxes include taxes on products such as fuel tax, excises on tobacco and cement, other taxes on domestic products, and sales subsidies on domestic goods. It also includes purchases and other taxes on imports as well as taxes on defense imports. Taxes on imported products include only customs and levies on imports as published in the NA (ICBS, 2009b, Table 30).

Finally, taxes on production factors are added to the payments to production factors from the different sectors. More specifically, taxes on land and capital are merged to “taxes on capital including land and fixed assets” which is payable by activities and based on shares of capital and land use.

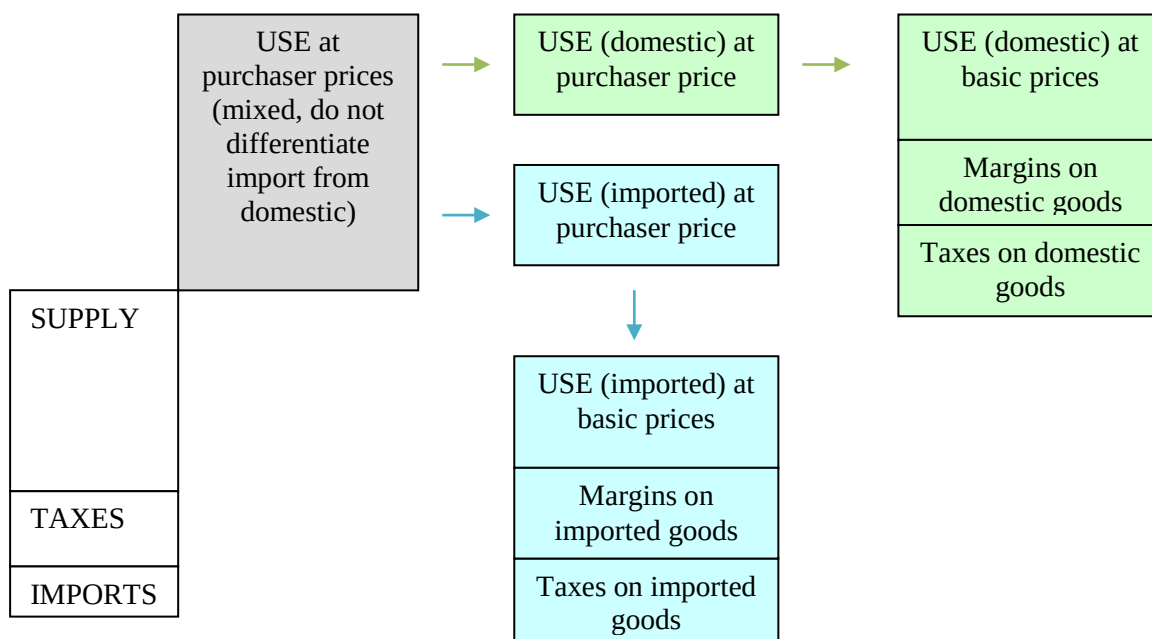
5. *A Commodity-By-Commodity IOT*

This section highlights the amendments applied in the SAM, which is in an industry by commodity format, to convert it to the commodity-by-commodity format of the GTAP Data Base. We also describe situations in which the SAM sectors are not consistent with the sectors of the GTAP Data Base, and therefore present amendments performed to make them consistent.

The main task is to generate separate matrices that distinguish between the use of domestic and imported commodities as well as to distinguish between the use at basic and purchaser prices. In the SAM by Siddig et al. (2011), there is no distinction among these matrices. Figure 2 explains the structure of the data in the SAM and the required adjustments to generate the IOT in the format of the GTAP Data Base.

The process depicted in Figure 2 is automatized and coded in GAMS by embedding instructions provided in the GTAP contributor guide (Huff et al., 2000). The GAMS code was developed by McDonald and Lakatos (2009) in collaboration with the GTAP Data Base team.

Figure 2: Moving from the SAM to the IOT database



Source: Own composition.

Furthermore, factors of production, specifically labor and final demand by households, is aggregated as the SAM (Siddig et al., 2011) includes comprehensive details on labor. The SAM distinguishes the use of labor in different sectors of the economy by ethnic group, gender, and occupation. This generates 36 labor categories in the SAM, which are represented by only one group in the Israeli IOT according to GTAP format. The SAM provides data on only one row vector of capital use by sector and one row vector for land use by sector. Therefore, they are directly included in the IOT. The mapping between the production factors in the SAM and the IOT is shown in Table 4 of the Annex.

