

J Malaysia

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J.1 Introduction

This document describes the adaptation of the 2019 Malaysian input-output (I-O) table for input to the Global Trade Analysis Project (GTAP). The structure of this paper is as follows. Section 2 describes the source data. Section 3 discusses strengths and limitations of the published input-output (I-O) data. Section 4 addresses the procedures for data processing. Section 5 presents the mapping between the 124 Malaysian I-O sectors, 65 GTAP sectors, and the more aggregated 56 sectors of the submitted table.

J.2 Data Sources

The primary raw input was 124-sector input-output data published by the Department of Statistics Malaysian (DOSM). The 2019 I-O data was measured in thousands of 2019 Malaysian ringgit. The 2019 DOS raw input-output data satisfy the sectoral balance condition, and contain most of the data ready for conversion to the GTAP format. These data include:

1. Supply and Use tables at purchasers' prices for 124 sectors. The Supply table shows the total outputs of 124 domestic commodities, total imports, taxes and subsidies on domestic and imported goods, trade and transport margins, by commodity. The Use table shows the demand for those commodities by industries, private households, government, investment, changes in inventories, and exports.
2. An Absorption matrix at basic prices showing the use of 124 domestically-produced commodities by 124 commodities and by five final users (private consumption, government consumption, investment, exports, and changes in stocks). The matrix also contains the values of import commodities, taxes and subsidies on products, other net taxes on production, compensation of employees and operating surplus, by commodity use.
3. An Import Absorption matrix at basic prices showing the use of 124 imported commodities by 124 commodities and by five final users (private consumption, government consumption, investment, exports, and changes in stocks).

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J.3 Strengths and Limitations of the Original Input Output Data

We have conducted a number of checks on the data. They include checks of the non-negativity condition and the balancing conditions of the tables. This section discusses the strengths and limitations of the data.

Strengths

As can be seen from the previous section, the original data contain detailed supply and use data for 124 commodities and activities. They provide most of the data needed for GTAP. Specifically: (a) There are absorption matrices for domestic and imported commodities, Commodity by commodity ; and (b) The absorption matrix commodity by commodity also contains the values of taxes on products, subsidies on products, other net taxes on production, compensation of employees and operating surplus. (c) The tables are balanced.

Limitations

1. There are some negative non-inventory flows in the absorption matrix $C \times C$. For example, there is negative capital return in sector 38 Builders' Carpentry and Joinery.
2. There are non-zero exports flows in the imported good matrix for most of merchandised goods. That is, there are re-exports of these commodities.
3. There are no separate values for land rentals.
4. There are no separate data for tariffs or export taxes.

J.4 Data Processing

In this section we discuss the adjustments procedures, the additional data sources, and the assumptions that we adopted to address the data issues described in the previous section. For the GTAP (Global Trade Analysis Project), we require commodity-by-commodity tables. In Malaysian I-O Table, these are represented by T6_ABSORP CXC and T7_Import CXC, which pertain to domestic and imported commodities, respectively.

1. Table 6 contains a vector of taxes and subsidies on products. There is a need to obtain the net value (tax - subsidy) and convert this into a matrix. In Excel, these values are presented as a row vector, allowing for allocation per input. The net per-product taxes can be allocated proportionally across domestic and imported inputs (based on row shares) for each type of use (intermediate and final).

The steps are as follows: Sum up the total intermediate input values of domestic and imported inputs for each type of use (intermediate and final). Then, use Excel's functions to

divide the values in Table 6 and Table 7 by the summed row values to obtain the proportion. Multiply this proportion by the net taxes to get the allocated values.

2. T6 includes data for taxes on production, labor (not differentiated by skill), which corresponds to compensation of employees, and capital (gross operating surplus). There is no land component represented in this table.
3. GTAP does not account for exports of imports. Hence, the values in AI11 should be sourced solely from T6.
4. There is a negative capital return in the builders' carpentry and joinery sector. It is necessary to impose the positive returns of a similar industry and regain balance through changes in stock. The gross operating surplus for this sector from the previous I-O table and subsequently from the Malaysian I-O table was identified. Then, a reasonable and positive value was selected and assigned to this value, and the changes in stock were adjusted accordingly.

