OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as "developed", "industrialized" and "developing" are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Vienna International Centre, P.O. Box 300, 1400 Vienna, Austria
Tel: (+43-1) 26026-0 · www.unido.org · unido@unido.org

09112

Distr.:
LIMITED
4 October 1979
UNIDO/ICIS.122
ENGLISH

Joint UNCTAD- UNIDO Project on the interrelationship between growth patterns, trade configuration and industrial structure (UNITAD)

EXPERT GROUP MEETING

ON

THE ANALYSIS AND PROJECTION OF TECHNOLOGICAL CHARACTERISTICS IN THE UNITAD SYSTEM OF MODELS

(UNIDO, VIENNA - 22- 24 OCTOBER 1979)

ANALYSIS OF COEFFICIENTS FROM INPUT - OUTPUT TABLES

(Analysis Part A)

This document was reproduced without formal editing

id.79-7264

ANALYSIS OF COEFFICIENTS FROM INPUT - OUTPUT TABLES

1. Aim of the study

Input coefficients as well as other coefficients calculated from an input-output table differ between countries and change in time. Both types of differences were in the past investigated in numeroue studies.

The aim of this study ie to find eome factors which influence the intercountry variability of input coefficients in a eet of comparable input- output tebles classified by the 8 sectors of the SIMV model. It is further assumed, that the 8 sector tables are result of aggregation of a set of more detailed and also standardized tables, classified by 24 industries.

The intercountry differences between the input coefficients in the 8 aector tablss can be than explained by the following diffsrencee among the countries:

a) Differences in the economic level, population number and populetion dsnsity.

b) Differences in the economic structure at the 24 industry level, which may depend on the three sbovs mentioned factors ae well as on the endowment with certain natural rssources.

2. General framework of the analysis of coefficients from input- output tables

The enalysis will be carried out for the following two asts of comparable input-out tables for a number of countries:

a)"UNIDO" input- output tables classified by 24 industries

b)"SIMV" input- output tables classified by 8 sectors.

The defitions of the"SIMV" sectors and "UNIDO" industries can be found in Table 1.

Following notetion will be introduced:

i,j = the SIMV sectors (i,j= 1,2,.....8)

m,n = the UNIDO industries(m,n= 1,2.....24)

a_{ij} = input coefficients of the SIMV teble

b_{mn} = input coefficisnts of the UNIDO table

a_{vj} = velue edded (input) coefficient of the SIMV table

b_{vm} = value edded (input) coefficient of the UNIDO table

t_{ij} = technological coefficient of the SIMV table

x_j, x_m = gross output velue in the SIMV end UNIDO tebles respectively

v_j, v_m = groes valus added in the SIMV end UNIDC tables respectively

s_m, s_n = sheres of groas value edded of the UNIDC industry m or n respectively in the gross value added of the SIMV sector i or j respectively

Explanatory veriables:

y_k = groas domestic product per capita in country k

p_k = number of population in country k

Table 1.

The Classification Key between the SIMV Sectors, UNIDO Standardized Tables Industries and the 1968 International Standard Industrial Classification of All Economic Activities (ISIC).

SIMV Sectors	UNIDO Industries	1968 ISIC
1. Agriculture	1. Agriculture	Div. 1. Agriculture etc.
2. Agri- Food Processing	2. Food Products	311/2 Food Manufacturing 313 Beverage Industries 314 Tobacco Manufactures
3. Energy	3. Coal Mining	210 Coal Mining
	4. Petroleum and Gas	220 Crude Petroleum and Nat. Gas
	5. Petroleum and Coal Prod.	353 Petroleum Refineries 354 Products of Petroleum and Coal
	6. Electricity,Gas and Water	410 Electricity, Gas and Steam 420 Water Works and Supply
4. Basic Products	7. Metal Ore Mining	230 Metal Ore Mining
	8. Other Mining	290 Other Mining
	9. Paper and Paper Products	341 Paper and Paper Products
	10. Chemicals	351 Industrial Chemicals 352 Other Chemical Products
	11. Non- Metalic Min. Products	361 Pottery, China, etc. 362 Glass and Glass Products 369 Other Non- Metallic Min. Prod.
	12. Metals	371 Iron and Steel 372 Non- Ferroue Metals
5. Light Industry	13. Textiles	321 Manufacture of Textiles
	14. Wearing Apparel	322 Wearing Apparel 323 Leather and Leather Products 324 Footwear
	15. Wood Products	331 Manufacture of Wood Products 332 Furniture and Fixtures
	16. Printing and Publishing	342 Printing and Publishing
	17. Plastic and Rubber Prod.	355 Rubber Products 356 Plastic Products 390 Other Industries
	18. Metal Products	381 Metal Products
6. Equipment Goods Industry	19. Machinery	382 Machinery 383 Electrical Machinery 385 Professional and Scientific
	20. Transport Equipment	384 Transport Equipment
7. Construction	21. Construction	Div.5. Construction
8. Services	22. Trade	Div. 6. Wholesale and Retail Trade
	23. Transport & Communication	Div. 7. Transport and Communication
	24. Other Services	Div. 8. Financing,Real Estate etc. Div. 9. Community and Private Serv.