Furthermore, the SAM distinguishes final demand by 10 household groups which are aggregated into one account in the IOT. The mapping between the different final demand categories in the SAM and the IOT is shown in Table 5 of the Annex.

5.1 The Adjustments of Negative Capital

The SAM includes three sectors that pay negative compensation to capital. These sectors are forestry (forest), transport and business services (othtrans), and financial services and insurance which include imputed bank services and general expenses (financbank). These sectors are mapped to sectors 9, 36, and 40 in the IOT classification, respectively. GTAP has non-negativity as a prerequisite for the IOT to be accepted. Therefore, the three occasions must be addressed separately to assure the consistency of the Israeli IOT with GTAP requirements.

For “othtrans”, the negative capital compensation, which represents about 0.07% of the total output of this sector, is automatically removed in the process of converting the SAM to an IOT as this activity feeds into a multi-activity-commodity in the SAM.

For the forestry sector, the negative capital compensation represents the reality in Israel. Forests, which are exclusively state owned, are used mainly for recreational, ecological, and conservational purposes. Economic activities such as timber production and grazing are considered by-products. The capital included in the afforestation in the country is mainly financed by donations (FAO, 2010). Accordingly, to avoid the negativity in the Israeli IOT, the negative value is allocated to changes of stocks in the forest sector and zeroed out in the capital compensation according to procedures described in Huff et al. (2000).

For the “financbank” sector, the negative capital compensation is from imputed banking services. To remove this negativity, a modified standard procedure recommended in the problem area of the GTAP Data Base contributor’s website (<https://www.gtap.agecon.purdue.edu/databases/contribute/bankingsect.asp>) is applied. This is depicted in Table 3 where -V is negative capital from imputed banking services.

Table 3: The treatment of negative imputed bank services

Resulting Table	Non-Financial	Financial	Total
Financial sector	+Z+V	+A-V	Z+A
Non-financial sector	+C	+B	C+B
Capital	+X-V	+Y+V	X+Y
Total	Z+C+X	A+B+Y	

The implemented procedure works as follows:

1. Apportion -V across the capital of all non-financial sectors (+X) according to each non-financial sectors share in X, hence reducing X by V.
2. Raise Z, which is the intermediate use of financial sector by non-financial sector, for each non-financial sector by the amount X was reduced by in the previous step. This keeps all non-financial sectors balanced.

3. Remove imputed banking services (negative) from the financial sector in the row (Y+V) and the column (A-V). This keeps the financial sectors balanced as imputed banking is deducted and Z is increased by V.

5.2 Other Adjusted Inconsistencies

The submitted IOT of Israel includes 43 sectors, 10 of which are agricultural. In 33 cases, these sectors are one-to-one mappings from the IOT sectors to the GTAP classification. In 10 cases, GTAP sectors are aggregated (Table 6)

The sector “C_B” (Plants used for sugar manufacturing) is included in the Israeli IOT, although this sector is not singled out in the input data used. However, since the beginning of the 1980s no plants used for sugar manufacturing are commercially grown in Israel and also the output of the sector “SGR” (sugar) is zero, the C_B-sector is included in the IOT with zeros, as suggested in Horridge et al. (2008).

Table 6 shows the final mapping between the final Israeli IOT with 43 sectors and the 57 sectors of the GTAP Data Base. Further mapping that considers the original data represented by the SUT and the 162 sectors of the 1995 IOT is shown in Table 7.

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Annex

Table 4: Mapping of production factors between SAM and IOT

SAM 2004		IOT 2004
Description	Code	Code
Jewish female unskilled workers	fjfusw	flab
Jewish female industrial skilled workers	fjfiw	
Jewish female agricultural skilled workers	fjfasw	
Jewish female sales and service workers	fjfssw	
Jewish female clerical workers	fjfcle	
Jewish female managers	fjman	
Jewish female associate professionals and technicians	fjapt	
Jewish female academic professionals	fjfacp	
Jewish male unskilled workers	fjmusw	
Jewish male industrial skilled workers	fjmisw	
Jewish male agricultural skilled workers	fjmasw	
Jewish male sales and service workers	fjmssw	
Jewish male clerical workers	fjmcle	
Jewish male managers	fjman	
Jewish male associate professionals and technicians	fjmapt	
Jewish male academic professionals	fjmacp	
Arab & others female unskilled workers	fafusw	
Arab & others female industrial skilled workers	fafisw	
Arab & others female agricultural skilled workers	fafasw	
Arab & others female sales and service workers	fafssw	
Arab & others female clerical workers	fafcfe	
Arab & others female managers	fafman	
Arab & others female associate professionals and technicians	fafapt	
Arab & others female academic professionals	fafacp	
Arab & others male unskilled workers	famusw	
Arab & others male industrial skilled workers	famisw	
Arab & others male agricultural skilled workers	famasw	
Arab & others male sales and service workers	famssw	
Arab & others male clerical workers	famcle	
Arab & others male managers	famman	
Arab & others male associate professionals and technicians	famapt	
Arab & others male academic professionals	famacp	
Foreign workers from Palestine - legal	ffwpal_l	
Foreign workers from Palestine - illegal	ffwpal_il	
Foreign workers from the Rest of the World - legal	ffwrow_l	
Foreign workers from the Rest of the World - illegal	ffwrow_il	
Capital	fcapital	fcap
Land	fland	fland

