A Study of National Accounts Tables of the Soviet Union and Its Industrial Structure

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In the first part of this paper the revised "Income-Goods" table cobined with IBMF (Interindustry Balance of Money Flow) is shown and then, using the table, in the second one I focus on statistical analysis of the industrial structure of the Soviet Union. The so-called "Income-Goods" table which I have been studing for these past few years was offered by V. D. Belkin and his groupe in 1975.[1] This unique table is formed from an I-O table, to which sectors showing revenue and expenditure are attached on the outside of it. As a whole, Belkin's table has succeeded in seizing both goods and income flows, including the redistribution of income in national accounts. Whereas the IBMF, presented in Sh. B. Sverdlik's new book, *Social Products and Money Flow*, also is a creative table, resembling an I-O table in character, i. e., in this table a change of state budget-credit expenditure has an influence on the money flow of each industry through each coefficient; also the change in final demand in an I-O table regulates the output of each industry, so that the former as well as the latter acquires an operational function. In addition to this, Sverdlik has shown to us three I-O tables, which include outer columns of intermediate transactions of the Soviet Union in 1959, 1966, and 1972, and are completely restored, although these were only 9 interindustry transactions. According to his book, the 1972 I-O table (hitherto unpublished) had the following sectors: 97 sectors of industries, 5 sectors of constructions, 2 sectors of agricultures, forestry, freight transportation, communications serving production, trade and public dinning services, state procurement of all agricultural products, distribution of materials, supplies and products among enterprises and organizations associated with material production and other branches of material production.[2]

I. Consruction of Revised "Income-Goods" Table

First of all, the I-O table and the IBMF constructed by Sverdlik are shown and the data used is examined. *Table 1* offers both these tables compounded as one table. The section from the lst row to the 16th row and the lst column to the 30th column, except for the 15th column (hereinafter described as "1–16; 1–30/15"), refers to the I-O table, and the section "1–10, 12, 17–20; 1–16" (in gothic figures) refers to IBMF.

Table 2 is the 7-sector I-O table reconstructed by V. Treml. As you see, it is of the conventional static, open, Leontief type in purchasers' prices, and it is used to provide a set of control totals for the sectors omitted from the published USSR table, as well as for some elements of final demand and value added. Its output

1) See the list of references (1) and (2), Belkin and his group.

2) See (5) Sverdlik, page 39.

Table 1. The Compounded table of the both tables (I-O table and IBMF) (1972. billon rubles)

		Heavy industry	Light industry	Food industry	Construction	Agriculture (Socialized)	Agriculture (Private)	T & C	T & D	Other branches	Total interindustry use	Consumption: Services	Consumption: Science	Consumption: Household	Consumption: Government	Financial institutions	Total (10+11+12+13+14+15)	Gross fixed capital formation: Productive: Social	Gross fixed capital formation: Productive: Private	Gross fixed capital formation: Productive: Total	Gross fixed capital formation: non-Produc.: Social	Gross fixed capital formation: non-Produc.: Private	Gross fixed capital formation: non-Produc.: Total	Increase in stocks: Productive: Social	Increase in stocks: Productive: Private	Increase in stocks: Productive: Total	Increase in stocks: non-Productive	Others	Total (19+22+25+26+27)	Exports	Total supply
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Heavy industry	1	140.2 **154·5**	4.2 **5·2**	4.1 **6·2**	38.1 **40·1**	13.3 **22·4**	0.0 **0·0**	6.4 **12·7**	1.5 **3·5**	0.6 **0·6**	208.4 **245·2**	5.4 **7·1**	5.4 **6·2**	26.5 **26·5**	3.0 x_1 (**5·1**)	**32·8**	**322·9**	32.6 **44·5**	0.6 **0·0**	32.6 **44·5**	4.3 **29.6**	0.3 **3.3**	4.6 **32.9**	4.2 -	0.0 **0·0**	4.2 -	0.3 -	17.8 -	59.5 77.4	15.0 -	822.9 **77.4**
Light industry	2	2.8 **2·8**	41.4 **41·6**	0.8 **0·8**	0.6 **0·6**	0.4 **0·4**	0.0 **0·0**	0.2 **0·2**	0.3 **1·5**	0.1 **0·1**	46.6 **48·0**	0.0 **0·0**	0.0 **0·0**	44.5 **44·5**	1.8 x_2 (**1·8**)	**0·7**	**95·0**	0.0 **0·9**	0.0 **0·0**	0.0 **0·9**	- **2·9**	- **0·0**	- **2·9**	1.4 **0·0**	- **0·0**	1.4 **0·0**	0.0 **0·3**	0.3 **-1·9**	1.1 **1·9**	1.0 **0·7**	95.0 **81.8**
Food industry	3	1.3 **1·4**	0.5 **0·5**	30.0 **30·2**	0.1 **0·1**	4.3 **4·4**	0.0 **0·0**	0.0 **0·0**	0.7 **0·1**	0.0 **0·0**	36.9 **36·7**	0.0 **0·0**	0.0 **0·0**	88.3 **88·3**	3.2 x_3 (**3·2**)	**0·6**	**128·8**	0.0 **0·0**	0.0 **0·0**	0.0 **0·0**	- **0·0**	- **0·0**	- **0·0**	-0.2 **0·0**	0.0 **0·0**	-0.2 **0·0**	0.0 **0·0**	-0.3 **0·0**	-0.5 **0·0**	0.9 **0·0**	128.8 **35·9**
Construction	4	- **20·9**	- **0·8**	- **1·7**	- **2·5**	- **11·9**	- **0·0**	- **5·1**	- **1·6**	- **0·0**	- **44·5**	**18·3**	**1·1**	**3·3**	x_4 **(10·2)**		**77·4**														
Agriculture (Socialized)	5	2.4 **2·4**	8.6 **8·6**	45.7 **45·8**	0.0 **0·0**	13.3 **15·5**	0.0 **0·0**	0.0 **0·0**	0.2 **1·0**	0.0 **0·0**	70.2 **73·5**	0.0 **0·0**	0.0 **0·0**	8.3 **8·3**	0.7 x_5 (**0·7**)	-(**0·7**)	**81·8**														
Agriculture (Private)	6	0.0 **0·0**	0.3 **0·3**	4.7 **4·7**	0.0 **0·0**	0.0 **0·0**	10.6 **10·8**	0.0 **0·0**	0.0 **0·0**	0.0 **0·0**	15.6 **15·8**	0.0 **0·0**	0.0 **0·0**	20.1 **20·1**	0.0 x_6 (**0**)	**0·0**	**35·9**														
Transportation & communications	7	24.3 **24·3**	0.9 **0·9**	2.3 **2·3**	0.1 **0·1**	1.4 **1·4**	0.0 **0·0**	0.0 **0·0**	0.2 **0·2**	0.3 **0·3**	29.5 **29·5**	0.0 **0·0**	0.0 **0·0**	0.0 **0·0**	0.0 x_7 (**0**)	**0·0**	**29·5**														
Trade & distribution	8	6.3 **6·3**	2.9 **2·9**	10.9 **10·9**	0.0 **0·0**	4.6 **4·6**	0.0 **0·0**	0.0 **0·0**	0.0 **0·0**	0.5 **0·5**	25.2 **25·2**	0.0 **0·0**	0.0 **0·0**	0.0 **0·0**	0.0 x_8 (**0**)	**0·0**	**25·2**														
Other branches	9	1.6 **1·7**	0.1 **0·1**	0.1 **0·1**	0.2 **0·2**	0.1 **0·1**	0.0 **0·0**	0.0 **0·0**	0.1 **0·2**	0.1 **0·1**	2.3 **2·5**	0.0 **0·0**	0.0 **0·0**	2.9 **2·9**	0.2 x_9 (**0·2**)	-(**0·2**)	**5·4**														
Total purchases	10	178.9 **214·5**	58.9 **60·9**	98.6 **102·7**	39.1 **43·6**	37.4 **60·7**	10.6 **10·8**	6.6 **18·0**	3.0 **8·1**	1.6 **1·6**	434.7 **520·9**	5.4 **25·4**	5.4 **7·3**	190.3 **193·9**	8.9 x_{10}**(21·2)**	**33·2**	644.7	78.0	0.2	78.2	33.9	3.6	37.5	8.5	0.0	8.5	0.3	15.1	139.6	17.6	801.9 **801·9**
Depreciation	11	17.7	0.8	1.6	3.6	6.5	0.6	4.4	1.9	0.0	37.1	3.5	0.9	7.8	3.2																
Labor income	12	45.8 **45·8**	6.7 **6·7**	5.3 **5·3**	25.8 **25·8**	25.9 **25·9**	24.7 **25·1**	9.2 **9·2**	10.4 **10·4**	3.4 **3·4**	157.2 **157·6**	6.8 **6·8**	6.1 **6·1**	**0·0**	27.4 **(27·4)**	61.3 -**(27·4)**	**231·8**														
Surplus product	13	65.3	21.1	19.4	8.9	9.0	-	9.3	9.9	0.4	143.3	- 0.1	0.3	-	2.8																
Value added (12+13)	14	111.1	27.8	24.7	34.7	34.9	24.7	18.5	20.3	3.8	300.5	6.7	6.4	-	30.2																
Gross value of output (10+11+14)	15	307.7	87.5	124.9	77.4	78.8	35.9	29.5	25.2	5.4	29.6	15.6	12.7	-	42.3																
Imports	16	15.2	7.5	3.9	-	3.0	0.0	-	-	-	-	-	-	-	-																
Services	17	-	-	-	-	-	-	-	-	-	-	-	-		-	**2·9***	**15·6**														
Science	18	**3·6**	**0·5**	**0·6**	**0·5**	**0·2**	**0·0**	**1·0**	**0·7**	**0·0**	**7·1**	**0·1**	**0·0**	**12·7**	**7·4**	- **1·9***	**14·6**														
Total expenditure (10+12+17+18)	19	**263·9**	**68·1**	**108·6**	**69·9**	**86·8**	**35·9**	**28·2**	**19·2**	**5·0**	**685·6**	**32·3**	**13·4**	**0·0**	-	**124·1***	**061·0**														
Government & Financial Institutions	20	**59·0**	**26·9**	**20·2**	**7·5**	**-5·0**	**0·0**	**1·3**	**6·0**	**0·4**	**116·3**	**-16·7***	**-0·7***	**206·6**			**124·1***														
Total supply (15+16 or 19+20)	21	322.9	95.0	128.8	77.4	81.8	35.9	29.5	25.2	5.4	801.9	15.6	12.7	-	43.3																

T & C Transportation & communication.

T & D Trade & distribution.

Gothic figures—mean the data of IBMF and others the data of I-O Table.

Source: See Sverdlik, pp. 86~89 and pp. 104~105.