d_k = population density in country k

e_{mk} = share of exports by industry m in total exports of country k

Two basic hypotheses,complemented by a few sub- hypotheses, will be testsd.
The two basic hypotheses sre as follows:

I. The intercountry differences in the vslues of input- coefficients of the SIMV tables sre caused by differences in economic level(measured by per capita GDP), size (measured by number of pupulation) or population density among the countries of the sample.

II. The intercountry differences in the vslues of input coefficients of the SIMV tablee are csused by the different weights of the UNIDO industries in the aggregsgated SIMV sectors. These differences in the relative composition of the SIMV sectors will be called " output- mix".

Following sub- hypotheses were tested:

a) The values of the SIMV input coefficients sre small and thus insignificant.

b) The variability of the SIMV input coefficients is small and not worth explaining.

c) The"output mix " depends on differencas in economic level, size, density of populstion snd on natural endowment(to be measured by certain export shares) among the countries of the sample.

d) The variability of the input coefficients can be strongly influenced by intercountry differences in the value added(input)coefficients . In order to remove this effect(which reflects the impact of relative wages, taxes etc.,but not differences in input structure) the snalysis will be also carried out out for so called " technologicsl " coefficients.

The values of several variables, listed above and related to the sub- hypothsses, sre defined as follows:

a) The"output mix" is measured with the help of gross value added shares (not grcss output shares) in order to preserve consistency with other investigstions carried out with the help of the SIMV input-output tables :

$$(1) \qquad s_m = \frac{v_m}{\sum_m v_m} \quad ; \qquad s_n = \frac{v_n}{\sum_n v_n}$$

b) the technological coefficients sre defined ss fcllcws:

$$(2) \qquad t_{ij} = s_{ij} \frac{1}{1 - s_{vj}}$$

3. Data

A set of standardized input- output tables, prepared by the University of Bradford (England) was used as the main source of data. These tables,which were made available to UNIDO, were first aggregated into the 24 industry UNIDO classification and later on further aggregated into the 8 sector SIMV classification. The Bradford input- output tables were prepared in several versions. For this study a set of tables was used, which (i) are all adjusted to the output levels of 1970, (ii) the was carried out by the RAS procedure not only for the intermediate flows, but for the value added row and final demand column too; (iii) original national industry classification was not changed.
These tables were aggregated into the 24 industry UNIDO classification, in several cases the aggregation was not perfect. The quality of results of the analysis was no doubt influenced by several imperfections of the set of comparable input- output tables. These imperfections were caused by the following factors:

a) Intercountry differences in the methodology of the original national input-output tables. National tables were compiled for different years.
b) The adjustment by the RAS method, carried out at Bradford, is only an approximation to the real structure of the economy in the reference year 1970.
c) The aggregation of the Bradford tables into the classification by 24 UNIDO industries was in several cases not perfect.

The data which were used in the analysis were originally not complied for that purpose and are in many respects of low quality. It is then surprising that many results of investigation are good and can be reasonably interpreted.

The analysis was carried out for 30 countries, for which standardized tables in the UNIDO industry classification could be obtained. These countries are listed in Table 2. The table also contains values of the explanatory variables used in the regression analysis.

4. Results of the analysis

This paragraph contains only the results of various analytical procedures and brief comments on some of their formal properties. The attempt to interpret the results is made in paragraph 5.