Converting the Malaysian IO table into GTAP Format

The 124 sectors of the Malaysia I-O table were aggregated to a set of 56 sectors that best correspond to elements of GTAP's standard 65 commodities. The mappings from 124 and 56 sectors to these 65 sectors are reported in Table 8.24.

5. Checking Sectoral Balance and Non-negativity Conditions

After converting the Malaysian I-O tables to the format required by GTAP data base, we conducted the sectoral balance and non-negativity checks. The new data base passed the sectoral balance check and non-negativity conditions.

Table 8.24: Concordance between 124 Malaysia I-O sectors, GTAP 65 sectors and 56 sectors in the contributed table.

56 sectors		65 GTAP sectors		124 Malaysian I-O sectors	
1	afs	1	afs	1	Accommodation
				2	Food and Beverage
2	atp	2	atp	3	Air Transport
3	b_t	3	b_t	4	Spirits, Wines and Liquors
				5	Soft Drinks, Mineral Waters and Other Bottled Waters
				6	Tobacco Products
4	bph	4	bph	7	Pharmaceuticals, Medicinal Chemical & Botanical Products
5	chm	5	chm	8	Basic Chemicals
				9	Fertilizers and Nitrogen Compounds
				10	Paints and Varnishes
				11	Soaps & Detergents, Cleaning & Polishing, Perfumes and Toilet Preparations
				12	Other Chemicals Products

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56 sectors		65 GTAP sectors		124 Malaysian I-O sectors	
6	cmn	6	cmn	13	Postal and Courier Activities
				14	Publishing Activities
				15	Telecommunications
				16	Motion Picture, Programming and Broadcasting Activities
				17	Computer and Information Services
7	cmt_omt	7	cmt	18	Processing and Preserving of Meat
		8	omt		
8	cns	9	cns	19	Residential Buildings
				20	Non-Residential Buildings
				21	Civil Engineering
				22	Specialised Construction Activities
9	coa_oil_gas	10	coa	23	Crude Oil and Natural Gas
		11	oil		
		12	gas		
10	ctl_rmk_wol	13	ctl	24	Other Livestock
		14	rmk		
		15	wol		
11	dwe	16	dwe	25	Ownership of Dwellings
12	edu	17	edu	26	Education
13	eeq	18	eeq	27	Domestic Appliances
				28	Electric Motors, Generators and Transformers
				29	Wiring Devices, Electric Lighting Equipment and Other Electrical
14	ele	19	ele	30	Computers, Peripheral, Office Equipment and Machinery
				31	Electricity Distribution & Control Apparatus, Batteries and Accumulators
				32	Fibre Optic, Electronic and Other Electric Cables
				33	Electronic Components and Boards
				34	Optical Instruments, Photographic Equipment, Magnetic and Optical Media
15	ely_gdt	20	ely	35	Electricity and Gas
		21	gdt		
16	fmp	22	fmp	36	Structural Metal Products, Tanks, Reservoirs and Steam Generators
				37	Other Fabricated Metal Products
17	frs	23	frs	38	Forestry and Logging
18	fsh	24	fsh	39	Fishing and Aquaculture
19	hht	25	hht	40	Health
20	i_s	26	i_s	41	Basic Iron and Steel
				42	Casting of Metals
21	ins	27	ins	43	Insurance/ Takaful and Pension Funding
22	lea	28	lea	44	Leather Products
23	lum	29	lum	45	Sawmilling and Planning of Wood
				46	Veneer Sheets and Wood-based Panels
				47	Builders' Carpentry and Joinery
				48	Wooden Containers and Other Wood Products
24	mil	30	mil	49	Dairy Products
25	mvh	31	mvh	50	Motor Vehicles, Trailers and Semi Trailers
26	nfm	32	nfm	51	Basic Precious and Other Non-Ferrous Metals
27	nmh	33	nmh	52	Glass and Glass Products
				53	Refractory, Clay, Porcelain and Ceramic Products

