

14.12

Turkey

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14.12.1 The original input-output table

The source table for Turkey's input-output (I/O) table is "The Input-Output Structure of the Turkish Economy 1990," published by the State Institute of statistics in June 1994. The 1990 I/O table has 64 sectors presented industry by industry. All transactions are reported in millions of Turkish Lira (TL). Several separate matrices are reported in the 1990 I/O tables. This includes 1) I/O flow matrix (or transactions matrix), 2) imports matrix, and 3) table of distributive margins.

The I/O matrix records the flows of goods and services among industries. The table is organized in such a way that the columns show the values of the inputs absorbed by the industries and payments to primary inputs, whereas the rows show the distribution of products into various industries and final demand categories. Final demand categories consist of public and private final consumption expenditures, public and private gross fixed capital formations, increase in stocks, and exports.

In the 1990 I/O table GDP is given at producers' prices. As far as the income approach is concerned this measure of GDP is the sum of all income payments accruing to the factors of production including net indirect taxes (indirect taxes minus subsidies). Import tariffs are added to this value in order to obtain GDP at market prices.

The import matrix corresponds to the I/O matrix but records the value of the imported goods purchased by industries and final demand categories. The difference between I/O matrix and import matrix gives the matrix of domestic usage of industries and final demand categories.

The table of distributive margins shows the difference between producers' prices and purchasers' prices of all flows of goods in the I/O table.

The final uses of GDP have been classified into six categories: 1. private final consumption expenditure, 2) public final consumption expenditure, 3) private fixed capital formation, 4) public fixed capital formation, 5) change in stocks, and 6) export. Imports are reported at *cif* values and they are exclusive of import duties. Exports are given at ex-factory prices. Indirect taxes are not distinguished as commodity taxes and other indirect taxes.

Gross and net value added (both at factor cost) are given as row vectors. The break-up of net value added into returns to labor and capital is not available from the I/O table.

14.12.2 Turkish I/O table for GTAP

The original I/O table had some balance problems in the sense that total sales were not equal to total costs for some sectors. In order to satisfy the balance condition, import matrix was rescaled so that total imports in transactions matrix match with the corresponding values in the import matrix. Following this, the 64-sector Turkish I/O table was aggregated up to 36-sector table in partial concordance to GTAP. Table 14.12.1 shows the mapping between the sectors from the original table (64 sectors) to the aggregated table (36 sectors). Table 14.12.2 shows the mapping between the 36 Turkish sector into 49 GTAP sectors.

Sixteen matrices have been reported with GTAP sectoral classification: AI01-AI15 and AI27 as specified in GTAP Technical Paper #1 (Huff and McDougall, 1996) including intermediate usage of domestic products and imports, investment usage of domestic products and imports, household consumption of domestic products and imports, government consumption of domestic products and imports, change in stocks of domestic products and imports, exports, non-commodity indirect taxes, and employment of capital and labor. No information was available regarding the employment of land and commodity tax on different types of usage, hence all were assumed to be zero.

Two sectors were split to meet the GTAP sectoral requirement. These were “crude petroleum and natural gas”, and “gas manufacture and waterworks”. These splits (shown below) were implemented using OECD energy consumption data (1996).

Disaggregating energy sectors	
GTAP sectors	Turkish sectors
16 Oil	.75 TUR 6: crude petroleum and natural gas
17 Gas	.25 TUR 6: crude petroleum and natural gas
44 Gas	.40 TUR 51: gas manufacture and waterworks
45 Water	.60 TUR 51: gas manufacture and waterworks

Table 14.12.1 Mapping from 64-sector to 36-sector I/O table

Turkish		Turkish/GTAP	
1	agriculture	1	agriculture
20	ginning		
2	animal husbandry	2	animal husbandry
3	forestry	3	forestry
4	fisheries	4	fishing
5	coal mining	5	coal
6	crude petroleum and natural gas (75%)	6	oil
6	crude petroleum and natural gas (25%)	7	gas
7	iron ore mining	8	minerals n.e.c.
8	non-ferrous ore mining		
9	non-metallic mineral mining		
10	stone quarrying		
11	slaughtering, preparing & preserved meat	9	meat products
12	canning and preserving of fruits and veg.	10	food products n.e.c.
14	grain mill products		
16	manufacture of other food products		
13	man. of vegetable and animal oils and fats	11	vegetable and animal oils and fats
15	sugar	12	sugar
17	alcoholic beverages	13	beverages and tobacco products
18	soft drinks and carbonated water industries		
19	tobacco manufactures		
21	manufacture of textiles	14	textiles
22	manufacture of wearing apparels	15	wearing apparel
23	manufacture of leather and fur products	16	leather products
24	manufacture of footwear		
25	man. of wood and wood products	17	wood products
26	man. of wood furniture and fixtures		
27	man. of paper and paper products	18	paper products and publishing
28	printing, publishing and allied industries		
29	manufacture of fertilizers	19	chemical, rubber, plastic products
30	man. of drugs and medicines		
31	man. of other chemical products		
34	man. of rubber products		
35	man. of plastic products		
32	petroleum refineries	20	petroleum, coal products

