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Russian Federation

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11.0.1 Original Input-Output Table

The input-output table for the Russian Federation (RF) was prepared for the GTAP Data Base by experts from the Moscow State "Lomonosov" University in collaboration with experts from the United States International Trade Commission. The original data sources used to construct the social accounting matrix include the RF national accounts statistics, the official input-output table, and custom statistics.

The reference year of the official RF input-output table is 1997. It is grouped commodity by commodity and includes 22 producing sectors. The units of measurement are million Russian rubles. Three different kinds of tables are available, namely: (a) the input-output table in basic prices (table of total usage of both domestic and imported goods and services, and value-added elements), (b) the table of imports usage, and (c) the table of net taxes on total intermediate usage. The table of usage of domestic goods and services was obtained by subtracting the elements of the imports usage matrix from the corresponding elements of the total intermediate consumption matrix.

The 1997 RF I-O table is expressed in basic prices, i.e. the elements of intermediate consumption and final demand do not include transportation and trade margins and net taxes on raw materials, goods, fuel, energy and other inputs used in production. The totals of margins and taxes on inputs mentioned above are presented in the corresponding rows of the intermediate consumption quadrant of the I-O table and on the table of usage of imported goods and services as well.

To adjust the intermediate demand of the sector "Financial mediation, insurance, administration of public organization services," an additional row and column of "Imputed financial mediation services" were included in the 1997 RF I-O table. Imputed financial mediation services represent the difference between interest received by financial intermediators (commercial banks, investment fund, financial companies and corporations, pension funds) and the interest paid by these intermediators. Aside from imputed financial mediation services, intermediate consumption also includes insurance services. Insurance services are calculated as the sum of insurance premiums received by insurers and net income of insurers from investing their reserves minus insurance money they paid-up and plus the increase in their insurance reserves adjusted for price changes.

Financial mediation and insurance services are currently not distributed for existing sectors of the economy. They are taken as intermediate consumption of standard (conventional) unit. In determining Gross Domestic Product, the value of financial mediation and insurance services is deducted from the total sum of value-added of all other sectors of the economy.

The matrix of final demand in the original input-output table consists of household consumption expenditures, government consumption expenditures, non-commercial organizations' expenditures¹, gross accumulation of fixed capital, changes in stocks, net valuable purchases² and exports.

Two additional elements are used in the 1997 RF I-O table to adjust total household consumption -- direct purchases of foreign goods and services made by the residents (adjustment from the imports side) and direct purchases of domestic market goods and services made by non-residents (adjustment from the exports side).

The matrix of value-added includes labor payments, net profit, net mixed income, depreciation, other taxes on production, and other subsidies on production. According to the methodology applied in the official I-O table, labor payments include social security taxes. Mixed income is the revenue of unincorporated private enterprises. It is a kind of income that simultaneously combines elements of labor payments to owners of unincorporated private enterprises and their profits.

11.O.2 Adjustment of the Official I-O Table

Some adjustments to the 1997 RF I-O table were made to prepare the data base for the GTAP model. These adjustments can be divided into two stages. The first stage includes the disaggregation of the sectors in existing the I-O table. This work was done based on available product balances prepared by the State Statistics Agency. As a result, an additional 22 producing sectors were identified (see Table 11.O.1).

The second stage includes some basic reorganization and restructuring of the different parts of the I-O table: excluding from the consideration the travelers' (household's) expenditures scalars to eliminate distortions of export and import vectors; expanding the imputed financial service charges into an array and correcting the capital (value-added) and finance (intermediate consumption) accounts accordingly; combining transportation and trade margins with non-margin usage of these services; combining the vector of net valuables purchases with the vector of gross accumulation of fixed capital; combining the vector of non-commercial organizations' expenditures with vector of government consumption expenditures; combining net profit with net mixed income and depreciation to get a vector of gross capital return.

¹Non-commercial organizations are all not-for-profit resident organizations supplying services or products to households free of charge or at prices which are not economically important.

²Valuables consist of precious metals and jewels, antiquarian goods, collections and other works of art. Usually they are kept as a store of value. It is supposed that their real value does not reduce with time. Valuables are not used in the production process.