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56 sectors		65 GTAP sectors		124 Malaysian I-O sectors	
				54	Cement, Lime and Plaster
				55	Non-Metallic Mineral Products
28	oap	34	oap	56	Poultry Farming
29	obs	35	obs	57	Scientific Research and Development
				58	Professional
				59	Business Services
30	ocr_pfb	36;37	ocr; pfb	60	Rubber
				61	Flower Plants
				62	Other Agriculture
31	ofd	38	ofd	63	Processing and Preserving of Seafood
				64	Processing and Preserving of Fruits & Vegetables
				65	Bakery Products
				66	Other Food Processing
				67	Prepared Animal Feeds
32	ofi	39	ofi	68	Monetary Intermediation
				69	Other Financial Service
				70	Activities Auxiliary to Financial Service and Insurance/ Takaful
33	ome	40	ome	71	Engines & Turbines, Fluid Power Equipment, Other Pumps, Compressors, Taps and Valves
				72	Other General Purpose Machinery
				73	Communication Equipment and Consumer Electronics
				74	Irradiation Equipment, Electro Medical and Electrotherapeutic
				75	Measuring Equipment, Testing, Navigating and Control
				76	Watches and Clocks
34	omf	41	omf	77	Furniture
				78	Other Manufacturing
				79	Repair & Installation of Machinery and Equipment
35	osd	42	osd	80	Oil Palm
36	osg	43	osg	81	Public Administration
				82	Public Order and Safety
				83	Other Public Administration
				84	Non-Profit Institutions Serving Households
37	otn	44	otn	85	Weapons, Ammunition and Special Purpose Machinery
				86	Motorcycles
				87	Ships, Boats, Bicycles and Invalid Carriages
				88	Other Transport Equipment
38	otp	45	otp	89	Land Transport
				90	Highway Operation Services, Bridge and Tunnel
39	oxt	46	oxt	91	Mining of Metal Ores
				92	Quarrying of Stone, Sand and Clay
				93	Other Mining and Quarrying
40	p_c	47	p_c	94	Coke and Refined Petroleum Products
41	pcr	48	pcr	95	Grain Mill Products, Starches and Starch Products
42	pdr	49	pdr	96	Paddy
43	ppp	50	ppp	97	Paper and Paper Products
				98	Reproduction of Recorded Media
				99	Printing
44	ros	51	ros	100	Arts, Entertainment and Recreation
45	rpp	52	rpp	101	Rubber Tyres and Tubes

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56 sectors		65 GTAP sectors		124 Malaysian I-O sectors	
				102	Rubber Processing
				103	Rubber Gloves
				104	Other Rubber Products
				105	Plastic Products
46	rsa	53	rsa	106	Real Estate
				107	Rental and Leasing
47	sgf	54	sgf	108	Confectionery
48	tex	55	tex	109	Preparation, Spinning and Weaving of Textiles
				110	Finishing of Textiles
				111	Other Textiles
49	trd	56	trd	112	Wholesale & Retail Trade, Repair of Motor Vehicles and Motorcycles
50	v_f	57	v_f	113	Vegetables
				114	Fruits
51	vol	58	vol	115	Vegetable & Animal Oils and Fats
52	wap	59	wap	116	Wearing Apparel
				117	Footwear
53	whs	60	whs	118	Warehousing and Support Activities for Transportation
				119	Services Incidental to Water and Air Transportation
54	wht_gro_c_b	61	wht	120	Food Crops
		62	gro		
		63	c_b		
55	wtp	6	wtp	121	Water Transport
				122	Other Private Services
56	wtr	65	wtr	123	Water
				124	Sewerage, Waste Management & Remediation Activities