Table 2. the 7-sector table reconstructed by V. Treml (1972. billon rubles)

	Heavy industry	Light industry	Construc-tion	Agri-culture and forestry	T & C	T & D	Other branches	Total inter-industry use	Con-sump-tion	Invest-ment and other	Exports	Total final demand	Total supply
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
1. Heavy industry	138,654.9	9,113.0	38,058.0	13,575.0	5,875.4	1,669.6	789.5	207,735.4	39,795.0	59,293.7	13,478.9	112,567.6	320,303.0
2. Light industry	6,250.1	72,661.8	746.9	4,698.6	223.6	936.9	64.6	85,582.5	139,178.0	1,161.4	3,564.1	143,903.5	229,486.0
3. Construction	0	0	0	0	0	0	0	0	0	77,400.0	0	77,400.0	77,400.0
4. Agriculture and forestry	2,820.0	59,349.7	49.9	23,948.3	5.1	250.7	46.3	86,470.0	29,059.0	2,319.0	708.0	32,086.0	118,556.0
5. Transportation & communications	24,326.2	3,207.5	93.9	1,377.7	25.9	195.5	303.3	29,530.0	0	0	0	0	29,530.0
6. Trade & distribution	6,481.8	13,735.7	0	4,555.3	0	0	512.2	25,285.0	0	0	0	0	25,285.0
7. Other branches	1,215.1	211.8	178.9	130.3	0	129.2	6.5	1,871.8	2,528.0	318.2	72.0	2,918.2	4,790.0
8. Total purchases	179,748.1	158,279.5	39,127.6	48,285.2	6,130.0	3,181.9	1,722.4	436,474.7	210,560.0	140,492.3	17,823.0	368,875.3	805,350.0
9. Depreciation	17,869.0	2,341.0	3,568.0	6,959.0	4,698.0	1,813.0	52.0	37,300.0	14,840.0	0	0	14,840.0	52,140.0
10. Labor income	46,090.0	10,923.0	25,750.0	51,239.0	9,071.0	11,118.0	1,006.0	155,197.0					
11. Surplus product	64,323.3	42,202.1	8,954.4	8,855.8	9,631.0	9,172.1	1,864.6	145,003.3					
12. Imports	12,272.6	15,740.4	0	3,217.0	0	0	145.0	31,375.0					
13. Total supply	320,303.0	229,486.0	77,400.0	118,556.0	29,530.0	25,285.0	4,790.0	805,350.0					
14. GVO	308,030.4	213,745.6	77,400.0	115,339.0	29,530.0	25,285.0	4,645.0	773,975.0					

T & C Transportation & communications.
T & D Trade & distribution.
GVO Gross value of output.
Source: See V. Treml

values correspond to the concept of total supply (gross value of output plus imports) rather than to domestic output. The use of a total supply concept is a common Soviet practice in regard to highly aggregated tables.

Now let us compare Sverdlik's table with Treml's (see *table 3*). The two have almost the same data and the differences between them are minor. That means that Sverdlik's table may be reconstructed in much the same way with Treml's one. As Sverdlik says, his table, like Treml's 7-sector table, is reconstructed on an "establishment (Ведомство)" basis, on which most Soviet economic statistics are recorded and reported. According to Sverdlik, so far as mutual transactions between organizations, enterprises and establishments on a "current-account-plan" are concerned, and so far as their current transactions with the financial-credit systems, "state budget" and "credit-cash-plan" are concerned, the IBMF formed from the I-O table on an "establishment" basis at purchasers' price may play an important role.[3] Thus, in order to compile the IBMF, these are no compulsion to make adjustments in their primary data, both inputs and outputs, but there is merely a requirement to enlarge a practical index system of financial balances. Concerning purchasers' price table, while in the I-O table valued at producers' price, the transaction of goods and services are valued at the price of shipment from producers, each transaction in the I-O table at purchasers' price is valued at purchasers' price including trade margin, transportation and distribution charges and excise (turnover) taxes, which accompanied the transaction of goods, as well as producers' cost and profits. As a consequence, in current purchasers' price tables the transportation and distribution rows reflect costs incurred not on sales of output, but on transportation in a manufacturing process.[4]

As for treating imports on an I-O table, in general there are two methods. One is so-called "non-competitive import type", which treats imports and domestic goods as different products by the reason that they are produced in the different economic region, even if they are of the same quality. The another is "competitive import type" in which imports and domestic products are treated in the same way if they are of the same quality or are classified into the same sector. However, in the Sverdlik's I-O table, imports are neither separated into competing and noncompeting, nor into intermediate and final products. Instead, all imports are treated as competing; they are assigned to the appropriate producing sectors and are combined with those sectors' domestic output. Thus, the total value of each sector's sales equals its domestic production plus imports, i. e., total supply. Whereas exports are recorded in the conventional manner, as a vector in the final demand quadrant.

3) See (5) Sverdlik, page 41.

4) "Major difference in two types of Input-Output Tables is only whether the distributive margin is included in each transaction or not. However, this is a considerable difference from the aspect of making use of them. Since the table at Purchasers' Price shows the cost of production and the consumption according to the actual trade situation, it is convenient for the comparison with other economic data. While, in the Table at Producers' Price, the difference in valuation of transaction due to the difference in the distributive margin rate can be avoided, and it is sutable for the caluculation of the repercussion effect." (See (5) Government of Japan, p. 138)

Table 3. A comparison of both tables (Treml's & Sverdlik's)

		Heavy industry		Light industry		Construction		Agriculture & forestry		T & C		T & D		Other branches		Total inter-industry use		Consumption		Investment & other		Exports		Total final demand	
		T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S	T	S
Total purchases	A	179.7	178.9	158.3	157.5	39.1	39.1	48.3	48.0	6.1	6.6	3.2	3.0	1.7	1.6	436.5	434.7	210.6	210.0	140.5	139.6	17.8	17.6	368.9	367.2
	B	1.004		1.005		1.000		1.000		0.924		1.067		1.063		1.004		1.003		1.006		1.011		1.005	
Depreciation	A	17.9	17.7	2.3	2.4	3.6	3.6	7.0	7.1	4.7	4.4	1.8	1.9	0.1	0.0	37.3	37.1	14.8	15.4	0	0	0	0	14.8	15.4
	B	1.011		0.958		1.000		0.986		1.068		0.947		—		1.005		0.961		—		—		0.961	
Labor income	A	46.1	45.8	10.9	12.0	25.8	25.8	51.2	50.6	9.1	9.2	11.1	10.4	1.0	3.4	155.2	157.2								
	B	1.007		0.908		1.000		1.012		0.989		1.067		0.250		0.987									
Surplus product	A	64.3	65.3	42.2	40.5	9.0	8.9	8.9	9.0	9.6	9.3	9.2	9.9	0.1	0.4	145.0	143.3								
	B	0.985		1.042		1.011		0.989		1.032		0.929		0.250		1.012									
Imports	A	12.3	15.2	15.7	11.4	0	0	3.2	3.0	0	0	0	0	0.1	0	31.4	29.6								
	B	0.809		1.377		—		1.067		—		—		—		1.061									
Total supply	A	320.3	322.9	229.5	223.8	77.4	77.4	118.6	117.7	29.5	29.5	25.3	25.2	4.8	5.4	805.4	801.9								
	B	0.992		1.025		1.000		1.008		1.000		1.000		0.889		1.004									
Gross value of output	A	308.0	307.7	213.7	212.4	77.4	77.4	115.3	114.7	29.5	29.5	25.3	25.2	4.6	5.4	774.0	772.3								
	B	1.001		1.006		1.000		1.005		1.000		1.000		0.852		1.002									

T: I–O table of Treml.
S: I–O table of Sverdlik.
B=TA/SA.

Table 4. Revised "Income-goods" table

			Industries & others	Construction	Service sec.	Science sec.	Household	G. & F. I.	Total	Service sec.	Science sec.	Household	Government	Prodactive G. F. C. F. Industries & others	Prodactive G. F. C. F. Construction	Prodactive I. S. Industries & others	Prodactive I. S. Construction	Non-Productive G. F. C. F. Service sec.	Non-Productive G. F. C. F. Science sec.	Non-Productive G. F. C. F. Household	Non-Productive G. F. C. F. Government	Non-Productive I. S. Service sec.	Others	Exports	Total	Revenue or Income: Industries & others	Revenue or Income: Construction	Revenue or Income: Total	Revenue or Income: Service sec.	Revenue or Income: Science sec.	Revenue or Income: Household	Revenue or Income: Government	Revenue or Income: F. I.	Revenue or Income: Total
			1	2	4	5	6	7	8	9	10	11	12	13(1)	13(2)	14(1)	14(2)	15(4)	15(5)	15(6)	15(7)	16(4)	17	18	19	20	21	22	23	24	25	26	27	28
Semi-Productive Activities	Industries & others	1	a_{11} 395.6	a_{13} 39.1	c_4 5.4	c_5 5.4	c_6 190.3	c_7 8.9	644.7					k_{11} 32	k_{12} 1.7	i_{11} 8.2	i_{12} 0.3	k_{14} 1.4	k_{15} 0.8	k_{16} 0.3	k_{17} 2.1	i_{14} 0.3	p_1 15.1	e_1 17.6	x_1 724.5	$k_{11}+i_{11}$ 40.2	k_{21} 42.0	82.2						
	Construction	2	0	0	0	0	0	0	0					k_{21} 42	k_{22} 2.5	0	0	k_{24} 18.3	k_{25} 1.1	k_{26} 3.3	k_{27} 10.2	0			x_2 77.4	$k_{12}+i_{12}$ 2.0	k_{22} 2.5	4.5						
	Non-productive sectors	4 5 7	0	0	0	0	0	0	0	x_4 (15.6)	x_5 (12.7)	x_6 (190.3)	x_7 (42.3)												15.6 12.7 190.3 42.3	$k_{14}+i_{14}$ 1.7 k_{15}(0.8) k_{16}(0.3) k_{17}(2.1)	k_{24} 42.0 k_{25}(1.1) k_{26}(3.3) k_{27}(10.2)	20.0 1.9 3.6 12.3						
	Depreciation	8	d_1 33.5	d_2 3.6	d_4 3.5	d_5 0.9	(d_6) 7.8	d_7 3.2	d 44.7																	d_1 33.5	d_2 3.6	d_0 37.1	d_4 3.5	d_5 0.9		d_7 3.2		d 44.7
	Labor income	9	w_1 131.4	w_2 25.8	w_4 6.8	w_5 6.1	—	w_7 27.4	w 197.5																						W 197.5			W 197.5
	Surplus product	10	p_1 134.4	p_2 8.9	p_4 −0.1	p_5 0.3	—	p_7 2.8	p 146.3																	p_1 134.4	p_2 8.9	p_0 143.3	p_4 −0.1	p_5 0.3		$\hat{p}_7$ 2.8		p 146.3
	Imports	11	m_1 29.6	m_2 0	m_4 0	m_5 0	m_6 0	m_7 0	m 29.6			(m')														m 29.6						(m')		(m') m 29.6
	Total supply	12	x_1 724.5	x_2 77.4	x_4 15.6	x_5 12.7	x_6 190.3	x_7 42.3	x 1062.8	15.6	12.7	(m') 190.3	42.3	74	4.2	8.2	0.3	19.7	1.9	3.6	12.3	0.3	15.1	17.6										
Expenditure	Industries & others	13	A_{11} 435.8	A_{21} 42.0	0	S_1 6.6	W_1 131.4	B_1 108.7	X_1 724.5		S_1 6.6			$k_{11}(32)$ $k_{21}(42)$		i_{11} 8.2																B_{13} 108.7	197.5
	Construction	14	A_{12} 41.1	A_{22} 2.5	0	S_2 0.5	W_2 25.8	B_2 7.5	X_2 77.4		S_2 0.5				$k_{12}(1.7)$		i_{12} 0.3														B_{14} 7.5	12.5
	Service sec.	16	C_4 7.1	A_4 18.3	—	S_4 0.1	W_4 6.8	B_4 −16.7	X_4 15.6		S_4 0.1				$k_{22}(2.5)$			$k_{14}(1.4)$ $k_{24}(18.3)$				i_{14} 0.3										B_{16} −16.7	3.4
	Science sec.	17	C_5 6.2	A_5 1.1	0	—	W_5 6.1	B_5 −0.7	X_5 12.7		S_5 0.0								$k_{15}(0.8)$ $k_{25}(1.1)$												B_{17} −0.7	1.2
	Household	18	C_6 190.6	A_6 3.3	cs 12.7	S_6 0	—	B_6 25.2	X_6 231.8	cs 12.7	S_6 0.0	$c_6(m')$ 190.3								$k_{16}(0.3)$ $k_{26}(3.3)$												B_{18} $(-m')$ 25.2	231.8
	Government	19	C_7 11.0	A_7 10.2	0	S_7 7.4	W_7 27.4	—	F		S_7 7.4		F_8 42.3								$k_{17}(2.1)$ $k_{27}(10.2)$											(m')	(m') 62.0	
	Financial institutions	20	F_1 32.7	F_2 0	F_4 2.9	F_5 −1.9	F_6 34.3	—	124.0	F'_4 2.9	F'_5 −1.9											F_{17} 15.1	F_{18} 17.6						F'_6 34.3	F_7 56.0			
Total revenue		21	X_1 724.5	X_2 77.4	X_4 15.6	X_5 12.7	X_6 231.8	B 124.0	X 1186.6	x_4 15.6	x_5 12.7	x_6 190.3	x_7 42.3	74	4.2	8.2	0.3	19.7	1.9	3.6	12.3	0.3	15.1	17.6		197.5	12.5	180.4	3.4	1.2	231.8	(m') 62.0	124.0	