Table 11.O.1 Further Disaggregation of the Russian Federation Input-Output Table

Sector Code	Initial Producing Sectors	Sectors after disaggregating the 1997 RF I-O Table	Sector Code
01	Electric energy	Production, collection and distribution of electricity	01
02	Oil and gas industry products	Extraction of crude petroleum	02
		Manufacture of petroleum products	03
		Extraction and manufacture of natural gas	04
03	Coal	Mining and manufacture of coal	05
04	Shale oil and peat	Other fuel industry: mining and manufacture of peat and shale oil	06
05	Ferrous metals	Ferrous metals: mining and dressing of metal ores, mining and dressing non-metallic stuff, manufacture of ferrous metals, manufacture of pipe, ferro alloy, coke, fire products, second manufacturing of ferrous metals, manufacture of metal products	07
06	Non-ferrous metals	Non-ferrous metals: aluminum industry, copper industry, leaden and zinc industry, nickel and cobalt industry, titanium and magnesium industry, tungsten and molybdenum industry, tin industry, antimony and quicksilver industry, less-common metal and semi-conductor industry, precious metal industry, manufacture of non-ferrous metals, second manufacturing of non-ferrous metals, electrode industry, hard alloy, refractory and heat-resisting metal industry	08
07	Chemical and petrochemical industry products	Chemical and petrochemical industry (no pharmaceutical industry): mining of chemicals, inorganic chemistry, synthetic fiber industry, synthetic rosin and plastic industry, plastics, glass fiber, glass fiber plastics manufacture, lacquer and paint industry, chemical reagent and pure chemical agent industry, chemical dye industry, chemical and photographic industry, household chemical goods, other chemical industries; synthetic caoutchouc industry, organic synthesis product industry, industrial carbon production, tire industry, rubber and asbestos industry	09
08	Machinery and equipment, metal-working industry products	Mechanical engineering and metal manufacturing (no medicine equipment industry): heavy, power, transport engineering, electro technical industry, chemical and oil engineering, machine-tool and instrumental industry, instrument-making industry, computer engineering industry, motor-car industry, bearing industry, tractor and agricultural engineering, road-building and utility engineering, light and food industry engineering, household equipment engineering, sanitary and gas equipment engineering, aircraft industry, defense industry, shipbuilding industry, wireless equipment industry, means of connection industry, electronic industry, other engineering industry, metal construction and manufacture industry, machine and equipment maintenance	10

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Table 11.O.1 Further Disaggregation of the Russian Federation Input-Output Table (Contd)

Sector Code	Initial Producing Sectors	Sectors after disaggregating the 1997 RF I-O Table	Sector Code
09	Timber industry, woodworking industry pulp and paper industry products	Timber, wood manufacturing, pulp and paper industry: timber industry, wood manufacturing industry, furniture industry, manufacture of match, other wood manufacturing, manufacture of paper and paper products	11
10	Construction materials (including glass, porcelain and faience industries)	Construction material industry (including glass, ceramic and faience industry)	12
11	Light industry products	Light industry	13
12	Food industry products	Food industry	14
13	Other manufactured goods	Mixed fodder industry Polygraphic and printing industry Other manufacturing	16 17 18
14	Construction	Construction	20
15	Agricultural products, services and forestry	Plant products Animal products Agricultural services Forestry	22 23 24 25
16	Transportation and communication services	Transport (including road management and trunk pipeline) Communication (mail, courier, electro and wireless connection)	26 27
17	Trade services	Trade (whole and retail trade, chemist's shops, markets) Public catering Storage and procurement: procurement organizations, procurement management, intermediary services for purchasing of agricultural products Material and technical provision and sale Operations with immovables General activity for providing market operations: intermediary services for purchasing, selling and renting of goods and securities; intermediary services in the fields of transportation, housing and communal services, household services, education, culture, medicine and science; advertising; auditor activity; marketing and consultations on finance, management and commerce; legal advice	28 29 30 31 33 34
18	Products of other activities	Metallic, non-metallic, food wastes, scrapes Publishing and editing activity Security service (protecting of property of business, organizations, citizens; private investigation) Information and computing services Non production household services: bath-houses, shower-baths, public toilets, house cleaning, hock-shops, undertaker's offices, cemeteries, crematoriums	37 38 39 32 42