Table 5: Mapping of final demand between SAM and IOT

SAM 2004		IOT 2004
Description	Code	Code
Jewish households in first income quintile	hj1	hhous
Jewish households in second income quintile	hj2	
Jewish households in third income quintile	hj3	

SAM 2004		IOT 2004
Description	Code	Code
Jewish households in fourth income quintile	hj4	
Jewish households in fifth income quintile	hj5	
Arabic and other households in first income quintile	hao1	
Arabic and other households in second income quintile	hao2	
Arabic and other households in third income quintile	hao3	
Arabic and other households in fourth income quintile	hao4	
Arabic and other households in fifth income quintile	hao5	
Government	GOVT	govt
Savings - Investments	KAP	i_s
Stock Changes	DSTOC	DSTOC
Rest of the World	ROW	ROW

Table 6: Mapping of the final Israeli IOT to GTAP sectors

The Israeli 2004 IOT			The GTAP standard sectors		
No.	SEC	SEC Description	No.	GSEC	Sectors in GTAP
1	PDRGRO	Cereals	1	PDR	Paddy rice
			3	GRO	Cereal grains nec
2	WHT	Wheat	2	WHT	Wheat
3	V_F	Fruits and vegetables	4	V_F	Vegetables, fruit, and nuts
4	OCRPS	Other crops	5	OSD	Oil seeds
			7	PFB	Plant-based fibers
			8	OCR	Crops nec
5	C_B	sugar cane and sugar beet	6	C_B	Plants used for sugar manufacturing
6	CTLWOL	Bovine cattle, sheep, goats, and horses	9	CTL	Bovine cattle, sheep, goats, and horses
			12	WOL	Wool and silk-worm cocoons
7	OAMO	Other animal farming, other meat products and edible oils, margarine, and oil products	10	OAP	Animal products nec
			19	CMT	Bovine meat products
			20	OMT	Meat products nec
			21	VOL	Vegetable oils and fats
8	RMK	Milk	11	RMK	Raw milk
9	FRS	Forestry	13	FRS	Forestry
10	FSH	Fishing	14	FSH	Fishing
11	COG	Coal, oil, and gas	15	COA	Coal
			16	OIL	Oil
			17	GAS	Gas
12	OMN	Minerals nec	18	OMN	Minerals nec
13	MIL	Dairy products	22	MIL	Dairy products
14	PCROFD	Rice and other food products	23	PCR	Processed rice
			25	OFD	Food products nec
15	SGR	Sugar manufacturing	24	SGR	Sugar
16	B_T	Beverages and tobacco manufacturing	26	B_T	Beverages and tobacco products
17	TEX	Textiles	27	TEX	Textiles
18	WAP	Wearing apparel	28	WAP	Wearing apparel
19	LEA	Leather products	29	LEA	Leather products
20	LUM	Wood products	30	LUM	Wood products
21	PPP	Paper products and publishing	31	PPP	Paper products, publishing
22	PCGDT	Petroleum, coal and gas	32	P_C	Petroleum, coal products
			44	GDT	Gas manufacture and distribution
23	CRP	Chemical, rubber, and plastic products	33	CRP	Chemical, rubber, plastic products
24	NMM	Mineral non-metallic products	34	NMM	Mineral products nec
25	ISNFM	Basic metal	35	I_S	Ferrous metals
			36	NFM	Metals nec
26	FMP	Metal products (excl. machinery and equipment)	37	FMP	Metal products
27	MVH	Motor vehicles and parts	38	MVH	Motor vehicles and parts
28	OTN	Transport equipment nec ⁶	39	OTN	Transport equipment nec
29	ELE	Electronic equipment	40	ELE	Electronic equipment

⁶ Not elsewhere considered.