Table 5. The tabular form of revised "Income-goods" table

	1 ~ 8	9 ~ 19	20 ~ 22	
1 ⟩ 7	I	III	IV	
8 ⟩ 12	II ·····		····· V ·····	
13 ⟩ 21	VIII	VII	····· VI ·····	

note: →: the flow of goods.
·→: the flow of income.
VIII: IBMF.
IV: a special distnict.

As next step, we would like to explain the structure of the revised "income-goods" *(see table 4)*, which integrates both tables (IBMF and the I-O table). For that purpose ***table 5*** will be of much use for us. As you see, ***table 5*** may be divided into the 8 following sections, and arabic figures at the inner margin of ***table 5*** correspond with arabic figures at the same place of ***table 4***. Section I in ***table 5*** referes to intermediate transactions, section II–the crude value added sector, section III-the final demand sector, including consumption, accumulation (gross fixed capital formation by productive- and nonproductive sectors, increase in stocks by sectors), others and exports, section IV–a special district diffrent from the other area in entering way, which may be shown by symbols at the same area in ***table 4***, section V–the first-income-distribution sector, where it is shown that each income including depreciation belongs to each sector arranged at the upper margin of the table, section VI–the income redistribution sector, i. e., the transfer transaction sector, section VII–the final expenditure, where every transaction means purchasing goods and service from section III and section VIII–*IBMF table.*

Getting the explain back on ***table 4***, we find an ordinary I-O table in the section "1–12; 1–19", around which there are some receiving and expending income- or transfer-transaction sectors ("13–21; 1–28" and "1–21; 20–28"). IBMF is included in a quadrant (southwest) "13–21; 1–8". About this IBMF we must pay special attention to the fact that the data of this IBMF is given as a transposed matrix, which means that the data of the columns of IBMF in ***table 4*** corresponds to the data of the row of IBMF in ***table 1***. The first column (industry & others) in the quadrant of IBMF measures the flows of revenue of this sector from sectors shown at the left side of this table (from the 13th row to the 20th row) through the object - transaction. This flow of revenue corresponds to the flow of products of "industry & others" sold to the topmost sectors of this table. Here (a_{11}) means the product of "industry & others" delivered to and consumed as raw material by "industry & others" itself (inner transaction), while (A_{11}) means the product delivered to but not entirely consumed by its sector, i. e., $(A_{11})-(a_{11})$ means the increase of stocks in this sector (a kind of investment). If, for example, government

purchased C_7 (11.0) from the Ist sector and consumed c_7 (8.7) in government itself, then $(C_7 - c_7)=2.1=k_{17}$ means the increase of goods bought from the Ist sector, and the gross fixed capital formation (construction) in the government sector is recorded in $A_7=10.2=k_{27}$.

What does F_1 *("20; 1")=32.7* mean ? The answer may be found in $F_{17}+F_{18}$ ("20; 17–18")=15.1+17.6, i. e., it means that "Financial institutions (or Government)" has bought $b_1=F_{17}=15.1$ from the "others" sector and $e_1=F_{18}=17.6$ from the "exports" sector. In this case, "Financial institutions" (or Government, in practice "foreign trade association") buys export goods from the "Industries & others" sector and then sells them to foreign countries. On the other hand in the case of imports, as the table shows, the value of import goods (m_1) may be absorbed into the total supply value and its cost (or value of import goods) may be compensated for by selling goods of the Ist sector. Therefore, in so far as some goods of the Ist sector are purchased the cost of import goods should be borne in proportion to that ratio. The revenue from import goods concealed in gross sales will, sooner or later, be absorbed into the state budget as turnover tax or a profit-deduction system (some part of ($B_{13}=108.7$)).

Now let us take up a case of imports of final demand goods (for example, consumers' goods — trace the flow of "m'" in table 4). In this case we posit that consumers' goods imported are purchased by the "Household" sector with money drawn from bank savings (see "−m'" in B_{18}) and "government" gets the money by selling those goods (in practice, not "government" but "foreign trade association"— see "+m'" in "11; 26").

Now let us examine the balance relations in this table. We will prove the following equations (We assume, in this case, the following variables as given; $s_1\sim s_7, cs, c_6, w_1\sim w_7, k, l, b, e,$ and I-O table):

(1) $A_{11}=a_{11}+k_{11}+i_{11}=395.6+32+8.2=435.8$

(2) $A_{12}=a_{12}+k_{12}+i_{12}=39.1+1.7+0.3=41.1$

(3) $A_{21}=a_{21}+k_{21}=42.0$

(4) $A_{22}=a_{22}+k_{22}=2.5$

(5) $C_4=c_4+k_{14}+i_{14}=7.1$

(6) $A_4=k_{24}=18.3$

(7) $C_5=c_5+k_{15}=5.4+0.8=6.2$

(8) $A_5=k_{25}=1.1$

(9) $C_6=c_6+k_{16}=190.3+0.3=190.6$

(10) $A_6=k_{26}=3.3$

(11) $C_7=c_7+k_{17}=8.9+2.1=11.0$

(12) $A_7=k_{27}=10.2$

(13) $F_1=X_1-(A_{11}+A_{12}+C_4+C_5+C_6+C_7)=32.7$

(14) $F_2=X_2-(A_{21}+A_{22}+A_4+A_5+A_6+A_7)=0$

(15) $F_4=X_4-cs=2.9$

(16) $F_5=X_5-\left(\sum_{i=1}^{7} S_i\right)=-1.9$

As a next step, we must determine B series in IBMF as follows:

(17) $B_1=X_1-(A_{11}+A_{21}+S_1+W_1)=108.7$

(18) $B_2=X_2-(A_{12}+A_{22}+S_2+W_2)=7.5$

(19) $B_4=X_4-(C_4+A_4+S_4+W_4)=-16.7$

(20) $B_5=X_5-(C_5+A_5+W_5)=-0.7$

Herein we find that the system cannot independently decide **B** (payment of "household" sector into "government" sector, i. e., income tax, public charges, insurance, savings, purchase of government bonds and so on). **B** must be decided in accordance with statistical data based on reality. Given **B** as 25.2 in the table, it follows that:

(21) $X_6=231.8$, $F=B=124.0$, $F_6=34.3$ and $X=1186.6$

In connection with this, we should take note of the fact that $X:x=1186.6:1062.8=1.12$ means, in a sense, a deflator of the national economy (or a kind of index of inflation) and it depends upon the size of B, which shows the volume necessary for absorbing the purchasing power of people into the "government" sector.

Of course it is simple to prove the following equation:

$$\sum_{i=1}^{6} B_i=C_7+A_7+S_7+W_7+\sum_{i=1}^{6} F_i \quad (B_3=F_3=O)$$

Next, let us detemine the B and F series in section VI and VII. According to the entering rule of this table, **B** should have the following relation:

(22) $B_{13}=(d_1+p_1+m_1)-(s_1+k_{11}+k_{21}+i_{11})=108.7$

where $B_{13}=B_1$

Because of:

$$\begin{aligned} B_1&=X_1-(A_{11}+A_{21}+S_1+W_1)\\ &=a_{11}+d_1+w_1+p_1+m_1-[(a_{11}+k_{11}+i_{11})+k_{21}+s_1+w_1]\\ &=(d_1+p_1+m_1)-(s_1+k_{11}+k_{21}+i_{11})=108.7 \end{aligned}$$

(23) $B_{14}=(d_1+p_1)-(s_2+k_{12}+k_{22}+i_{12})=7.5$

similarly $B_{14}=B_2$

(24) $B_{16}=(d_4+p_4)-(s_4+k_{14}+k_{24}+i_{14})=-16.7$

similarly $B_{16}=B_4$

(25) $B_{17}=(d_4+p_4)-(s_5+k_{15}+k_{25})=-0.7$

similarly $B_{17}=B_5$

Now, if we assume that $B_{18}=B_6=25.2$, then we get $F_6'=34.3$, Because $cs+s_6+c_6+k_{16}+k_{26}+B_{18}=W+F_6'\rightarrow F_6'=34.3$.

At this point we will prove the balance relation $F_6'=F_6$ under the relation of $B_{18}=B_6$

$$F_6=X_6-\sum_i W_i$$

$$F_6'=(cs+s_6+c_6+k_{15}+k_{25}+B_{18})-W$$

where $X_6=cs+s_6+c_6+k_{15}+k_{25}+B_{18}$ (see "18; 9～27")

therefore $F_6=F_6'$

As for the "government" sector, we assume a balance relation as follows:

(26) $F_7=(S_7+F_8+k_{17}+k_{27})-(d_7+p_7)=56.0$

Up to this point, we have decided all variables upon the relation that the revenue of each sector is equal to the each expenditure. According to the entering rule of the table, we enter the following figures; *2.9 in* F_4', *−1.9 in* F_5', *15.1 in* F_{17} and *17.6 in*

F_{18}.