4.1 Size and variability of the input coefficients

Average values of the input coefficients for the 8 sectors of the SIMV table and values of the variations coefficients (standard deviation divided by the arithetic average) are presented in Table 3.
Following general observations can be made:

a) There are no empty cells in the Table 3.
b) The differences in the magnitude of individual average coefficients are very great; the values of the coefficients range from a_{26}= 0.00018 (deliveries of agri- food to the equipment goods industry) to a_{v8} = 0.76936 (value added coefficient in the service sector).

Table 2. Countries of the sample and the explanatory variables of the regression equations

Country	GDP per head 1000' $ 1970	Population Million 1970	Population density 1000/km² 1970	Export shares in total exports 1972/73 Fertilers minerals SITC- Code 27	Metalliferous ore 28	Coal coke 321	Petroleum & products 33	Petroleum crude 331
Australia	2.054	12.552	0.0016	0.00344	0.14409	0.04542	0.00827	0.00000
Austria	1.917	7.447	0.0889	0.00774	0.00354	0.0000	0.00227	0.00000
Belgium	2.658	9.300	0.3049	0.00919	0.00954	0.00315	0.02322	0.00000
Brazil	0.517	95.204	0.0112	0.00274	0.09625	0.00000	0.00581	0.00022
Costa Rica	0.567	1.737	0.0343	0.00000	0.00000	0.00000	0.00433	0.00000
Cyprus	0.859	0.633	0.0688	0.10198	0.24766	0.00000	0.00000	0.00000
Denmark	3.160	4.929	0.1144	0.00499	0.00374	0.00000	0.01342	0.00000
Finland	2.253	4.606	0.0137	0.00000	0.00317	0.00000	0.00347	0.00000
France	2.781	50.670	0.0926	0.00545	0.1625	0.00356	0.00153	0.00000
Greece	1.133	8 793	0.0667	0.04529	0.02599	0.00000	0.00996	0.00000
India	0.099	543.182	0.1683	0.01540	0.9524	0.00000	0.00563	0.00000
Indonesia	0.077	119.467	0.0589	0.00000	0.10645	0.00000	0.32797	0.29217
Iran	0.392	28.359	0.0172	0.00266	0.00932	0.00000	0.88051	0.74580
Iraq	0.374	9.356	0.0215	0.00018	0.00000	0.00000	0.94460	0.94222
Italy	1.734	53.565	0.1779	0.00448	0.00000	0.00000	0.04884	0.00000
Jordan	0.234	2.280	0.0233	0.18475	0.00293	0.00000	0.00000	0.00000
Luxemburg	2.824	0.338	0.1300	0.00921	0.00957	0.00311	0.02321	0.00000
Mexico	0.666	50.313	0.0255	0.05202	0.02746	0.00000	0.02580	0.00000
New Zealand	2.235	2.811	0.0105	0.00000	0.00236	0.00000	0.00742	0.00000
Norway	2.884	3.877	0.0120	0.01197	0.02296	0.00000	0.01815	0.00000
Peru	0.469	13.248	0.0103	0.00000	0.18920	0.00000	0.00709	0.00642
Philippines	0.186	37.604	0.1253	0.00000	0.20761	0.00000	0.01595	0.00000
Portugal	0.717	8.628	0.0937	0.01285	0.01169	0.00000	0.02328	0.00000
Rhodesia	0.283	5.308	0.0136	0.00000	0.00000	0.00000	0.00000	0.00000
Singapore	0.914	2.075	3.4583	0.00000	0.01236	0.00000	0.23090	0.00000
South Africa	0.822	21.500	0.0176	0.06102	0.06172	0.00852	0.04304	0.00000
Spain	1.089	33.779	0.0669	0.01093	0.00951	0.00737	0.04127	0.00000
Sweden	4.107	8.043	0.0179	0.00000	0.03970	0.00000	0.00724	0.00000
Turkey	0.359	35.232	0.0451	0.02936	0.03599	0.00537	0.00125	0.00000
United Kingdom	2.194	55.480	0.2274	0.00593	0.00327	0.00361	0.02187	0.00000