The Israeli 2004 IOT			The GTAP standard sectors		
No.	SEC	SEC Description	No.	GSEC	Sectors in GTAP
30	OME	Machinery and equipment nec	41	OME	Machinery and equipment nec
31	OMF	Manufactures nec	42	OMF	Manufactures nec
32	ELY	Electricity	43	ELY	Electricity
33	WTR	Water	45	WTR	Water
34	CNS	Construction	46	CNS	Construction
35	TRD	Trade services	47	TRD	Trade
36	OPTOBS	Transport and business services nec	48	OTP	Transport nec
			54	OBS	Business services nec
37	WTP	Water transport	49	WTP	Water transport
38	ATP	Air transport	50	ATP	Air transport
39	CMN	Communication	51	CMN	Communication
40	OFIISR	Financial services and insurance, including imputed bank services and general expenses	52	OFI	Financial services nec
			53	ISR	Insurance
41	ROS	Recreational and other services	55	ROS	Recreational and other services
42	OSG	Public administration, defense, education, and health	56	OSG	Public administration, defense, education, health
43	DWE	Dwellings	57	DWE	Dwellings

Table 7: Concordance between the sectors in the original data sources and the final IOT sectors

IOT 2004			SAM 2004			SUT 2004		IOT 1995		GTAP		
No	Code	Description	No	Code	Description	No	Description	No	Description	No	Code	Sector names
1	PDRGR O	Cereals	2	cereal	Growing of rice (non-husked), corn, barley, rye, oats, and other cereals	1	Field crops	2	Growing of other cereals and pulses	1	PDR	Paddy rice
										3	GRO	Cereal grains nec
2	WHT	Wheat	1	wheat	Growing of wheat	1	Field crops	1	Growing of wheat	2	WHT	Wheat
3	V_F	Fruits and vegetables	7	vegfruit	Fruit and vegetables including mate and spices, excluding other fruit dried	3	Fruit and vegetables	15	Growing of citrus	4	V_F	Vegetables, fruit, and nuts
								16	Growing of pome fruits			
								17	Growing of stone fruits			
								18	Growing of nuts			
								19	Growing of grapes			
								20	Growing of bananas			
								21	Growing of olives			
								22	Growing of subtropical and other tree crops			
								23	Growing of vegetables (including melons and pumpkins)			
								24	Growing of potatoes			
4	OCRPS	Other crops	3	othcrops	Growing of rough fodder, cotton, other	1	Field crops	3	Growing of rough fodder	5	OSD	Oil seeds
								4	Growing of cotton	7	PFB	Plant-based fibers

IOT 2004		SAM 2004		SUT 2004		IOT 1995		GTAP	
No	Code	Description	No	Code	Description	No	Code	Description	Sector names
.	.	.	.	.	.	.	.	.	.
					plant based fibers, oil seeds, soya beans, groundnuts, tobacco. Growing of flowers, seeds, and nursery products. Imports of green coffee, cocoa beans, and bulk tea	5		Growing of other field crops (including groundnuts)	8 OCR Crops nec
5	C_B	sugar cane and sugar beet							6 C_B Plants used for sugar manufacturing
6	CTLWO L	Bovine cattle, sheep, goats, and horses	5	cattleplus	Bovine cattle, horses, asses, mules, and hinnies, live, bovine semen, sheep, live goats shorn wool, greasy, and fleece-washed shorn wool	2	Livestock	7 Cattle farming for meat 12 Sheep farming (milk, meat, and wool)	9 CTL Bovine cattle, sheep, goats, and horses 12 WOL Wool and silk-worm cocoons
7	OAMO	Other animal farming, other meat products and edible oils,	6	othanimal	Laying hens, poultry farming, and turkey farming. Farming of	2	Livestock	8 Raising of laying hens 9 Poultry farming for meat 10 Poultry hatcheries 11 Raising of turkeys and other poultry farming	10 OAP Animal products nec