Using these conditions, we attempt to prove the following:

(27) $\sum F_j = \sum B_i$ (j=4, 5, 6, 7, 17, 18, i=13, 14, 16, 17, 18)

(28) $CS+S+C_6+F_8+K+I+B=D+P+W+m+F'_6+F_7$

(where $B=B_{13}+B_{14}+B_{16}+B_{17}+B_{18}$)

Since section V=section VII (in table 5)

(29) We get

$D+P+W+m=F'_4+F'_5+F_{17}+F_{18}+S+SC+C_6(=x_6)+F_8+K+I$

(28)+(29) $B=F'_6+F_7+F'_4+F'_5+F_{17}+F_{18}$

II. An analysis of the effect of final demand[5)]

In this section we attempt to characterize the production structure of the Soviet Union by the use of the I-O table.

Table 6 shows the original input data of the I-O tables in 1959, 1966 and 1972 prepared by Sverdlik. Using these data, we get the "input coefficients" of each table (see *table 7;* Divided matrix-I), the structure of industry based on total supply and the structure dynamics (see *table 8*). As you see in table 8, the industry structure has undergone a minor transformation in the 1960's, except for heavy, light and food industries. Among these sectors, heavy industry (including mining) is the only section which raised its own ratio to the total output. Average rate of growth a year of this sector for 13 years was 9.8% and while total output average rate of growth was 7.7%. Let us take note of the ratio $\frac{\sum a_{ij}}{x_j}$ or $\frac{\sum\sum a_{ij}}{\sum x_j}$, which here means effectiveness of production (so-called **Материалоемкость**). We can see that the ratio $\left(\frac{\sum\sum a_{ij}}{\sum x_j}\right)$ was worsening gradually: 50.3% (1959), 51.8% (1966) and 54.2% (1972). This tendency is, as a whole, found in each sector too.

Next, we calculate delivery ratios $\frac{a_{ij}}{x_i}$ (i=1,...,9 ; j=1,...9), which show the ratio of product used by each sector to total demand for each good. Concerning the "agriculture (private)" sector, we can say that the ratio of product in this sector directly consumed by the "consumption" sector was keeping almost more than half of its production (see "6 ; 16" of *table 10),* whereas in the socialized "agriculture" sector, more than half of the product was used for the "food industry" sector in 1962 and 1972 (see "5 ; 3") and the ratio of total interindustry use of its sector's product was approximately 80% or more (see "5 ; 10").

It can be thought that every industry produces goods to support the final demand such as consumption, capital formation and exports in the end. This means, in a sense, that every product is generated by the final demand. Now we analyze the dynamics of total supply generated by the final demand sectors (R (I)) and their coefficients (R (2)) (see *table 10*). A conventional calculation process is as follows.

R (I)=(I−A)$^{-1}$[C•I•E]

5) I am grateful to Mrs. Sachiko Mineno for her assistance. By using of the computer of Hokkaido University, she made a calculation of most of data in this section.

Table 6. Input-Output Table of each year (Original Input Data)

1959

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	35.4	1.3	1.6	13.6	3.7	0.0	3.2	1.2	0.4	60.4	8.9	2.0	1.2	1.1	4.3	13.2	8.1	0.0	8.1	0.9	0.2	1.1	3.7	0.0	3.7	0.6	4.7	18.2	3.5	95.3
2	2.4	15.4	0.2	0.6	0.0	0.0	0.2	0.5	0.0	19.3	19.5	0.0	0.0	0.8	0.8	20.3	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	1.5	0.0	1.2	2.7	0.6	42.8
3	0.9	0.7	13.3	0.0	1.6	0.0	0.0	0.0	0.0	16.5	37.8	0.0	0.0	1.2	1.2	39.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	1.4	0.0	1.4	2.8	0.5	58.8
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.3	0.0	16.3	9.7	3.2	12.9	0.0	0.0	0.0	0.0	0.0	29.2	0.0	29.2
5	0.3	4.4	14.5	0.0	5.0	3.3	0.0	0.0	0.0	27.5	2.6	0.0	0.0	0.6	0.6	3.2	1.4	0.0	-0.4	0.0	0.0	0.0	2.5	0.0	2.5	0.0	-1.0	2.0	0.7	33.4
6	0.0	0.1	2.0	0.0	0.0	4.2	0.0	0.0	0.0	6.3	14.5	0.0	0.0	0.0	0.0	14.5	0.0	-0.4	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	20.4
7	8.6	0.4	1.2	0.1	0.8	0.0	0.0	0.1	0.1	11.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3
8	3.2	1.4	3.7	0.0	2.9	0.0	0.0	0.0	0.0	11.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2
9	0.7	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	1.1	1.9	0.0	0.0	0.2	0.2	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.0	-0.1	0.0	0.0	3.2
T	51.5	23.8	36.5	14.0	14.0	7.5	3.4	0.8	0.5																					
D	4.7	0.3	0.5	0.7	1.7	0.4	1.2	0.3	0.0																					
L	19.3	2.8	1.9	11.0	13.5	12.2	4.0	4.2	2.4																					
S	16.9	12.5	18.4	2.0	2.8	0.0	2.5	4.9	0.3																					
T	36.2	15.3	20.3	13.9	16.3	12.2	6.5	9.1	2.7																					
P	92.5	39.3	57.3	29.2	32.0	20.4	11.3	11.2	3.2																					
M	2.8	3.5	1.5	0.0	1.4	0.0	0.0	0.0	0.0																					
TS	95.3	42.8	58.8	29.2	33.4	20.4	11.3	11.2	3.2																					

1966

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	72.4	2.2	2.4	21.3	5.7	0.0	3.9	1.2	0.6	109.7	14.7	3.1	2.9	1.9	7.9	22.6	17.7	0.0	17.7	2.2	0.2	2.4	3.4	0.0	3.4	0.4	9.2	33.1	7.3	172.7
2	1.9	27.0	0.5	0.6	0.3	0.0	0.2	0.3	0.0	38.8	27.5	0.0	0.0	1.3	1.3	28.8	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	1.4	1.6	0.9	62.1
3	0.0	0.7	22.1	0.1	0.9	0.0	0.0	0.3	0.0	25.0	62.0	0.0	0.0	2.3	2.3	64.3	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	1.7	0.0	1.0	2.7	1.0	93.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0	0.0	24.0	16.5	3.0	12.5	0.0	0.0	0.0	0.0	0.0	43.5	0.0	43.5
5	0.7	5.2	27.9	0.0	6.4	2.9	0.0	0.1	0.0	43.2	3.7	0.0	0.0	0.7	0.7	4.4	0.4	0.0	0.4	0.0	0.0	0.0	6.2	0.0	6.2	0.0	0.8	7.4	0.4	55.4
6	0.0	0.2	3.3	0.0	0.0	8.3	0.0	0.0	0.0	11.8	17.4	0.0	0.0	0.0	0.0	17.4	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	29.6
7	15.9	0.4	1.5	0.1	0.9	0.0	0.0	0.1	0.1	19.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0
8	3.9	1.7	7.0	0.0	2.8	0.0	0.0	0.0	0.3	15.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.7
9	0.7	0.0	0.0	0.5	0.1	0.0	0.0	0.1	0.0	1.4	2.4	0.0	0.0	0.2	0.2	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
T	96.4	37.4	64.7	22.6	17.1	11.2	4.1	2.1	1.0																					
D	9.9	0.5	1.0	1.8	4.0	0.4	2.7	1.2	0.0																					
L	30.4	4.5	3.5	15.9	20.0	18.0	6.5	7.2	2.7																					
S	30.2	14.6	21.4	3.2	12.3	0.0	5.7	5.2	0.3																					
T	60.6	19.1	24.9	19.1	32.3	18.0	12.2	12.4	3.9																					
P	166.9	57.0	90.6	43.5	53.4	29.6	19.0	15.7	4.0																					
M	5.8	5.1	2.4	0.0	2.0	0.0	0.0	0.0	0.0																					
TS	172.7	62.1	93.0	43.5	55.4	29.6	19.0	15.7	4.0																					

1972

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	140.2	4.2	4.1	38.1	13.3	0.0	6.4	1.5	0.6	208.4	26.2	5.4	5.4	3.0	13.8	40.0	32.6	0.0	32.6	4.3	0.3	4.6	4.2	0.0	4.2	0.3	17.8	59.5	15.0	322.9
2	2.8	41.4	0.8	0.6	0.4	0.0	0.2	0.3	0.1	46.6	44.5	0.0	0.0	1.8	1.8	36.3	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	1.4	0.0	-0.3	1.1	1.0	95.0
3	1.3	0.5	30.0	0.1	4.3	0.0	0.0	0.7	0.0	36.9	88.3	0.0	0.0	3.2	3.2	91.5	0.0	0.0	0.0	0.0	0.0	0.0	-0.2	0.0	-0.2	0.0	-0.3	-0.5	0.9	128.8
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.5	0.0	44.5	29.6	3.3	32.0	0.0	0.0	0.0	0.0	0.0	77.4	0.0	77.4
5	2.4	8.6	45.7	0.0	13.3	0.0	0.0	0.2	0.0	70.2	8.3	0.0	0.0	0.7	0.7	9.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	2.9	0.0	-1.9	1.9	0.7	81.8
6	0.0	0.3	4.7	0.0	0.0	10.6	0.0	0.0	0.0	15.6	20.1	0.0	0.0	0.0	0.0	20.4	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	35.9
7	24.3	0.9	2.3	0.1	1.4	0.0	0.0	0.2	0.3	29.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.5
8	6.3	2.9	10.9	4.6	0.0	0.0	0.0	0.0	0.5	25.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.2
9	1.6	0.1	0.1	0.4	0.2	0.0	0.0	0.1	0.1	2.3	2.9	0.0	0.0	0.2	0.2	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.2	0.0	-0.2	0.0	0.0	5.4
T	178.9	58.9	98.6	39.1	37.4	10.6	6.6	3.0	1.6																					
D	17.7	0.8	1.6	3.6	6.5	0.6	4.4	1.0	0.0																					
L	45.8	6.7	5.3	25.8	25.9	24.7	9.2	10.4	3.4																					
S	65.3	21.1	19.4	8.9	9.9	0.0	9.3	9.9	0.4																					
T	111.1	27.8	24.7	34.7	34.9	24.7	18.5	20.3	3.8																					
P	307.7	87.5	124.9	77.4	78.8	35.9	29.5	25.2	5.4																					
M	15.2	7.5	3.9	0.0	3.0	0.0	0.0	0.0	0.0																					
TS	322.9	95.0	128.8	77.4	81.8	35.9	29.5	25.2	5.4																					

Note: Figures in the input-output table are given in terms of organizational-units-base at current purchasers' price.

1. Heavy industry.
2. Light industry.
3. Food industry.
4. Constraction.
5. Agriculture (Socialized sector).
6. Agriculture (private sector).
7. Transportation & communications.
8. Trade and distribution.
9. Other branches.
10. Total interindustry use.
[Consumption]
11. Household.
12. Services.
13. Science & scientific services.
14. Public administration & other services.
15. Total of service sector.
16. Total of consumption.
[Accumulation & others]
(Gross fixed capital formation).
17. Productive social investment.
18. Productive private investment.
19. Total of these.
20. Non-productive social investment.
21. Non-productive private investment.
22. Total of these
[Increase in stocks]
23. Productive social increase in stocks.
24. Productive private increase in stocks.
25. Total of these.
26. Non-productive increase in stocks.
27. Others.
28. Total of "accumulation & others".
29. Exports.
30. Total.