Table 3. Average values of the input coefficients of the SIEN model

	Agriculture	Agri-Food	Energy	Basic Products	Light Industry	Equipment Goods	Construction	Services
1. Agriculture	1 0.096 46 (0.83)	1 0.344 29 (0.85)	s 0.009 52 (4.82)	 0.026 07 (3.22)	1 0.052 70 (1.01)	s 0.000 99 (3.63)	 0.007 54 (2.95)	s 0.002 95 (1.49)
2. Agri-Food Processing	1 0.058 19 (1.19)	1 0.142 68 (0.47)	s 0.001 10 (3.63)	s 0.011 52 (0.92)	s 0.004 95 (1.01)	s 0.000 18 (4.16)	s 0.000 39 (2.44)	s 0.009 13 (1.06)
3. Energy	 0.014 21 (1.47)	s 0.015 97 (0.65)	1 0.125 96 (0.71)	1 0.056 96 (0.50)	s 0.018 30 (0.50)	 0.024 43 (1.15)	 0.012 92 (0.74)	s 0.021 96 (0.80)
4. Basic Products	 0.030 62 (0.80)	 0.029 05 (0.94)	 0.034 25 (1.45)	1 0.198 46 (0.57)	1 0.082 13 (0.61)	1 0.101 42 (0.71)	1 0.185 91 (0.38)	s 0.010 23 (0.74)
5. Light Industry	s 0.011 70 (1.10)	 0.024 93 (0.83)	s 0.013 51 (0.89)	 0.029 88 (0.89)	1 0.199 55 (0.38)	1 0.069 46 (0.62)	1 0.096 62 (0.53)	s 0.019 24 (0.64)
6. Equipment Goods Ind.	s 0.014 04 (1.19)	s 0.007 26 (1.32)	s 0.011 58 (0.93)	s 0.016 31 (0.81)	s 0.010 31 (0.83)	1 0.104 43 (0.62)	 0.027 50 (0.74)	s 0.016 81 (0.91)
7. Construction	s 0.007 30 (1.57)	s 0.003 59 (1.42)	 0.015 19 (1.50)	s 0.009 70 (1.46)	s 0.005 43 (1.32)	s 0.004 12 (1.23)	 0.037 73 (1.82)	s 0.017 24 (0.91)
8. Services	1 0.075 23 (0.84)	1 0.145 82 (0.67)	1 0.097 14 (0.82)	1 0.134 41 (0.54)	1 0.135 31 (0.64)	1 0.105 58 (0.58)	1 0.136 05 (0.64)	1 0.130 98 (0.59)
Value Added	1 0.692 02 (0.19)	1 0.228 46 (0.29)	1 0.689 64 (0.19)	1 0.514 20 (0.23)	1 0.489 73 (0.19)	1 0.587 68 (0.21)	1 0.494 05 (0.19)	1 0.769 36 (0.10)

(Table 3)

c) Certain coefficients can be considered , according to their magnitude, as large and important, other coefficients as small and less important. Since there are no general rules according to which coefficients can be classified, the following selection has been made:

i) Small coefficients are those the value of the standerd deviation(product of the everage value end of the coefficient of variation- which is in bracketts in each cell) is lower than 0.02. There are 28 " s" coefficients in Table 3.

ii) Large coefficients ere those the value of which is greater than 0.05. There ere alltogether 26 such " l " coefficients in Table 3.

iii) The remaining 18 coefficients are"middle- eize"coefficients.

d) The variation of coefficiente depends on their eize; it is in generel greater for small coefficients end emaller for large coefficients. But there are certain important deviations from this rule (e.g. for the inputs of the service sector).

e) The veriation of the input coefficiente on the main diagonel ie rather small. This is rather important. Velues of the coefficiente on the main diegonal are influenced by the the methodology of statistical compilation of input- output tables and by aggregation of larger tables into smaller ones. It is often assumed that they differ etrongly between countries and make the other input coefficients less comparable. Thiee does not seem to be the cese for input- output tebles used in this investigation.

4.2 Dependence of the values of input-and-technological coefficients on GDP per head, size of the country and populetion density

Following regression equetions were tested:

$$(3) \quad e_{ij} = c^{o}_{ij} + c^{y}_{ij}\, y + c^{p}_{ij}\, p + c^{d}_{ij}\, d \qquad (i = 1,2....8,v \; ; \; j=1,2...8)$$

$$(4) \quad t_{ij} = c^{o}_{ij} + c^{y}_{ij}\, y + c^{p}_{ij}\, p + c^{d}_{ij}\, d \qquad (i,j = 1,2.....8)$$

Only linear regressions were tried. Earlier heve shown, that more complicated (logerithmic) equations yeild much worse results. The advantage of the linear regression is simplicity end additivity of results in columns of the input-output table.

