

# *Tajikistan*

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## **1. Introduction**

This chapter outlines the construction and contribution a 2011 Tajikistan Input-Output Table for the GTAP Data Base. The Agency on Statistics under the President of the Republic of Tajikistan (AS), with technical support of the GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit), developed the Social Accounting Matrix (SAM) that is first since country's independence in 1991. To ensure its further use, as a next step, GIZ initiated to include Input-Output Table into GTAP Database.

## **2. Data Source**

The source of Tajikistan's contributed data from "Tajikistan Input-Output Table, 2011" published by Agency on Statistics under the President of the Republic of Tajikistan in September 2015.

Tajikistan Input-Output Table, 2011 were compiled based on the following official sources of the data:

- Balance of Payments of Tajikistan;
- State budget of Tajikistan;
- Custom Service under the Government of the Republic of Tajikistan
- Tax Committee under the Government of the Republic of Tajikistan;
- AS Quarterly Household Budget Survey;
- National Bank of Tajikistan;
- Information on capital transactions, property income, and insurance payment recorded in National Account (NA) department of the AS.

The submitted Input Output Table into GTAP Data Base at basic prices and the units are thousand Tajik Somoni (TJS).

The original Input-Output Table that do not match precisely with the requirements of GTAP an available information was reclassified according to GTAP requirements. The Mapping between the original Input-Output Table and GTAP are reveal in Table 1.

**Table 1. Mapping between Tajikistan Original Input-Output Table and GTAP 57 sector classification**

GTAP - 57 sectors			TJK-2011 Input-Output Table, 37 sectors		
No	Code	Description	No	Code	Description
1	pdr	Paddy Rice: rice, husked and unhusked	<b>1</b>	agr	Agriculture (1-12)
2	wht	Wheat: wheat and muslin			
3	Gro	Other Grains: maize (corn), barley, rye, oats, other cereals			
4	v_f	Vegetables & Fruit: vegetables, fruit and nuts, potatoes, cassava, truffles,			
5	Osd	Oil Seeds: oil seeds and oleaginous fruit; soy beans, copra			
6	c_b	Cane & Beet: sugar cane and sugar beet			
7	Pfb	Plant Fibers: cotton, flax, hemp, sisal and other raw vegetable materials used in textiles			
8	ocr	Other Crops:			
9	ctl	Cattle: cattle, sheep, goats, horses, asses, mules, and hinnies; and semen thereof			
10	oap	Other Animal Products:			
11	rmk	Raw milk			
12	wol	Wool: wool, silk, and other raw animal materials used in textile			
13	frs	Forestry: forestry, logging and related service activities	<b>13</b>	frs	
14	fsh	Fishing: hunting, trapping and game propagation including related service activities, fishing, fish farms; service activities incidental to fishing	<b>14</b>	fsh	
15	coa	Coal: mining and agglomeration of hard coal, lignite and peat	<b>15</b>	coa	
16	oil	Oil: extraction of crude petroleum and natural gas (part), service activities incidental to oil and gas extraction excluding surveying (part)	<b>16-17</b>	oilgas	Oil & Gas
17	gas	Gas: extraction of crude petroleum and natural gas (part), service activities incidental to oil and gas extraction excluding surveying (part)			
18	omn	Other Mining: mining of metal ores, uranium, gems. other mining and quarrying	<b>18</b>	omn	
19	cmt	Cattle Meat: fresh or chilled meat and edible offal of cattle, sheep, goats, horses, asses, mules, and hinnies. Raw fats or grease from any animal or bird.	<b>19-26</b>	fdbev	Food products, Beverage & Tobacco
20	omt	Other Meat: pig meat and offal. preserves and preparations of meat, meat offal or blood, flours, meals and pellets of meat or inedible meat offal; greaves			
21	vol	Vegetable Oils:			