IOT 2004		SAM 2004		SUT 2004		IOT 1995		GTAP	
No	Code Description	No	Code Description	No	Description	No	Description	No	Code Sector names
.		.		.		.		.	
	margarine, and oil products		other animals including fine animal hair, not carded or combed and silk-worm cocoons suitable for reeling			14	Farming of other animals		
		13	meat Processing of meat and poultry, including CPC Subclass 02962 (pulled wool, greasy, including fleece-washed pulled wool; coarse animal hair) and CPC Subclass 02971 (raw hides and skins of bovine or equine animals, sheep or lambs, goats or kids)	8	Meat, fish, fruit and vegetables, dairy products, and oil	41	Processing of meat and poultry		
		15	edibleoil Manufacture of edible oils, margarine, and oil products			43	Manufacture of edible oils, margarine, and oil products	19	CMT Bovine meat products
								20	OMT Meat products nec

IOT 2004			SAM 2004			SUT 2004			IOT 1995			GTAP		
No	Code	Description	No	Code	Description	No	Description		No	Description		No	Code	Sector names
.			.			.			.			.		
					excluding CPC Subclass 21660 (maize (corn) oil and its fractions, not chemically modified)							21	VOL	Vegetable oils and fats
8	RMK	Milk	4	milk	Milk of cattle, sheep, and goats	2	Livestock		6	Cattle farming for milk		11	RMK	Raw milk
9	FRS	Forestry	9	forest	Forestry, fruit trees (investment to bearing), and imports of natural rubber	5	Other agricultural Industries		27	Forestry		13	FRS	Forestry
									28	Fruit trees (investment to bearing)				
									29	Natural rubber (imports)				
10	FSH	Fishing	8	fishing	Pond-culture fisheries, shore and lake fisheries	2	Livestock		13	Pond-culture fisheries		14	FSH	Fishing
						5	Other agricultural Industries		34	Shore and lake fisheries				
11	COG	Coal, oil, and gas	11	coaloilgas	Mining of hard coal and extraction of crude petroleum and natural gas	6	Mining of hard coal, and extraction of crude petroleum and natural gas		36	Mining and agglomeration of hard coal		15	COA	Coal
									37	Extraction of crude petroleum and natural gas		16	OIL	Oil
												17	GAS	Gas
12	OMN	Minerals nec	12	mineral	Other mining and quarrying products	7	Other mining and quarrying products		38	Rough diamonds (imports)		18	OM N	Minerals nec
									39	Quarrying of stone and sand				
									40	Extraction of salts, mining and quarrying				

IOT 2004			SAM 2004			SUT 2004		IOT 1995			GTAP		
No	Code	Description	No	Code	Description	No	Description	No	Description	No	Code	Sector names	
.			.			.		.		.			
13	MIL	Dairy products	16	dairy	Dairy products	8	Meat, fish, fruit and vegetables, dairy products, and oil	44	Manufacture of dairy products and ice cream	22	MIL	Dairy products	
14	PCROFD	Rice and other food products	17	grainmills	Manufacture of grain-mill products including husked rice and corn oil	9	Other food products and tobacco products	45	Manufacture of grain-mill products	23	PCR	Processed rice	
			10	gardenplants	Gardening as well as mixed and unclassified farming. Processing of fruit, vegetables and fish including CPC Subclass 01350 (other fruit, dried), and other food products	5	Other agricultural Industries	35	Gardening, as well as mixed and unclassified farming	25	OFD	Food products nec	
			14	mvegfruit	Meat, fish, fruit and vegetables, dairy products, and oil	8	Meat, fish, fruit and vegetables, dairy products, and oil	42	Processing of fruit, vegetables, and fish				
			18	othfood	Other food products and tobacco products	9	Other food products and tobacco products	46	Bakery and pastry products				
								48	Manufacture of chocolate, cocoa, and sugar confectionery				
								49	Manufacture of prepared food				
								50	Manufacture of food products nec				