The results are presented in Tables 4 and 5 respectively. The selection was made on the basis of the F- values. The lowest F- value accepted was equal to 2,85, which corresponds to 10 % probability in the case of one explanatory variable.

The figures in Tables 4 and 5 should be read in a way, which will be explained on the example of the input- coefficient for the input from agri-food processing to agriculture:

Table 4. Dependence of the input coefficients on GDP per head, population and density

	Agriculture	Agri-Food	Energy	Basic Products	Light Industry	Equipment Goods	Construction	Services
1. Agriculture		0.338 0.07 -0.097 d 5% 0.588 p 5%			0.081 0.19 -0.021 y 5%			0.002 0.32 0.004 d 1%
2. Agri-Food Processing	0.007 0.32 0.033 y 1% 0.036 d 5%	0.157 0.16 -0.203p 10% -0.030d 10%		0.014 0.262 -0.003 y 5% 0.033 d 10%				0.005 0.13 0.003 y 10%
3. Energy							0.012 0.20 0.007 d 5%	0.016 0.45 0.110 p 1% 0.008 d 5%
4. Basic Products	0.020 0.14 0.008 y 5%			0.155 0.10 0.032 y 10%	0.061 0.12 0.015 y 10%	0.090 0.14 0.272 p 5%	0.225 0.21 -0.029 y 5%	0.005 0.20 0.003 y 5% 0.025 p 5%
5. Light Industry	0.005 0.19 0.005 y 5%	0.023 0.15 0.013 d 5%	0.010 0.30 0.008 d 1% 0.044 p 5%	0.027 0.11 0.069 p 10%				0.012 0.24 0.058 p 1% 0.004 y 5%
6. Equipment Goods Ind.	0.006 0.16 0.006 y 5%	0.006 0.12 0.005 d 10%	0.005 0.26 0.004 y 1% 0.005 d 10%	0.015 0.14 0.008 d 5%	0.007 0.13 0.003 y 5%	0.076 0.13 0.021 y 5%	0.015 0.26 0.009 y 1%	0.007 0.52 0.128 p 1% 0.003 y 10%
7. Construction	0.000 0.27 0.005 y 1%	0.002 0.10 0.001 y 10%	0.002 0.22 0.010 y 1%	0.007 0.24 0.069 p 1%	0.000 0.48 0.051 p 1% 0.002 y 1%	0.000 0.33 0.003 y 1%		0.009 0.19 0.006 y 5%
8. Services	0.068 0.55 0.071 d 1% -0.150 p 10%	0.134 0.16 0.052 d 5%	0.088 0.16 0.052 d 5%	0.123 0.27 0.061 d 1%	0.120 0.35 0.083 d 1%			
Value Added	0.791 0.46 -0.107 d 1% -0.059 y 1%	0.280 0.12 0.046 d 10%		0.571 0.16 -0.042 y 5%				

(Table 4)

Table 5. Dependence of the technological coefficients on GDP per head, population and density

	Agriculture	Agri-Food	Energy	Basic Products	Light Industry	Equipment Goods	Construction	Services
1. Agriculture	0.448 [0.16] -0.092 y 5%	0.473 [0.28] -0.131 d 1% 0.725 p 5%			0.150 [0.17] -0.035 y 5%			0.009 [0.31] 0.015 d 1%
2. Agri-Food Processing	0.067 [0.24] 0.072 y 1%			0.038 [0.22] -0.010 y 1%				
3. Energy						0.110 [0.12] -0.031 y 10%	0.024 [0.12] 0.010 d 10%	
4. Basic Products					0.115 [0.20] 0.035 y 5%	0.202 [0.25] 0.723 p 1%	0.449 [0.15] 0.050 y 5%	0.090 [0.27] 0.494 p 1%
5. Light Industry		0.031 [0.27] 0.025 d 1%			0.403 [0.13] -0.075 d 10%			0.041 [0.14] 0.098 p 5%
6. Equipment Goods Ind.		0.009 [0.15] 0.010 d 5%	0.023 [0.16] 0.012 y 5%		0.011 [0.20] 0.007 y 5%	0.172 [0.16] 0.046 y 5%		0.081 [0.13] 0.236 p 5%
7. Construction	0.003 [0.20] 0.014 y 5%	0.002 [0.09] 0.002 y 10%	0.009 [0.19] 0.036 y 5%	0.014 [0.20] 0.125 p 5%	0.000 [0.47] 0.094 p 1% 0.005 y 1%	0.001 [0.38] 0.006 y 1%	0.025 [0.35] 0.021 y 1%	0.056 [0.54] 0.600 p 1%
8. Services		0.185 [0.29] 0.124 d 1%			0.244 [0.26] 0.132 d 1%			0.584 [0.26] -0.956 p 1%