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Table 11.O.1 Further Disaggregation of the Russian Federation Input-Output Table (Contd)

Sector Code	Initial Producing Sectors	Sectors after disaggregating the 1997 RF I-O Table	Sector Code
19	Housing and communal services, consumer services	Dwellings	40
20	Health services, physical training services, social maintenance services, education, culture and art	Health, physical training and sport services (including recreation and tourism services), social security Education Culture and art: libraries, film libraries, museums and exhibitions, clubs, parks, botanical gardens and zoo, tele- and radio editors, theaters, cinemas, concerts and so on	43 44 45
21	Science, geological survey, geodesic and hydro-meteorological services	Science and scientific services Geology and bowels investigation, geodesic and hydro meteorological services	46 35
22	Financial mediation, insurance, administration of public organization services	Finance, credit and insurance State administration, public associations and unions	47 48

11.O.3 *Commodity Concordance*

The commodity mapping was conducted by using national sectoral and customs statistics and some expert judgments for the sectoral disaggregation. Appendix Table 11.O.A1 shows how the sectoral classification of the RF IOT is mapped to the GTAP sectoral classification (GSC2).

To match the GSC2 sectors, some of the RF I-O table commodities had to be split. These sectors are: agriculture (plant and animal products, agricultural services); timber, wood manufacturing, pulp and paper industry; food industry; mining and manufacture of coal; extraction and manufacture of natural gas; ferrous metals; non-ferrous metals; light industry; chemical and petrochemical industry; mechanical engineering and metal manufacturing; extraction and manufacture of natural gas; communal services; transport; finance, credit and insurance. Because of unavailability of data, the percentage shares for the split of intermediate consumption of all sectors (except for agriculture and food commodities) mentioned above were calculated from production shares based on expert judgments and relative production shares. As for the disaggregation of intermediate consumption of agricultural and food sectors, we partially applied full costs' coefficients used in the GTAP 5 Data Base for the Former Soviet Union. For the disaggregation of final consumption, capital formations, export and import elements we used statistical information for production and trade of different sectors available. The same approach was applied for splitting value-added components.

11.O.4 Additional Remarks

The 1997 RF I-O table does not include information on employment of land and on customs import duties. Information on land employment was obtained from the State (National) Report for 1998 prepared by the Russian Federation State Committee on Land Policy. *Ad valorem* import duties for GTAP commodities were calculated using the Import Customs Tariff of the Russian Federation.

References

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- The Russian Federation State Customs Committee. 1998. The RF State Customs Tariff. The Russian Federation State Customs Committee, Moscow.

Table 11.O.A1 Mapping of 44 Sectors in the RF I-O Table to the GTAP Sectoral Classification

GTAP Sectoral Classification (GSC2)			The RF Sectoral Classification	
01	pdr	Paddy rice	22	Plant products (part)
			24	Agricultural services (part)
02	wht	Wheat	22	Plant products (part)
			24	Agricultural services (part)
03	gro	Cereal grains nec	22	Plant products (part)
			24	Agricultural services (part)
04	v_f	Vegetables, fruits, nuts	22	Plant products (part)
			24	Agricultural services (part)
05	osd	Oilseeds	22	Plant products (part)
			24	Agricultural services (part)
06	c_b	Sugar cane, sugar beet	22	Plant products (part)
			24	Agricultural services (part)
07	pfb	Plant-based fibers	22	Plant products (part)
			24	Agricultural services (part)
08	ocr	Crops nec	22	Plant products (part)
			24	Agricultural services (part)
09	ctl	Bovine cattle, sheep and goats, horses	23	Animal products (part)
			24	Agricultural services (part)
10	oap	Animal products nec	23	Animal products (part)
			24	Agricultural services (part)
11	rmk	Raw milk	23	Animal products (part)
			24	Agricultural services (part)
12	wol	Wool, silk-worm cocoons	23	Animal products (part)
			24	Agricultural services (part)
13	for	Forestry	25	Forestry
			11	Timber, wood manufacturing, pulp and paper industry (part)
14	fsh	Fishing	14	Food industry (part)
			23	Animal products (part)
15	col	Coal	05	Mining and manufacture of coal (part)
16	oil	Oil	02	Extraction of crude petroleum
			04	Extraction and manufacture of natural gas (part)
			06	Other fuel industry
17	gas	Gas	04	Extraction and manufacture of natural gas (part)
18	omn	Mineral nec	07	Ferrous metals (part)
			08	Non-ferrous metals (part)
19	cmt	Bovine cattle, sheep and goat, horse meat products	14	Food industry (part)
20	omt	Meat products nec	14	Food industry (part)
21	vol	Vegetable oils and fats	14	Food industry (part)
22	mil	Dairy products	14	Food industry (part)
23	pcr	Processed rice	14	Food industry (part)
24	sgr	Sugar	14	Food industry (part)
25	ofd	Food products nec	14	Food industry (part)
26	b_t	Beverages and tobacco products	14	Food industry (part)
27	tex	Textiles	13	Light industry (part)
28	wap	Wearing apparel	13	Light industry (part)
29	lea	Leather products	13	Light industry (part)