T: Total.
D: Depreciation.
L: Labor income.
S: Surplus product.
P: Gross value of output.
M: Imports.
TS: Total supply.

Table 7. DIVIDED MATRIX-I: $\frac{a_{ij}}{X_j}$ & $\frac{T}{X_j}$ $\frac{D}{X_j}$ $\frac{L}{X_j}$ $\frac{S}{X_j}$ $\frac{P}{X_j}$ $\frac{M}{X_j}$ $(i, j=1,\ldots,9)$

1959

	1	2	3	4	5	6	7	8	9
1	0.3715	0.0304	0.0272	0.4658	0.1108	0.0	0.2832	0.1071	0.1250
2	0.0252	0.3598	0.0034	0.0205	0.0	0.0	0.0177	0.0446	0.0
3	0.0094	0.0164	0.2262	0.0	0.0479	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0031	0.1028	0.2466	0.0	0.1497	0.1618	0.0	0.0	0.0
6	0.0	0.0023	0.0340	0.0	0.0	0.2059	0.0	0.0	0.0
7	0.0902	0.0093	0.0204	0.0034	0.0240	0.0	0.0	0.0089	0.0313
8	0.0336	0.0327	0.0629	0.0	0.0868	0.0	0.0	0.0	0.0
9	0.0073	0.0023	0.0	0.0103	0.0	0.0	0.0	0.0	0.0
T	0.5404	0.5561	0.6207	0.4795	0.4192	0.3676	0.3009	0.0714	0.1563
D	0.0493	0.0070	0.0085	0.0240	0.0509	0.0196	0.1062	0.0268	0.0
L	0.2025	0.0654	0.0323	0.3767	0.4042	0.5980	0.3540	0.3750	0.7500
S	0.1773	0.2921	0.3129	0.0685	0.0838	0.0	0.2212	0.4375	0.0938
T	0.3799	0.3575	0.3452	0.4760	0.4880	0.5980	0.5752	0.8125	0.8437
P	0.9706	0.9182	0.9745	1.0000	0.9581	1.0000	1.0000	1.0000	1.0000
M	0.0294	0.0818	0.0255	0.0	0.0419	0.0	0.0	0.0	0.0

1966

	1	2	3	4	5	6	7	8	9
1	0.4192	0.0354	0.0258	0.4897	0.1029	0.0	0.2053	0.0764	0.1500
2	0.0110	0.4348	0.0054	0.0138	0.0054	0.0	0.0105	0.0191	0.0
3	0.0	0.0113	0.2376	0.0023	0.0162	0.0	0.0	0.0191	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0041	0.0837	0.3000	0.0	0.1155	0.0980	0.0	0.0064	0.0
6	0.0	0.0032	0.0355	0.0	0.0	0.2804	0.0	0.0	0.0
7	0.0921	0.0064	0.0161	0.0023	0.0162	0.0	0.0	0.0064	0.0250
8	0.0226	0.0274	0.0753	0.0	0.0505	0.0	0.0	0.0	0.0750
9	0.0041	0.0	0.0	0.0115	0.0018	0.0	0.0	0.0064	0.0
T	0.5582	0.6023	0.6957	0.5195	0.3087	0.3784	0.2158	0.1338	0.2500
D	0.0573	0.0081	0.0108	0.0414	0.0722	0.0135	0.1421	0.0764	0.0
L	0.1760	0.0725	0.0376	0.3655	0.3610	0.6081	0.3421	0.4586	0.6750
S	0.1749	0.2351	0.2301	0.0736	0.2220	0.0	0.3000	0.3312	0.0750
T	0.3509	0.3076	0.2677	0.4391	0.5830	0.6031	0.6421	0.7898	0.9750
P	0.9664	0.9179	0.9742	1.0000	0.9639	1.0000	1.0000	1.0000	1.0000
M	0.0336	0.0821	0.0258	0.0	0.0361	0.0	0.0	0.0	0.0

1972

	1	2	3	4	5	6	7	8	9
1	0.4342	0.0442	0.0318	0.4922	0.1626	0.0	0.2169	0.0595	0.1111
2	0.0087	0.4358	0.0062	0.0078	0.0049	0.0	0.0068	0.0119	0.0185
3	0.0040	0.0053	0.2329	0.0013	0.0526	0.0	0.0	0.0278	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0074	0.0905	0.3548	0.0	0.1626	0.0	0.0	0.0079	0.0
6	0.0	0.0032	0.0365	0.0	0.0	0.2953	0.0	0.0	0.0
7	0.0753	0.0095	0.0179	0.0013	0.0171	0.0	0.0	0.0079	0.0556
8	0.0195	0.0305	0.0846	0.0594	0.0	0.0	0.0	0.0	0.0926
9	0.0050	0.0011	0.0008	0.0052	0.0024	0.0	0.0	0.0040	0.0185
T	0.5540	0.6200	0.7655	0.5052	0.4572	0.2953	0.2237	0.1190	0.2963
D	0.0548	0.0084	0.0124	0.0465	0.0795	0.0167	0.1492	0.0397	0.0
L	0.1418	0.0705	0.0411	0.3333	0.3166	0.6880	0.3119	0.4127	0.6296
S	0.2022	0.2221	0.1506	0.1150	0.1210	0.0	0.3153	0.3929	0.0741
T	0.3441	0.2926	0.1918	0.4483	0.4267	0.6880	0.6271	0.8056	0.7037
P	0.9529	0.9211	0.9697	1.0000	0.9633	1.0000	1.0000	1.0000	1.0000
M	0.0471	0.0789	0.0303	0.0	0.0367	0.0	0.0	0.0	0.0

Table 8. The structure of the industry by total supply (nominal)

(billion rubles)

	year	value	the component ratio (%)	Increase		
				For 5 years (%)	value	Increase contribution rotio (%)
1. Heavy industry	1959	95.3	31.18	—	—	—
	1966	172.7	34.89	81.2	77.4	40.9
	1972	322.9	40.27	87.0	150.2	48.9
2. Light industry	1959	42.8	14.00	—	—	—
	1966	62.1	12.55	45.1	19.3	10.2
	1972	95.0	11.85	53.0	32.9	10.7
3. Food industry	1959	58.8	19.24	—	—	—
	1966	93.0	18.79	58.6	34.2	18.1
	1972	128.8	16.06	38.5	35.8	11.7
4. Construction	1959	29.2	9.55	—	—	—
	1966	43.5	8.79	49.0	14.3	7.6
	1972	77.4	9.65	77.9	33.9	11.0
5. Agriculture (socialized sector)	1959	33.4	10.93	—	—	—
	1966	55.4	11.19	65.9	22.0	11.6
	1972	81.8	10.20	47.7	26.4	8.6
6. Agriculture (private sector)	1959	20.4	6.68	—	—	—
	1966	29.6	5.98	45.1	9.2	4.9
	1972	35.9	4.48	21.3	6.3	2.1
7. Transportation & communications	1959	11.3	3.70	—	—	—
	1966	19.0	3.84	68.1	7.7	4.1
	1972	29.5	3.68	55.3	10.5	1.3
8. Trade & distribution	1959	11.2	3.66	—	—	—
	1966	15.7	3.17	40.2	4.5	2.4
	1972	25.2	3.14	60.5	9.5	3.1
9. Other branches	1959	3.2	1.05	—	—	—
	1966	4.0	0.81	25.0	0.8	0.4
	1972	5.4	0.67	35.0	1.4	0.5
10. Total	1959	305.6	100.0	—	—	—
	1966	495.0	100.0	62.0	189.4	100.0
	1972	801.9	100.0	62.0	306.9	100.0

Table 9. DIVIDED MATRIX-2: $\frac{a_{ij}}{X_j}$ $(i, j=1,...,9)$

1959

	1	2	3	4	5	6	7	8	9
1	0.3715	0.0136	0.0168	0.1427	0.0388	0.0	0.0336	0.0126	0.0042
2	0.0561	0.3598	0.0047	0.0140	0.0	0.0	0.0047	0.0117	0.0
3	0.0153	0.0119	0.2262	0.0	0.0272	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0090	0.1317	0.4341	0.0	0.1497	0.0988	0.0	0.0	0.0
6	0.0	0.0049	0.0980	0.0	0.0	0.2059	0.0	0.0	0.0
7	0.7611	0.0354	0.1062	0.0088	0.0708	0.0	0.0	0.0088	0.0088
8	0.2857	0.1250	0.3304	0.0	0.2589	0.0	0.0	0.0	0.0
9	0.2187	0.0313	0.0	0.0938	0.0	0.0	0.0	0.0	0.0

	10	11	12	13	14	15	16	17	18	19
1	0.6338	0.0934	0.0210	0.0126	0.0115	0.0451	0.1385	0.0850	0.0	0.0850
2	0.4509	0.4556	0.0	0.0	0.0187	0.0187	0.4743	0.0	0.0	0.0
3	0.2806	0.6429	0.0	0.0	0.0204	0.0204	0.6633	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5582	0.0	0.5582
5	0.8234	0.0778	0.0	0.0	0.0180	0.0180	0.0958	0.0419	0.0	0.0419
6	0.3088	0.7108	0.0	0.0	0.0	0.0	0.7108	0.0	−0.0196	−0.0196
7	1.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	1.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.3438	0.5937	0.0	0.0	0.0625	0.0625	0.6563	0.0	0.0	0.0

	20	21	22	23	24	25	26	27	28	29
1	0.0094	0.0021	0.0115	0.0388	0.0	0.0388	0.0063	0.0493	0.1910	0.0367
2	0.0	0.0	0.0	0.0350	0.0	0.0350	0.0	0.0280	0.0631	0.0140
3	0.0	0.0	0.0	0.0238	0.0	0.0238	0.0	0.0238	0.0476	0.0085
4	0.3322	0.1096	0.4418	0.0	0.0	0.0	0.0	0.0	1.0000	0.0
5	0.0	0.0	0.0	0.0749	0.0	0.0749	0.0	−0.0299	0.0599	0.0210
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	−0.0196	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0313	0.0	0.0312	0.0	−0.0313	0.0	0.0

1966

	1	2	3	4	5	6	7	8	9
1	0.4192	0.0127	0.0139	0.1233	0.0330	0.0	0.0226	0.0069	0.0035
2	0.0306	0.4348	0.0081	0.0097	0.0048	0.0	0.0032	0.0048	0.0
3	0.0	0.0075	0.2376	0.0011	0.0097	0.0	0.0	0.0032	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0126	0.0939	0.5036	0.0	0.1155	0.0523	0.0	0.0018	0.0
6	0.0	0.0068	0.1115	0.0	0.0	0.2804	0.0	0.0	0.0
7	0.8368	0.0211	0.0789	0.0053	0.0474	0.0	0.0	0.0053	0.0053
8	0.2484	0.1083	0.4459	0.0	0.1783	0.0	0.0	0.0	0.0191
9	0.1750	0.0	0.0	0.1250	0.0250	0.0	0.0	0.0250	0.0