(Table 5)

Table 6. Characteristics of the equations on the dependence of the input and technological coefficients on the GDP per head, number of population and population density.

a. Distribution of determination coefficients (R^2)

Value of R^2	Number of equations for a_{ij}'s	t_{ij}'s	total
0.05 - 0.09	-	1	1
0.10 - 0.14	13	5	18
0.15 - 0.19	7	7	14
0.20 - 0.24	7	5	12
0.25 - 0.29	6	8	14
0.30 - 0.34	3	1	4
0.35 - 0.39	2	2	4
0.40 - 0.44	1	-	1
0.45 - 0.49	2	1	3
0.50 - 0.54	1	1	2
0.55 - 0.59	1	-	1
total	43	31	74

b. Distribution of probabilities of the F- values

F- value upper limit	Number of variables:for: a_{ij}'s				t_{ij}'s				total			
	y	p	d	total	y	p	d	total	y	p	d	total
- 1%	9	5	6	20	5	4	5	14	14	9	11	34
- 5%	11	4	8	23	9	5	1	15	20	9	9	38
-10%	5	3	5	13	2	-	2	4	7	3	7	17
total	25	12	19	56	16	9	8	33	41	21	27	89

c. Features of the results for particular SIMV sectors

SIMV sector	row-wise variables			equat.	$\emptyset R^2$	column- wise variables			equat.	$\emptyset R^2$
	y	p	d			y	p	d		
(i) for the a_{ij}'s										
1. Agricult.	1	1	2	3	26.0	6	1	3	7	30.6
2. Agri-food	3	1	1	4	23.0	1	2	6	7	15.4
3. Energy	-	1	2	2	33.5	2	1	3	4	23.5
4. Basic pr.	5	2	1	6	15.2	3	2	3	7	18.3
5. Light ind.	2	3	2	5	19.8	4	1	1	5	25.4
6. Equipment	7	1	3	8	22.1	2	1	-	3	20.0
7. Construct.	6	2	-	7	26.1	2	-	1	3	22.3
8. Services	-	1	5	5	29.8	5	4	2	7	30.0
Value added	2	-	2	3	24.7	-	-	-	-	-
Total	25	12	19	43	23.4	25	12	19	43	23.4
(ii) for the t_{ij}'s										
1. Agricult.	2	1	2	4	23.0	3	-	-	3	20.0
2. Agri-food	2	-	-	2	23.0	1	1	4	5	21.6
3. Energy	1	-	-	1	12.0	2	-	-	2	17.5
4. Basic pr.	1	2	1	4	21.0	1	1	-	2	21.0
5. Light ind.	1	1	2	4	17.2	4	1	2	6	23.8
6. Equipment	3	1	1	5	16.0	3	1	-	4	22.7
7. Construct.	6	3	-	8	30.2	2	-	1	3	20.7
8. Services	-	1	2	3	27.0	-	5	1	6	27.5
total	16	9	8	31	22.8	16	9	8	31	22.8

$$a_{12} = 0.007 + 0.033y + 0.036d \quad , R^2 = 0.37$$
$$\qquad\qquad\quad (1\%) \qquad (5\%)$$

In this case, c^y_{12} is significant at 1% and c^d_{12} is significant at 5 % level, while c^p_{12} is not significant below 10% level.