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Table 11.O.A1 Mapping of 44 Sectors in the RF I-O Table to the GTAP Sectoral Classification (Contd)

GTAP Sectoral Classification (GSC2)			The RF Sectoral Classification	
30	lum	Wood products	11	Timber, wood manufacturing, pulp and paper industry (part)
31	ppp	Paper products, publishing	11	Timber, wood manufacturing, pulp and paper industry (part)
			38	Publishing and editing activity
			17	Polygraphic and printing industry
32	p_c	Petroleum, coal products	03	Manufacture of petroleum products
			05	Mining and manufacture of coal (part)
33	crp	Chemical, rubber, plastic products	09	Chemical and petrochemical industry (part)
34	nmn	Mineral products nec	09	Chemical and petrochemical industry (part)
35	i_s	Ferrous metals	07	Ferrous metals (part)
36	nfm	Metals nec	08	Non-ferrous metals (part)
37	fmp	Metal products	07	Ferrous metals (part)
			08	Non-ferrous metals (part)
38	mvh	Motor vehicles and parts	10	Mechanical engineering and metal manufacturing (part)
39	otn	Transport equipment nec	10	Mechanical engineering and metal manufacturing (part)
40	ele	Electronic equipment	10	Mechanical engineering and metal manufacturing (part)
41	ome	Machinery and equipment nec	10	Mechanical engineering and metal manufacturing (part)
42	omf	Manufactures nec	12	Construction material industry
			11	Timber, wood manufacturing, pulp and paper industry (part)
			16	Mixed fodder industry
			18	Other manufacturing
			37	Metallic, non-metallic, food wastes, scrapes
			39	Security service
43	ely	Electricity	01	Production, collection and distribution of electricity
44	gdt	Gas manufacture and distribution	04	Extraction and manufacture of natural gas (part) including trade and transportation margin for gas
45	wtr	Water	41	Communal services (part)
46	cns	Construction	20	Construction
47	trd	Trade	28	Trade
			29	Public catering
			30	Storage and procurement
			31	Material and technical provision and sale
48	otp	Transport nec	26	Transport (part)
49	wtp	Water transport	26	Transport (part)
50	atp	Air transport	26	Transport (part)
51	cmn	Communication	27	Communication
52	ofi	Financial services nec	47	Finance, credit and insurance (part)
53	isr	Insurance	47	Finance, credit and insurance (part)

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Table 11.O.A1 Mapping of 44 Sectors in the RF I-O Table to the GTAP Sectoral Classification (Contd)

GTAP Sectoral Classification (GSC2)			The RF Sectoral Classification	
54	obs	Business services nec	33	Operations with immovables
			32	Information and computing services
			34	General activity for providing market operations
			46	Science and scientific services
55	ros	Recreational and other services	41	Communal services (part)
			42	Non-production household services
			45	Culture and art
56	osg	Public administration and defense, education, health	43	Health, physical training and sport services
			44	Education
			48	State administration, public associations and unions
57	dwe	Dwellings	40	Dwellings