IOT 2004			SAM 2004			SUT 2004		IOT 1995		GTAP		
No	Code	Description	No	Code	Description	No	Description	No	Description	No	Code	Sector names
15	SGR	Sugar manufacturing	19	suger	Manufacture of sugar	9	Other food products and tobacco products	47	Manufacture of sugar	24	SGR	Sugar
16	B_T	Beverages and tobacco manufacturing	20	bevtabac	Manufacture of beverages and tobacco	9	Other food products and tobacco products	51	Manufacture of soft drinks	26	B_T	Beverages and tobacco products
								52	Manufacture of alcoholic beverages, beer, and tobacco products			
17	TEX	Textiles	21	textile	Textiles	10	Textiles	53	Spinning, winding, and interweaving of yarns (including wool)	27	TEX	Textiles
								54	Weaving of fabrics, terry towels, and carpets			
								55	Finishing of textiles			
								56	Manufacture of bedclothes, bedspreads, and of other textile products			
								57	Manufacture of knitted fabrics and knitted wearing apparel			
18	WAP	Wearing apparel	22	weapprl	Wearing apparel: clothing, dressing, and dyeing of fur	11	Clothing	58	Manufacture of outerwear (except knitted)	28	WAP	Wearing apparel
								59	Manufacture of swim suits, underwear, and wearing apparel nec			
19	LEA	Leather products	23	leather	Manufacture of footwear, leather, and leather products	12	Manufacture of footwear, leather, and leather products	60	Tanneries	29	LEA	Leather products
								61	Manufacture of footwear and footwear articles of leather and its substitutes			
								62	Manufacture of products of leather and leather substitutes nec			
20	LUM	Wood products	24	wood	Wood and wood products (excluding furniture)	13	Wood and wood products (excluding furniture)	63	Sawmills and manufacture of plywood	30	LUM	Wood products
								64	Manufacture of builders' carpentry and joinery, and of wood products nec			

IOT 2004			SAM 2004		SUT 2004		IOT 1995			GTAP		
No	Code	Description	No	Code	Description	No	Description	No	Description	No	Code	Sector names
21	PPP	Paper products and publishing	25	paperpub	Paper and cardboard, as well as products of printing and publishing	14	Paper and cardboard, and products thereof	65	Basic manufacture of paper and cardboard	31	PPP	Paper products, publishing
						15	Printing and publishing	66	Manufacture of paper and cardboard products			
								67	Publishing of books, pamphlets, and other publications			
								68	Publishing of periodicals nec			
								69	Printing, publishing and reproduction of recorded media			
22	PCGDT	Petroleum, coal and gas	26	petroleum	Petroleum, coal, and gas products and distribution	16	Refined petroleum and its products	70	Manufacture of refined petroleum and its products	32	P_C	Petroleum, coal products
										44	GDT	Gas manufacture and distribution
23	CRP	Chemical, rubber, and plastic products	27	chemical	Industrial chemicals, fertilizers, pesticides, and disinfectants. Pharmaceutical products for human and veterinary uses, other chemicals. Plastic products, rubber products, tires, and tubes	17	Industrial chemicals, fertilizers, pesticides, and disinfectants	71	Manufacture of basic industrial chemicals and fertilizers	33	CRP	Chemical, rubber, plastic products
						18	Petrochemicals and man-made fibers	72	Manufacture of pesticides and disinfectants			
						19	Pharmaceutical products for human and veterinary uses	73	Manufacture of petrochemicals and man-made fibers			
						20	Other chemicals	74	Manufacture of pharmaceutical products for human and veterinary uses			
								75	Manufacture of paints and varnishes			
								76	Manufacture of soap, detergents, and cosmetics			
								77	Manufacture of chemical products nec			
						21	Plastic products	78	Manufacture of plastic boards and pipes			

IOT 2004		SAM 2004		SUT 2004		IOT 1995		GTAP	
No	Code	Description	No	Code	Description	No	Description	No	Code Sector names
.			.			.		.	
						79	Manufacture of plastic sleeves and sheets		
						80	Manufacture of plastic containers and bottles, products from armoured plastic and plastic products for kitchen		
						81	Manufacture of plastic products for technical, agricultural and industrial uses		
						82	Manufacture of plastic products nec		
				22	Rubber products, tires, and tubes	83	Manufacture of rubber products, tires, and tubes		
24	NMM	Mineral non-metallic products	28	othminera l	Mineral non-metallic products	23	Mineral non-metallic products	34	NM M Mineral products nec
						84	Manufacture of glass, glass products, ceramic, and ceramic products		
						85	Manufacture of cement and its products		
						86	Processing of stone and non-metallic mineral products nec		
25	ISNFM	Basic metal	29	basicmeta l	Basic metal	24	Basic metal	35	I_S Ferrous metals
						87	Manufacture of basic iron and steel		
						88	Manufacture of non-ferrous and precious metals	36	NFM Metals nec
						89	Foundries of iron, steel, and of non-ferrous metals		
						90	Manufacture of metal pipes		
26	FMP	Metal products (excl machinery and equipment)	30	othmetal	Metal products (excl. machinery and equipment)	25	Metal products (excl. machinery and equipment)	37	FMP Metal products
						91	Manufacture of structural metal products, tanks, and steam boilers		
						92	Metal processing (metal workshops)		
						93	Metal coating		
						94	Manufacture of cutlery and cutting and hand tools		
						95	Manufacture of plumbing fixtures		
						96	Manufacture of tin ware products		
						97	Manufacture of wire and products thereof		