	10	11	12	13	14	15	16	17	18	19
1	0.6352	0.0851	0.0180	0.0168	0.0110	0.0457	0.1309	0.1025	0.0	0.1025
2	0.6248	0.4428	0.0	0.0	0.0209	0.0209	0.4638	0.0	0.0	0.0
3	0.2688	0.6667	0.0	0.0	0.0247	0.0247	0.6914	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5517	0.0	0.5517
5	0.7798	0.0668	0.0	0.0	0.0126	0.0126	0.0794	0.0072	0.0	0.0072
6	0.3986	0.5878	0.0	0.0	0.0	0.0	0.5878	0.0	0.0135	0.0135
7	1.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	1.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.3500	0.6000	0.0	0.0	0.0500	0.0500	0.6500	0.0	0.0	0.0

	20	21	22	23	24	25	26	27	28	29
1	0.0127	0.0012	0.0139	0.0197	0.0	0.0197	0.0023	0.0533	0.1917	0.0423
2	0.0	0.0	0.0	0.0032	0.0	0.0032	0.0	0.0225	0.0258	0.0145
3	0.0	0.0	0.0	0.0183	0.0	0.0183	0.0	0.0108	0.0290	0.0108
4	0.3793	0.0690	0.4483	0.0	0.0	0.0	0.0	0.0	1.0000	0.0
5	0.0	0.0	0.0	0.1119	0.0	0.1119	0.0	0.0144	0.1336	0.0072
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0135	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

1972

	1	2	3	4	5	6	7	8	9
1	0.4342	0.0130	0.0127	0.1180	0.0412	0.0	0.0198	0.0046	0.0019
2	0.0295	0.4358	0.0084	0.0063	0.0042	0.0	0.0021	0.0032	0.0011
3	0.0101	0.0039	0.2329	0.0008	0.0334	0.0	0.0	0.0054	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0293	0.1051	0.5587	0.0	0.1626	0.0	0.0	0.0024	0.0
6	0.0	0.0084	0.1309	0.0	0.0	0.2953	0.0	0.0	0.0
7	0.8237	0.0305	0.0780	0.0034	0.0475	0.0	0.0	0.0068	0.0102
8	0.2500	0.1151	0.4325	0.1825	0.0	0.0	0.0	0.0	0.0198
9	0.2963	0.0185	0.0185	0.0741	0.0370	0.0	0.0	0.0185	0.0185

	10	11	12	13	14	15	16	17	18	19
1	0.6454	0.0811	0.0167	0.0167	0.0093	0.0427	0.1239	0.1010	0.0	0.1010
2	0.49 5	0.4684	0.0	0.0	0.0189	0.0189	0.3821	0.0	0.0	0.0
3	0.2865	0.6856	0.0	0.0	0.0248	0.0248	0.7104	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5749	0.0	0.5749
5	0.8582	0.1015	0.0	0.0	0.0086	0.0086	0.1100	0.0	0.0	0.0
6	0.4345	0.5599	0.0	0.0	0.0	0.0	0.5682	0.0	0.0056	0.0056
7	1.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	1.0000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.4259	0.5370	0.0	0.0	0.0370	0.0370	0.5741	0.0	0.0	0.0

	20	21	22	23	24	25	26	27	28	29
1	0.0133	0.0009	0.0142	0.0130	0.0	0.0130	0.0009	0.0551	0.1843	0.0465
2	0.0	0.0	0.0	0.0147	0.0	0.0147	0.0	−0.0032	0.0116	0.0105
3	0.0	0.0	0.0	−0.0016	0.0	−0.0016	0.0	−0.0023	−0.0039	0.0070
4	0.3824	0.0426	0.4134	0.0	0.0	0.0	0.0	0.0	1.0000	0.0
5	0.0	0.0	0.0	0.0355	0.0	0.0355	0.0	−0.0232	0.0232	0.0086
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0056	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	0.0	0.0	0.0	0.0370	0.0	0.0370	0.0	−0.0370	0.0	0.0

$R(2)=R(1)[(1...1)\ (C\cdot I\cdot E)]^{-1}$

Where R(1)—the total supply generated by the final demand sectors.

R(2)—its coefficients.

R(1) shows how many products of each production sector each final demand (C•I•E) generated.

Table 10. Total supply generated by final demand sectors (R(1)) and its coefficients (R(2))

Table 10—1 (1959)

$$\begin{bmatrix} 1.6823 & 0.1441 & 0.1738 & 0.7904 & 0.2620 & 0.0534 & 0.4789 & 0.1910 & 0.2253 \\ 0.0749 & 1.5743 & 0.0240 & 0.0675 & 0.0205 & 0.0042 & 0.0491 & 0.0787 & 0.0109 \\ 0.0235 & 0.0478 & 1.3195 & 0.0120 & 0.0781 & 0.0159 & 0.0075 & 0.0047 & 0.0032 \\ 0.0 & 0.0 & 0.0 & 1.0000 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0223 & 0.2060 & 0.3970 & 0.0147 & 1.2028 & 0.2450 & 0.0100 & 0.0117 & 0.0031 \\ 0.0012 & 0.0067 & 0.0566 & 0.0007 & 0.0034 & 1.2600 & 0.0005 & 0.0004 & 0.0002 \\ 0.1545 & 0.0345 & 0.0535 & 0.0768 & 0.0554 & 0.0113 & 1.0444 & 0.0274 & 0.0519 \\ 0.0624 & 0.0772 & 0.1241 & 0.0308 & 0.1188 & 0.0242 & 0.0190 & 1.0103 & 0.0084 \\ 0.0125 & 0.0047 & 0.0013 & 0.0162 & 0.0020 & 0.0004 & 0.0036 & 0.0016 & 1.0017 \end{bmatrix}_{1959} = (1-A)^{-1}$$

$$\begin{bmatrix} 13.2000 & 18.2000 & 3.5000 \\ 20.3000 & 2.7000 & 0.6000 \\ 39.0000 & 2.8000 & 0.5000 \\ 0.0 & 29.2000 & 0.0 \\ 3.2000 & 2.0000 & 0.7000 \\ 14.5000 & -0.4000 & 0.0 \\ 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 \\ 2.1000 & 0.0 & 0.0 \end{bmatrix}_{1959} \equiv \begin{bmatrix} \\ \\ \\ \\ C\ I\ E \\ \\ \\ \\ \\ \end{bmatrix} \equiv \begin{bmatrix} \\ \\ \\ \\ Y \\ \\ \\ \\ \\ \end{bmatrix}$$

where: final demand(Y)
$Y=C+I+E$

$$\begin{bmatrix} 33.9932 & 55.0765 & 6.2447 \\ 34.0318 & 7.6924 & 1.2332 \\ 53.2284 & 4.7511 & 0.8253 \\ 0.0 & 29.2000 & 0.0 \\ 27.3673 & 4.8111 & 1.2422 \\ 20.6393 & -0.2776 & 0.0390 \\ 5.2746 & 5.4020 & 0.6268 \\ 7.9802 & 2.8177 & 0.4098 \\ 2.4292 & 0.7225 & 0.0487 \end{bmatrix}_{1959} \equiv \begin{bmatrix} \\ \\ \\ \\ \mathrm{R(1)} \\ \\ \\ \\ \\ \end{bmatrix} \Leftarrow (\mathrm{I-A})^{-1} * \begin{bmatrix} \\ \\ \\ \\ C\ I\ E \\ \\ \\ \\ \\ \end{bmatrix}$$

$$\begin{bmatrix} 0.0108 & 0.0 & 0.0 \\ 0.0 & 0.0183 & 0.0 \\ 0.0 & 0.0 & 0.1887 \end{bmatrix}_{1959} \equiv \begin{bmatrix} \frac{1}{\sum C_i} & 0 & 0 \\ 0 & \frac{1}{\sum I_i} & 0 \\ 0 & 0 & \frac{1}{\sum E_i} \end{bmatrix} \equiv (\widehat{iY})$$

where $i=(1,\ldots,1)$ and
$\widehat{\ }$ diagonal matrix

$$\begin{bmatrix} 0.3683 & 1.0106 & 1.1782 \\ 0.3687 & 0.1411 & 0.2327 \\ 0.5767 & 0.0872 & 0.1557 \\ 0.0 & 0.5358 & 0.0 \\ 0.2965 & 0.0883 & 0.2344 \\ 0.2236 & -0.0051 & 0.0074 \\ 0.0571 & 0.0991 & 0.1183 \\ 0.0865 & 0.0517 & 0.0773 \\ 0.0263 & 0.0133 & 0.0092 \end{bmatrix} = \begin{bmatrix} \\ \\ \\ \\ \mathrm{R(2)} \\ \\ \\ \\ \\ \end{bmatrix} \Leftarrow \mathrm{R(1)})\ (\widehat{iY})^{-1}$$

total 2.0037 2.0220 2.0132(1959)

Table 10—2 (1966)

$$\begin{bmatrix} 1.7929 & 0.1614 & 0.1758 & 0.8847 & 0.2287 & 0.0311 & 0.3697 & 0.1491 & 0.2894 \\ 0.0396 & 1.7771 & 0.0256 & 0.0441 & 0.0186 & 0.0025 & 0.0268 & 0.0378 & 0.0094 \\ 0.0019 & 0.0317 & 1.3251 & 0.0045 & 0.0263 & 0.0036 & 0.0007 & 0.0263 & 0.0023 \\ 0.0 & 0.0 & 0.0 & 1.0000 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0130 & 0.1813 & 0.4609 & 0.0100 & 1.1430 & 0.1556 & 0.0046 & 0.0206 & 0.0036 \\ 0.0003 & 0.0095 & 0.0655 & 0.0004 & 0.0014 & 1.3899 & 0.0002 & 0.0015 & 0.0002 \\ 0.1660 & 0.0302 & 0.0461 & 0.0848 & 0.0407 & 0.0055 & 1.0344 & 0.0213 & 0.0524 \\ 0.0429 & 0.0639 & 0.1279 & 0.0232 & 0.0657 & 0.0089 & 0.0095 & 1.0080 & 0.0823 \\ 0.0076 & 0.0014 & 0.0024 & 0.0152 & 0.0034 & 0.0005 & 0.0016 & 0.0071 & 1.0017 \end{bmatrix} = (I-A)^{-1}$$

1966

$$\begin{bmatrix} 22.6000 & 33.1000 & 7.3000 \\ 28.8000 & 1.6000 & 0.9000 \\ 64.3000 & 2.7000 & 1.0000 \\ 0.0 & 43.5000 & 0.0 \\ 4.4000 & 7.4000 & 0.4000 \\ 17.4000 & 0.4000 & 0.0 \\ 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 \\ 2.6000 & 0.0 & 0.0 \end{bmatrix} = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} C\ I\ E = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} Y$$