GTAP - 57 sectors			TJK-2011 Input-Output Table, 37 sectors		
No	Code	Description	No	Code	Description
22	mil	Milk: dairy products			
23	pcr	Processed Rice: rice, semi- or wholly milled			
24	sgr	Sugar			
25	ofd	Other Food:			
26	b_t	Beverages and Tobacco products			
27	tex	Textiles: textiles and man-made fibers	27	tex	
28	wap	Wearing Apparel: Clothing, dressing and dyeing of fur	28	wap	
29	lea	Leather: tanning and dressing of leather; luggage, handbags, saddlery, harness and footwear	29	lea	
30	lum	Lumber: wood and products of wood and cork, except furniture; articles of straw and plaiting materials	30	lum	
31	ppp	Paper & Paper Products: includes publishing, printing and reproduction of recorded media	31	ppp	
32	p_c	Petroleum & Coke: coke oven products, refined petroleum products, processing of nuclear fuel	32	p_c	
33	crp	Chemical Rubber Products: basic chemicals, other chemical products, rubber and plastics products	33	crp	
34	nmm	Non-Metallic Minerals: cement, plaster, lime, gravel, concrete	34	nmm	
35	i_s	Iron & Steel: basic production and casting	35-36	isnfm	Iron & Steel & Non-Ferrous Metals
36	nfm	Non-Ferrous Metals: production and casting of copper, aluminium, zinc, lead, gold, and silver			
37	fmp	Fabricated Metal Products: Sheet metal products, but not machinery and equipment	37	fmp	
38	mvh	Motor Vehicles: cars, lorries, trailers and semi-trailers	38	mvh	
39	otn	Other Transport Equipment: Manufacture of other transport equipment	39	otn	
40	ele	Electronic Equipment: office, accounting and computing machinery, radio, television and communication equipment and apparatus	40	ele	
41	ome	Other Machinery & Equipment: electrical machinery and apparatus n.e.c., medical, precision and optical instruments, watches and clocks	41	ome	
42	omf	Other Manufacturing: includes recycling	42	omf	
43	ely	Electricity: production, collection and distribution	43-44	elygdt	Electricity & Gas: production, collection & distribution
44	gdt	Gas Distribution: distribution of gaseous fuels through mains; steam and hot water supply			
45	wtr	Water: collection, purification and distribution	45	wtr	

GTAP - 57 sectors			TJK-2011 Input-Output Table, 37 sectors		
No	Code	Description	No	Code	Description
46	cns	Construction: building houses factories offices and roads	46	cns	
47	trd	Trade: all retail sales; wholesale trade and commission trade; hotels and restaurants; repairs of motor vehicles and personal and household goods; retail sale of automotive fuel	47	trd	
48	otp	Other Transport: road, rail ; pipelines, auxiliary transport activities; travel agencies	48	otp	
49	wtp	Water transport	49	wtp	
50	atp	Air transport	50	atp	
51	cmn	Communications: post and telecommunications	51	cmn	
52	ofi	Other Financial Intermediation: includes auxiliary activities but not insurance and pension funding (see next)	52	ofi	
53	isr	Insurance: includes pension funding, except compulsory social security	53	isr	
54	obs	Other Business Services: real estate, renting and business activities	54	obs	
55	ros	Recreation & Other Services: recreational, cultural and sporting activities, other service activities; private households with employed persons (servants)	55	ros	
56	osg	Other Services (Government): public administration and defense; compulsory social security, education, health and social work, sewage and refuse disposal, sanitation and similar activities, activities of membership organizations n.e.c., extra-territorial organizations and bodies	56	osg	
57	dwe	Dwellings: ownership of dwellings (imputed rents of houses occupied by owners)	57	dwe	

### **3. *Processing***

The initial products by products Input-Output Table that includes 37 sectors, split into domestic and imported sectors and do not match with requirement of GTAP format. Thus, first initial Input-Output Table was adjusted into GTAP Input-Output Table format with checking and re-ordering of the data:

- Domestic commodity taxes entered as negative;
- The three import columns, i.e. border values (Mcif), tariff revenue (Mtar) and other commodity taxes (Mtax) entered as negative;
- Removal of re-export, using inventories, from import and export, in case of wearing apparel (WAP), leather (LEA), petroleum & coke (PC), motor vehicles (MVH), and other machinery equipment (OME).