IOT 2004			SAM 2004			SUT 2004		IOT 1995			GTAP		
No	Code	Description	No	Code	Description	No	Description	No	Description	No	Code	Sector names	
.	.	.	.	.	.	.	.	.	.	.	.	.	
98 Manufacture of metal products nec and ns													
27	MVH	Motor vehicles and parts	31	motorveh	Manufacture of cars and motorcycles, and parts thereof	31	Manufacture of cars and motorcycles, and parts thereof	11	5	Manufacture of cars and motorcycles, and parts thereof	38	MVH	Motor vehicles and parts
28	OTN	Transport equipment nec	32	transequip	Building and maintenance of ships, aircraft, and other transport equipment	32	Building and maintenance of ships, aircraft, and other transport equipment	11	6	Building and maintenance of ships, aircraft, and other transport equipment	39	OTN	Transport equipment nec
29	ELE	Electronic equipment	33	electequip	Manufacture of office machinery and computers, electronic components, and electronic communication equipment	27	Manufacture of office machinery and computers	10	3	Manufacture of office machinery	40	ELE	Electronic equipment
						29	Electronic components, and electronic communication equipment	10	4	Manufacture of automatic data-processing machinery (computers)			
								10	8	Manufacture of electronic components and of semiconductors			
								10	9	Manufacture of telecommunications equipment			
								11	0	Manufacture of data-communications equipment and of domestic electronic equipment			
30	OME	Machinery and equipment nec	34	machine	Machinery and equipment nec, electric motors, and electric distribution apparatus. Medical and scientific equipment,	26	Machinery and equipment	99		Manufacture of general-purpose machinery, equipment, parts and maintenance thereof	41	OME	Machinery and equipment nec
								10	0	Manufacture of agricultural and forestry machinery, parts and maintenance thereof			
								10	1	Manufacture of industrial machinery, parts and maintenance thereof, and of machinery for construction and road works, parts and maintenance thereof			

IOT 2004		SAM 2004		SUT 2004		IOT 1995		GTAP	
No	Code	No	Code	No	Description	No	Description	No	Code Sector names
.		.		.		.		.	
					medical equipment, and disposable and other medical articles	10	Manufacture of domestic appliances		
				28	Electric motors and electric distribution apparatus	2			
						10	Manufacture of electric motors, generators and transformers, and maintenance thereof		
						5			
						10	Manufacture of electricity distribution, and control apparatus		
						6			
						10	Manufacture of insulated wire and cables, cells and batteries		
						7			
				30	Medical and scientific equipment	11	Manufacture of industrial equipment for control and supervision		
						1			
						11	Manufacture of medical and surgical equipment		
						2			
						11	Manufacture of instruments for measuring, testing, and navigating		
						3			
						11	Manufacture of optical instruments and photographic equipment		
						4			
				36	Medical equipment and disposable and other medical articles	12	Manufacture of medical equipment and disposable and other medical articles		
						1			
31	OMF	35	othmanuf	33	Furniture	11	Manufacture of furniture (excluding metal and plastic furniture)	42	OMF Manufactures nec
	Manufactures nec				diamonds, jewellery, and goldsmith's and silversmith's articles, and	7			
						11	Manufacture of metal and plastic furniture		
						8			
				34	Diamonds	11	Manufacture of diamonds		
						9			

IOT 2004			SAM 2004		SUT 2004		IOT 1995			GTAP		
No	Code	Description	No	Code	Description	No	Description	No	Description	No	Code	Sector names
.			.			.		.		.		
					miscellaneous manufacturing	35	Jewellery, and goldsmith's and silversmith's articles	12	Manufacture of jewellery and goldsmith's and silversmith's articles			
						37	Miscellaneous manufacturing	12	Manufacture of toys and games as well as school and office supplies			
								12	Manufacture of musical instruments, sports goods, and products nec			
32	ELY	Electricity	36	electricity	Electricity	38	Electricity	12	Electricity		43	ELY Electricity
33	WTR	Water	37	water	Water	39	Water	12	Water		45	WTR Water
34	CNS	Construction	38	construct	Residential building and other construction	40	Residential buildings	12	Residential buildings		46	CNS Construction
						41	Other construction	12	Construction for agriculture and manufacturing			
								12	Construction for water supply and for electricity distribution			
								12	Buildings for public and business services (business buildings, hotels, institutions, etc.)			
								13	Buildings for transport and other construction works			
35	TRD	Trade services	39	trade	Wholesale and retail trade, maintenance and repair of motor vehicles, accommodation services, and restaurants	42	Wholesale and retail trade	13	Wholesale and retail trade		47	TRD Trade
						43	Maintenance and repair of motor vehicles	13	Maintenance and repair of motor vehicles			
						44	Accommodation services and restaurants	13	Hotels and accommodation services			
								13	Restaurant and dining services			