1966

$$\begin{bmatrix} 58.7727 & 100.2652 & 13.5005 \\ 53.8743 & 6.2851 & 1.9219 \\ 86.3464 & 4.0808 & 1.3781 \\ 0.0 & 43.5000 & 0.0 \\ 42.8928 & 10.9169 & 1.1758 \\ 28.6792 & 0.7813 & 0.0762 \\ 7.9968 & 9.6570 & 0.5030 \\ 11.6934 & 3.3641 & 0.5249 \\ 2.9901 & 0.9479 & 0.0602 \end{bmatrix} = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} R(1) \Leftarrow (I-A)^{-1} * \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} C\ I\ E$$

1966

$$\begin{bmatrix} 0.0071 & 0.0 & 0.0 \\ 0.0 & 0.0123 & 0.0 \\ 0.0 & 0.0 & 0.1042 \end{bmatrix} = \begin{bmatrix} \frac{1}{\sum C_i} & 0 & 0 \\ 0 & \frac{1}{\sum I_i} & 0 \\ 0 & 0 & \frac{1}{\sum E_i} \end{bmatrix} = (\widehat{iY})^{-1}$$

1966

$$\begin{bmatrix} 0.4195 & 1.2333 & 1.4063 \\ 0.3845 & 0.0773 & 0.2238 \\ 0.6163 & 0.0502 & 0.1605 \\ 0.0 & 0.5351 & 0.0 \\ 0.3062 & 0.1343 & 0.1369 \\ 0.2047 & 0.0096 & 0.0089 \\ 0.0571 & 0.1188 & 0.0586 \\ 0.0835 & 0.0414 & 0.0611 \\ 0.0213 & 0.0117 & 0.0070 \end{bmatrix} = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} R(2) \Leftarrow (R(1))\ (\widehat{iY})$$

total 2.0931 2.2117 2.0631 (1966)

Table 10—3

$$\begin{bmatrix} 1.8376 & 0.2223 & 0.2795 & 0.9160 & 0.3845 & 0.0 & 0.4002 & 0.1270 & 0.2469 \\ 0.0314 & 1.7798 & 0.0275 & 0.0310 & 0.0187 & 0.0 & 0.0189 & 0.0243 & 0.0405 \\ 0.0130 & 0.0298 & 1.3495 & 0.0108 & 0.0875 & 0.0 & 0.0030 & 0.0394 & 0.0059 \\ 0.0 & 0.0 & 0.0 & 1.0000 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0256 & 0.2076 & 0.5783 & 0.0168 & 1.2368 & 0.0 & 0.0070 & 0.0300 & 0.0100 \\ 0.0008 & 0.0095 & 0.0700 & 0.0007 & 0.0046 & 1.4190 & 0.0002 & 0.0021 & 0.0005 \\ 0.1401 & 0.0384 & 0.0565 & 0.0722 & 0.0523 & 0.0 & 1.0307 & 0.0193 & 0.0767 \\ 0.0388 & 0.0615 & 0.1209 & 0.0801 & 0.0160 & 0.0 & 0.0088 & 1.0070 & 0.1011 \\ 0.0095 & 0.0038 & 0.0044 & 0.0103 & 0.0052 & 0.0 & 0.0021 & 0.0048 & 1.0206 \end{bmatrix} = (I-A)^{-1}$$

1972

$$\begin{bmatrix} 40.0000 & 59.5000 & 15.0000 \\ 36.3000 & 1.1000 & 1.0000 \\ 91.5000 & -0.5000 & 0.9000 \\ 0.0 & 77.4000 & 0.0 \\ 9.0000 & 1.9000 & 0.7000 \\ 20.4000 & 0.2000 & 0.0 \\ 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 \\ 3.1000 & 0.0 & 0.0 \end{bmatrix} \equiv \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} \equiv \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix}$$

$C\ I\ E \qquad Y$

1972

$$\begin{bmatrix} 111.3749 & 181.0687 & 28.3069 \\ 68.6780 & 6.2469 & 2.2890 \\ 125.8712 & 1.1315 & 1.5007 \\ 0.0 & 77.4000 & 0.0 \\ 72.6375 & 5.1118 & 1.9777 \\ 35.7723 & 0.3704 & 0.0880 \\ 12.8744 & 14.0376 & 2.2272 \\ 15.3047 & 8.5467 & 0.7635 \\ 4.1368 & 1.3766 & 0.1546 \end{bmatrix} \equiv \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} \Leftarrow (I-A) * \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix}$$

R 1 $\qquad C\ I\ E$

1972

$$\begin{bmatrix} 0.0050 & 0.0 & 0.0 \\ 0.0 & 0.0072 & 0.0 \\ 0.0 & 0.0 & 0.568 \end{bmatrix} \equiv \begin{bmatrix} \frac{1}{\sum C_i} & 0 & 0 \\ 0 & \frac{1}{\sum I_i} & 0 \\ 0 & 0 & \frac{1}{\sum E_i} \end{bmatrix} \equiv (\widehat{iY})^{-1}$$

1972

$$\begin{bmatrix} 0.5560 & 1.2971 & 1.6083 \\ 0.3429 & 0.0447 & 0.1301 \\ 0.6284 & 0.0081 & 0.0853 \\ 0.0 & 0.5544 & 0.0 \\ 0.3626 & 0.0366 & 0.1124 \\ 0.1786 & 0.0027 & 0.0050 \\ 0.0643 & 0.1006 & 0.1265 \\ 0.0764 & 0.0612 & 0.0434 \\ 0.0207 & 0.0099 & 0.0088 \end{bmatrix} \equiv \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} \Leftarrow (R(1))\ (\widehat{iY})^{-1}$$

R(2)

total	2.2299	2.1153	2.1198 (1972)

Table 11. Crude value added generated by final demand sectors (R(3))

Table 11—1 (1959)

$$\begin{bmatrix} 0.4292^{*} & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.3645^{*} & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.3537 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.4692 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.5389 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.6176 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.6814 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.8393 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.8437 \end{bmatrix} * \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} * \mathrm{R}(1) = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} \mathrm{R}(3)$$

(1959)

* $0.4292=\frac{D_1}{X_1}+\frac{L_1}{X_1}+\frac{P_1}{X_1}$

$0.3645=\frac{D_2}{X_2}+\frac{L_2}{X_2}+\frac{P_2}{X_2}$ and so on

$$\begin{array}{c} \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \end{array} \begin{bmatrix} 14.5889 & 23.6372 & 2.6800 \\ 12.4041 & 2.8038 & 0.4495 \\ 18.8291 & 1.6806 & 0.2920 \\ 0.0 & 13.7000 & 0.0 \\ 14.7488 & 2.5928 & 0.6695 \\ 12.7478 & -0.1714 & 0.0241 \\ 3.5942 & 3.6810 & 0.4271 \\ 6.6977 & 2.3648 & 0.3440 \\ 2.0496 & 0.6096 & 0.0411 \end{bmatrix} = \mathrm{R}(3) \quad (1959)$$

$$\begin{array}{c} \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ \text{total} \end{array} \begin{bmatrix} 0.1581 & 0.4337 & 0.5057 \\ 0.1344 & 0.0514 & 0.0848 \\ 0.2040 & 0.0308 & 0.0551 \\ 0.0 & 0.2514 & 0.0 \\ 0.1598 & 0.0476 & 0.1263 \\ 0.1381 & -0.0031 & 0.0045 \\ 0.0389 & 0.0675 & 0.0806 \\ 0.0726 & 0.0434 & 0.0649 \\ 0.0222 & 0.0112 & 0.0078 \\ 0.9281 & 0.9339 & 0.9297 \end{bmatrix} \equiv \mathrm{R}(4) \quad (1959)$$

$\Leftarrow (\mathrm{R}(3))(\widehat{iY})^{-1}$

Table 11—2 (1966)

$$\begin{bmatrix} 0.4082 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.3156 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.2785 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.4805 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.6552 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.6216 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.7842 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.8662 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.7500 \end{bmatrix} * \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} * \mathrm{R}(1) = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} \mathrm{R}(3)$$

(1966)

$$\begin{array}{c} \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \end{array} \begin{bmatrix} 23.9923 & 40.9282 & 5.5109 \\ 17.0038 & 1.9836 & 0.6066 \\ 24.0470 & 1.1365 & 0.3838 \\ 0.0 & 20.9000 & 0.0 \\ 28.1048 & 7.1528 & 0.3120 \\ 17.8276 & 0.4857 & 0.0474 \\ 6.2712 & 7.5730 & 0.3945 \\ 10.1293 & 2.9140 & 0.4547 \\ 2.2426 & 0.7109 & 0.0452 \end{bmatrix} = \mathrm{R}(3) \quad (1966)$$

$$\begin{array}{c} \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ \text{total} \end{array} \begin{bmatrix} 0.1713 & 0.5034 & 0.5741 \\ 0.1214 & 0.0244 & 0.0632 \\ 0.1716 & 0.0140 & 0.0400 \\ 0.0 & 0.2571 & 0.0 \\ 0.2006 & 0.0880 & 0.0325 \\ 0.1272 & 0.0060 & 0.0049 \\ 0.0448 & 0.0931 & 0.0411 \\ 0.0723 & 0.0358 & 0.0474 \\ 0.0160 & 0.0087 & 0.0047 \\ 0.9252 & 1.0305 & 0.8079 \end{bmatrix} = \mathrm{R}(4) \quad (1966)$$

Table 11—3 (1972)

$$\begin{bmatrix} 0.3989 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.3011 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.2042 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.4948 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.5171 & 0.0 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.7047 & 0.0 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.7763 & 0.0 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.8452 & 0.0 \\ 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.0 & 0.7037 \end{bmatrix} * \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix} = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix}$$

R(1) = R(3) (1972)

$$\begin{array}{c} \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \end{array} \begin{bmatrix} 44.4258 & 72.2256 & 11.2912 \\ 20.6757 & 1.8806 & 0.6891 \\ 25.7020 & 0.2311 & 0.3064 \\ 0.0 & 38.3000 & 0.0 \\ 37.5619 & 2.6434 & 1.0227 \\ 25.2100 & 0.2610 & 0.0620 \\ 9.9940 & 10.8970 & 1.7289 \\ 12.9361 & 7.2240 & 0.6453 \\ 2.9111 & 0.9687 & 0.1088 \end{bmatrix} = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix}$$

R(3) (1972)

$$\begin{array}{c} \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ 8 \\ 9 \\ \text{total} \end{array} \begin{bmatrix} 0.2218 & 0.5174 & 0.6415 \\ 0.1032 & 0.0135 & 0.0392 \\ 0.1283 & 0.0017 & 0.0174 \\ 0.0 & 0.2744 & 0.0 \\ 0.1875 & 0.0189 & 0.0581 \\ 0.1259 & 0.0019 & 0.0035 \\ 0.0499 & 0.0781 & 0.0982 \\ 0.0646 & 0.0517 & 0.0367 \\ 0.0145 & 0.0069 & 0.0062 \\ 0.7674 & 0.9645 & 0.9008 \end{bmatrix} = \begin{bmatrix} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \end{bmatrix}$$

R(3) = R(4) (1972)

The total supplies of goods generated by the final demand sectors are shown as follows in % of total supply.

product value generated (% of total)

	1959	1966	1972
C	60.5%	59.6%	57.4%
I	36.0%	36.4%	37.8%
E	3.5%	4.0%	4.8%

The ratios of the total supply generated by the items of final demand to the original final sectors in 1959, 1966 and 1972 are shown as follows.