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Table 14.12.1 Mapping From 64-sector to 36-sector I/O table (continued)

Turkish		Turkish/GTAP	
33	man. of petroleum and coal products		
36	man. of glass and glass products	21	mineral products n.e.c.
37	manufacture of cement		
38	man. of other non-metallic mineral products		
39	manufacture of iron and steel	22	iron and steel
40	man. of non-ferrous metal	23	metals n.e.c.
41	man. of fabricated metal products	24	metal products
42	man. of machinery except electrical	25	machinery and equipment n.e.c.
43	man. of agr. Machinery and equipment		
44	man. of electrical machinery		
45	man. of shipbuilding and repairing	26	transport equipment n.e.c.
46	man. of railroad equipment		
48	man. of other transport equipment		
47	man. of land transport vehicles and equip.	27	motor vehicles and parts
49	other manufacturing industries	28	manufacture n.e.c.
50	electricity	29	electricity
51	gas manufacture and waterworks (40%)	30	gas
51	gas manufacture and waterworks (60%)	31	water
52	building construction	32	construction
53	other construction		
54	Wholesale and retail trade	33	trade and transport
55	restaurants and hotels		
56	railway transport		
57	other land transport		
58	water transport		
59	air transport		
60	communications		
61	financial institutions and insurance	34	financial, business, recre. services
62	personal and professional services		
63	public services	35	public services (defen., edu., h.)
64	ownership of dwellings	36	dwellings

Table 14.12.2 Mapping from 36 Turkish sectors to 49 GTAP sectors

Turkish/GTAP		GTAP	
1	agriculture	1	pdr
1	agriculture	2	wht
1	agriculture	3	gro
1	agriculture	4	v_f
1	agriculture	5	osd
1	agriculture	6	c_b
1	agriculture	7	pbf
1	agriculture	8	ocr
2	animal husbandry	9	ctl
2	animal husbandry	10	oap
2	animal husbandry	11	rmk
2	animal husbandry	12	wol
3	forestry	13	for
4	fishing	14	fsh
5	coal	15	col
6	oil	16	oil
7	gas	17	gas
8	minerals n.e.c.	18	omn
9	meat products	19	cmt
9	meat products	20	cmt
11	vegetable and animal oils and fats	21	vol
2	animal husbandry	22	mil
10	food products n.e.c.	23	pcr
12	sugar	24	sgr
10	food products n.e.c.	25	ofd
13	beverages and tobacco products	26	b_t
14	textiles	27	tex
15	wearing apparel	28	wap
16	leather products	29	lea
17	wood products	30	lum
18	paper products and publishing	31	ppp
20	petroleum, coal products	32	p_c
19	chemical, rubber, plastic products	33	crp
21	mineral products n.e.c.	34	nmm
22	iron and steel	35	i_s
23	metals n.e.c.	36	nfm
24	metal products	37	fmp
27	motor vehicles and parts	38	mvh
26	transport equipment n.e.c.	39	otn
25	machinery and equipment n.e.c.	40	ome

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Table 14.12.2 Mapping from 36 Turkish sectors to 49 GTAP sectors (continued)

Turkish/GTAP		GTAP	
28	manufacture n.e.c.	41	omf
29	electricity	42	ely
30	gas	43	gdt
31	water	44	wtr
32	construction	45	cns
33	trade and transport	46	t_t
34	financial, business, recreational services	47	osp
35	public services (defense, edu., health)	48	osg
36	dwellings	49	owe

Reference

Huff, K. and McDougall, R. (1996). *Contributing I/O Tables to the GTAP Data Base*, GTAP Technical Paper No. 1, Purdue University, USA.