IOT 2004		SAM 2004		SUT 2004		IOT 1995		GTAP	
No	Description	No	Description	No	Description	No	Description	No	Sector names
36	OPTOBS Transport and business services nec	40	othtrans Land transport, port and airport services, other transport services, and real estate activities. Renting of machinery and equipment and of personal and household goods. Computerized data processing and commercial research, and other business services.	45	Land transport	13	Buses, taxis, underground railways, and cable cars	48	OTP Transport nec
						5			
						13	Trucks and trains		
						6			
				48	Port and airport services	13	Port and airport services		
						9			
				49	Other transport services	14	Other transport services		
						0			
				53	Real-estate activities	14	Real-estate activities	54	OBS Business services nec
						5			
				55	Renting of machinery and equipment and of personal and household goods	14	Renting of machinery and equipment and of personal and household goods		
						7			
				56	Computerized data processing and commercial research	14	Computerized data processing and commercial research		
						8			
				57	Other business services	14	Labor recruitment and security and cleaning activities		
						9			
						15	Legal and accounting services		
						0			
						15	Business consultation, market research, and public-opinion polling		
						1			
						15	Architectural, engineering, and other technical activities		
						2			
						15	Advertising and public-relation services		
						3			

IOT 2004		SAM 2004		SUT 2004		IOT 1995		GTAP	
No	Code	Description	No	Code	Description	No	Description	No	Code Sector names
.	.	.	.	.	.	.	.	.	.
						15	Photographic activities and other business activities		
						4	nec		
37	WTP	Water transport	41	watertrans	Water transport	46	Water transport	13	WTP Water transport
38	ATP	Air transport	42	airtrans	Air transport	47	Air transport	13	ATP Air transport
						8			
39	CMN	Communication	43	cummunc	Communication s, post services, and courier activities	50	Communication s, post services, and courier activities	14	CMN Communication
						1		14	
						2	Telecommunications		
40	OFISR	Financial services and insurance, including imputed bank services and general expenses	44	financbank	Banking and other financial institutions, insurance, and social insurance funds	51	Banking and other financial institutions	14	OFI Financial services nec
						52	Insurance and social insurance funds	14	
						4			
						65	Imputed bank services and general expenses	16	ISR Insurance
						2			
41	ROS	Recreational and other services	46	recothser	Recreational, cultural, and sporting activities.	62	Recreational, cultural, and sporting activities	15	ROS Recreational and other services
						9			

IOT 2004		SAM 2004		SUT 2004		IOT 1995		GTAP	
No	Code	Description	No	Code	Description	No	Code	Description	Sector names
.	.	.	.	.	.	.	.	.	.
				63	Sanitation services, services for households by domestic personnel, and other personal services. Social and community institutions as well as religious services	16	0	Sanitation services, services for households by domestic personnel, and other personal services	
				64	Social and community institutions as well as religious services	16	1	Social and community institutions as well as religious services	
42	OSG	Public Administration, defence, education, and health	45	pubserv	Public administration, education, and health services as well as welfare and social work (all non-profit institutions, general government, and commercial)	15	5	Public administration	56 OSG Public Administration, Defence, Education, Health
				59	Education services (non-profit institutions, general government, and commercial)	15	6	Education services (non-profit institutions, general government, and commercial)	
				60	Health services (non-profit institutions, general government, and commercial)	15	7	Health services (non-profit institutions) general government, and commercial)	

IOT 2004		SAM 2004		SUT 2004	IOT 1995		GTAP
No	Code	No	Code	Description	No	Description	No Code Sector names
.		.		.	.		.
				61 Welfare and social work (non-profit institutions, general government, and commercial)	15 Welfare and social work (non-profit institutions, general government, and commercial)		
43	DWE	47	dwelling	Dwellings: ownership of dwellings (imputed rents of houses occupied by owners)	54 Ownership of dwellings	14 Ownership of dwellings	57 DWE Dwellings
					6		