	1959	1966	1972
C	2.0037	2.0931	2.2299
I	2.0220	2.2117	2.1153
E	2.0132	2.0631	2.1198

As you see, generally speaking, each unit of final demand (C•I•E) generated twice as much as the value of the final demand in each year and this tendency was observed duaring this period.

In case of Japan, these coefficients in 1970 were as follows; gross fixed capital formation—2.16, exports—2.13, increase in stocks—2.10, private consumption—1.76, consumption of government—1.49.

As for the crude value added generated by final demand sectors, it is shown in *table 11*. The value added is produced through the industrial production activities, which are generated by the final demand. Total crude value added produced by all industrial production activities (in case of this, in productive sectors) (R(3)) was 142.3 billion rubles (1959), 223.1 (1966) and 337.6 (1972).

Coefficients of the crude value added generated by the final demand sectors (R(4)) means how many crude value added of each production sector a unit of each final demand (C I E) generated. These were, as a whole, as follows.

	1959	1966	1972
C	0.9281	0.9252	0.7674
I	0.9339	1.0305	0.9645
E	0.9297	0.8079	0.9008

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Appendix: the revised "Income-Goods" table with the stock account (1975, billion rubles)

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
			Production			Consumption			Accumulation											Revenue			Balance at the term-end				
							Private		Gross fixed Cap. net			Increase in stocks															
			Sector I	Sector II	Agri-culture	Gov-ern-ment	Service	Goods	Pro-duc-tive	Non pro-duc-tive	Re-place-ment	incom-pleted f. c. f.	In-dustry	Na-tional reserve	Loss	Ex-port	Total	House-holds	Enter-prises	Govern-ment	Bank	Ex-ternal trans-action	Sav-ing	Foreign currency deposit account	Fixed assets	Stocks	Labor
1	Production	Sector I				O	O	O	IP (67.2)	IN (24.4)	RP (20.4)	V (7.3)	SK_1 + SK_2 + SK_a (13.3)	R_1 + R_2 + R_a (13.6)	LS (3.1)	E (24.0)	$\sum X$ (889.6)										
2		Sector II	$x_{i,j}$ (449.7)			$C_2G + C_2S$ (38.0)		C_2H C_aH (231.8)																			
3		Agriculture																									
4	Provisions for the consumption of fixed cap.		D (49.9)						119.3 ↓				26.9 ↓				D (49.9)		βD (21.0)		$(1-\beta)D$ (28.9)						
5	Compensation of employees		W_1+W_2(140.8) W_a(16.7)			$WS+WG$ (34.8)											W (195.5)	W^* (195.5)									
6	profit of enterprises		P_1(98.1) P_2(1.7) P_4(5.6)			PS(4.7)											P (110.1)		110.1								
7	Indirect taxes		$T_1+T_2-(S_{b1}+S_{b2})$ (66.6)														$T-S_b$ (66.6)			$T-S_b$ (66.6)							
8	Social insurance		$\sum S$ (11.3)														S (11.3)			S (11.3)							
9	Less: current subsidies		$-\sum S_b$ (?)														$-S_b$ (?)			$-S_b$ (?)							
10	Income from private subsidiary agriculture			S_jA (22.0)													S_jA (22.0)	SA (22.0)									
11	Imports		$\sum M$ (26.7)						↑ 118.1				↑ 26.9				M (26.7)			M (26.7)							
12	Total		$\sum X$ (889.1)			$Xs+Xg+C_2H+CaH$ (309.3)			$III \times 1.064$**								X (1198.4)										
16	Expenditure	Households				SH, CH(231.8)			$KH(1.7) \times 1.064 = 1.8$								[264.6]			TH(18.4) BH(0.6)	ΔAH_0 (12.1)		AH_0	—	ϕH_0	—	(population)$_0$
17		Enterprises				$S\Pi$(3.7)			$K\Pi = (17.8+10.4) \times 1.06 = 30.0$				$SK\Pi$ (13.3)				[148.9]	Z_1(8.6) Z_2(1.2)		ΔW (19.4) αP(69.1) $T\Pi$ (1.5)	$\Delta A\Pi_0$ (2.5)		$A\Pi_0$	—	$\phi\Pi_0$	SK_0	$L\Pi_0$ LK_0
									$KP\Pi$	$KN\Pi$	$R\Pi$	$V\Pi$															
18		Government				CG(73.8)			KG(81.1) → 86.3								[266.8]	Z_3(30.0) Z_4(0.4) Z_5(2.2)	Z_6(2.4)		M(26.7) rE ΔAG(4.3)		AG_0	-	ϕS_0 ϕG_0	R_0	LG_0
									KPG	KNG	RG	O		RG (13.6)	LS (3.1)	E (24.0)											
19		Bank															[73.7] error (0.8)	C_rH (4.7)	C_rL (3.3) C_rS (11.4) C_rK (0.7)	Z_7(0.7) E(24.0) $(1-\beta)D$(28.7) rM		rM	AB_0	FB_0	—	—	—
20		External transaction					SF	CF												rE	$r(SF+CF)$	$\frac{SF}{CF}$	—	$\frac{FF_0}{F_0}$	—	—	—
21	Balance begin period	Saving	$(AI)_{-1}$	$(AII)_{-1}$	$(AA)_{-1}$	$(AG)_{-1}$	$(AS)_{-1}$											AH_{-1}	$A\Pi_{-1}$	AG_{-1}	AB_{-1}						
22		Foreign currency deposit account	$(FI)_{-1}$	$(FII)_{-1}$	$(FA)_{-1}$	$(FG)_{-1}$	$(FS)_{-1}$											—	-	—	FB_{-1}	$\frac{F_{-1}}{FF_{-1}}$		(Note): r → the exchange rate of money for foreign currency			
23		Fixed assets	$(\phi I)_{-1}$	$(\phi II)_{-1}$	$(\phi A)_{-1}$	$(\phi G)_{-1}$	$(\phi S)_{-1}$		IP	IN		V						ϕH_{-1}	$\phi\Pi_{-1}$	ϕG_{-1}	—	—					
24		Stocks	$(RI)_{-1}$	$(RII)_{-1}$	$(RA)_{-1}$	$(RG)_{-1}$	$(RS)_{-1}$						$SK\Pi$	RG				—	SK_{-1}	RG_{-1}	—	—					
25		Labor	$(LI)_{-1}$	$(LII)_{-1}$	$(LA)_{-1}$	$(LG)_{-1}$	$(LS)_{-1}$											(population)$_0$	$L\Pi_{-1}$ LK_{-1}	LG_{-1}	—	—	FP_0	$\Delta L\Pi$	ΔLK	ΔLG	

Foot note: Sec. I: State enterprises
Sec. II: Corporative enterprises
Agriculture: Kolkhoz sector
Figures in the table is actual one from the official statistical data 1975 of the Soviet Union (billion rubles).

W^*: including $\Delta W = 18.4$
$\Delta W = P' \times 0.16 = 18.4$
$P' = P_1 + P_2 + PS = 104.4$
0.16= the bonus rate of wage, paied from profit
(See "HX" 75, page 726)
Wages (1975) include the bonus
** 1.064: inflator of constant prices

Source: My report at "Conference on Optimality and Disequilibrium in Econometric Modelling" in Budapest on March, 1982.

Notes:
X_{ij}: Intermediate products;
D: Provisions for the consumption of fixed capital;
W: Compensation of employees;
P: Profit of enterprises;
T: Indirect taxes;
S: Social insurance;
Sb: Current subsidies;
SjA: Income from private subsidary agriculuture;
M: Import;
X: Total supply and demand;
C_2G+C_2S: Government and institution's consumption expenditure of goods;
C_2H+C_2H: Private consumption expenditure of goods;
IP: Net productive domestic fixed capital formation;
IN: Net non-productive domestic fixed capital formation;
RP: Replacement;
V: Increase in stocks of incompleted fixed capital formation;
SK: Increase in stock in industry;
R: National reserve;
LS: Loss;
E: Exports;
$SH+CH$: Private consumption expenditure;
CG: General government consumption expenditures of goods and services;
$S\Pi$: General enterprise consumption expenditure;
CG: General goverment consumption expenditure;
KH: Investment in houses (private investment);
$K\Pi$: Enterprise investment and Kolkhoz investment;
KG: Government bond issue;
TH: Direct taxes and charges on inhabitants;
BH: Government bond issue;
$Z1$: Social insurance and social security contributions of enterprises;
$Z2$: Pioneer-camp- Sanatorum- and Hot-spring-rest- expenditure of enterprises and others;
ΔW: Adjustment item deducted from profit=the bonus included in wages;
αP: Deduction from enterprises' profit;
$T\Pi$: Income taxes on Kolkhoz and Cooperatives;
ΔAH_0: Saving of persons;
$\Delta A\Pi_0$: Saving of enterprises;
$Z3$: Social insurance and Socil security contributions of government;
$Z4$: Subsidies to households;
$Z5$: Scholarship given by government;
$Z6$: Social security (of Kolkhoz) contributions of government;
$Z7$: Adjustment item in financial revenue;
ΔAG: Saving of government;
CrH: Credit loan to consumers;
CrL: Long-term credit to industry;
CrS: Short-term credit to industry;
CrK: Long-term credit to Kolkhoz;
rE, rM: External transaction in foreign currency, r: Exchange rate;

(Stock Account)

AI, AII, AA, AG, AS, AH, $A\Pi$, AG, AB: Balance of saving of each subject at the beginning or the end of period;

FI, FII, FA, FG, FS, FB, FF: Foreign currency deposit account;

ΦI, ΦII, ΦA, ΦG, ΦS, ΦH, $\Phi \Pi$: Fixed assets account;

RI, RII, RA, RG, RS, SK: Goods-in-stock account;

LI, LII, LA, LG, LS, $L\Pi$: Employment of each item;

(Balance of stock account)

1, Saving in households—$AH_{-1}=\Delta AH_0+AH_0$

2, Saving in enterprises—$(AI)_{-1}+(AII)_{-1}+(AA)_{-1}\equiv A\Pi_{-1}$; $A\Pi_{-1}+\Delta AII_0=AII_0$

3, Saving in government—$AG_{-1}+\Delta AG_0=AG_0$

4, Cash balance in bank—$AB_{-1}+\Delta AH_0+\Delta AG_0+\Delta AII_0=AB_0$

Foreign currency balance in bank—$rE+r(SF+CF)+FB_{-1}=rM+FB_0$, r: Exchange rate

5, Balance of ruble account in external transaction—$SF+CF+F_{-1}=CF+SF+F_0$

Balance of foreign currency in external transaction—$rM+FF_{-1}=rE+r(SF+CF)+FF_0$

6, Balance of saving account—$AH_{-1}+A\Pi_{-1}+AG_{-1}+AB_{-1}+2(\Delta AH_0+\Delta AII_0+\Delta AG_0)=AG_0+AH_0+A\Pi_0+AB_0$