The GEMPACK programs was used to convert original Input-Output data to the required GTAP four main matrices format:

- the supply and use of the 37 GTAP products and three primary factors of production (land, labour and capital) without product taxes (GTAP matrix UF);
- the supply and use of the 37 GTAP products and three primary factors with product taxes (GTAP matrix UP);
- output of the 37 GTAP products (GTAP vector OP); and
- imports of the 37 GTAP products (GTAP vector MF).

### **4. *Data check***

Tajikistan Input-Output Table Data met the following requirements:

- a) there were no negative values other than where appropriate, i.e. except domestic commodity taxes (DOMTAX), border values of import (MCif), import tariff revenue (Mtar) and other commodity taxes on import (Mtax);
- b) all pre-tax commodity usage values (except changes in stocks) are non-negative;
- c) pre-tax commodity usage values are strictly positive
- d) post-tax values are also strictly positive
- e) all factor usage values are non-negative
- f) the pre- and post-disaggregation value of costs and sales balanced;
- g) total sales equalled total costs in total and by sector;
- h) the GTAP entropy input-output cost shares discrepancies, in some cases, are mainly related with reality in country economy
- i) all balance conditions are met (Table 2).

**Table 2. Balance condition**

	<b>Revise</b>	<b>Absolute difference</b>	<b>Sales</b>	<b>Costs</b>
<b>1 AGR</b>		-	13,316,853	13,316,853
<b>2 FRS</b>		(2)	11,082	11,084
<b>3 FSH</b>		3	12,591	12,588
<b>4 COA</b>		(1)	20,945	20,946
<b>5 OILGAS</b>		1	45,297	45,296
<b>6 OMN</b>		1	837,180	837,179
<b>7 FDBEV</b>		2	2,728,245	2,728,243
<b>8 TAB</b>		-	6,804	6,804
<b>9 TEX</b>		-	1,121,829	1,121,829
<b>10 WAP</b>		(3)	32,838	32,841
<b>11 LEA</b>		(5)	11,214	11,219
<b>12 LUM</b>		(2)	22,747	22,749
<b>13 PPP</b>		(2)	39,135	39,137
<b>14 p_c</b>		5	16,744	16,739
<b>15 CRP</b>		4	38,974	38,970
<b>16 NMM</b>		3	242,213	242,210
<b>17 ISNFM</b>		2	602,366	602,364
<b>18 FMP</b>		3	47,481	47,478
<b>19 MVH</b>		1	1,819	1,818
<b>20 OTN</b>		(2)	5,408	5,410
<b>21 ELE</b>		(3)	111,235	111,238
<b>22 OME</b>		(4)	26,062	26,066
<b>23 OMF</b>		(2)	7,245	7,247
<b>24 ELYGDT</b>		-	1,088,837	1,088,837
<b>25 WTR</b>		-	29,481	29,481
<b>26 CNS</b>		-	3,640,419	3,640,419
<b>27 TRD</b>		(2)	4,722,354	4,722,356
<b>28 OTP</b>		-	5,441,911	5,441,911
<b>29 WTP</b>		-	-	-
<b>30 ATP</b>		(4)	657,752	657,756
<b>31 CMN</b>		-	1,859,180	1,859,180
<b>32 OFI</b>		1	996,657	996,656
<b>33 ISR</b>		-	81,965	81,965
<b>34 OBS</b>		5	134,515	134,510
<b>35 ROS</b>		-	706,427	706,427
<b>36 OSG</b>		-	4,001,150	4,001,150
<b>37 DWE</b>		1	623,020	623,019

## *References*

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