It should be noted, that the three explanatory veriables (y,p,d) are not intercorrelated. The coefficient of correlation R between y and p equals to -0.2821, the coefficient of correlation R between y and d equals to -0.0467 and between p and d to - 0.0423. But even in the case of R_{yp} thera is no significant intercorrelation: tha value of R^2 = 0.0796, its standard error of eatimate is equal to 1,08 and the regression equation has a regression coefficient which is not aignificant at 10% level.

A summery raview of the results is presented in Table 6. Table 6 ehows, that the input coefficients perfomm better than the technological coefficients. Three values of the value sdded coefficients and 40 values of input coefficients could be explained by regression equations, but only 31 valuea of technological coefficients. Also the average value of the R^2 is slightly higher for the a_{ij}'a than for the t_{ij}'s ; (23.4 against 22.8).Among the explanatory variables, y prevails both for the input and technological coefficienta.

The number of significant equations differs by sectors. The number of significant equationa is row-wise high for the equipment gooda industry, construction and services, column- wise the number of significant equations is high for agriculture, agri- food processing, basic products and servicea.

4.3 Dependence of tha values of input- coefficienta for the UNIDO aectore on GDP per head, population number and density of population

The results of analysis presented in the previous paragraph have shown a relatively good performance of number of input coefficients and relatively weak performance of the technological coefficients.

The velues of the input coefficients of the SIMV tables depend also on the values of the input coefficients of the UNIDO 24- industry tebles. The dependence of the input coefficients of the UNIDO tables on GDP per head, number of population and populstion density can be alao analysed by the regression analysia. The results of the anslysis are presented in the Annex. In Table 8 the determination ccefficients R^2, in Table 7 aelected average values of the input coefficients can be found.

The results presented in the Annex and Table 7 indicate a few additional problems. The first one(which was neglected for the input coefficients of the SIMV tables for reasons to be explained now,) is the existence of negative intercepts in the regreasion aquations. There are 49 nagstive intercept valuea (out of a total number of 229) in the Annex. These negative intercept values are the consequence of zero coefficients for certain countries. In the analysis of the SIMV input coefficients it was assumed, that the zero coefficients are " true " zero valuea. In

Table 7. Average values and coefficients of variation of input coefficients *)

(Industries 09- 18 of the 24 industry classification)

SITC	UNIDO	09		10		11		12		13	
1.	01 Agriculture	.030	263 1.09	.034	837 3.59	.001	500 2.17	.019	679 5.34	.081	182 1.24
2.	02 Agri-food	.004	313 2.61	.060	730 1.84	.001	300 4.47	.000	298 3.06	.004	995 2.11
3.	03 Coal Mining	.003	174 2.38	.001	863 2.07	.006	282 1.54	.002	940 3.02	.000	595 1.89
	04 Petroleum	.001	487 3.07	.002	063 2.85	.003	794 3.09	.001	327 2.81	.001	548 4.00
	05 Petr. Products	.013	211 1.03	.019	482 1.62	.036	439 1.28	.021	407 1.31	.008	390 1.40
	06 Electricity	.029	481 0.68	.022	341 0.83	.026	123 0.62	.027	262 0.84	.015	531 0.67
4.	07 Metal ore	.000	909 3.33	.006	185 2.23	.026	251 1.88	.055	120 2.22	.000	678 4.86
	08 Oth. mining	.001	607 2.83	.015	284 2.77	.028	724 1.20	.006	039 2.77	.000	124 3.31
	09 Paper	.179	045 0.71	.022	390 0.99	.016	848 0.79	.001	514 1.27	.006	638 1.30
	10 Chemicals	.030	599 0.73	.109	869 0.81	.017	039 1.57	.009	017 1.14	.035	335 0.97
	11 Non-metals	.001	542 1.51	.010	569 1.28	.055	952 0.96	.005	405 1.24	.000	348 2.35
	12 Metals	.006	281 2.13	.008	452 1.60	.008	607 1.05	.181	601 0.96	.001	654 2.47
5.	13 Textiles	.006	840 2.18	.004	127 1.44	.002	771 2.44	.000	363 2.21	.221	742 0.53
	14 Apparel	.001	072 2.10	.000	888 2.46	.000	492 2.78	.000	892 2.57	.004	499 2.83
	15 Wood products	.013	877 1.53	.004	391 1.22	.004	008 1.02	.001	332 1.60	.002	204 1.50
	16 Printing	.006	852 1.34	.008	962 1.69	.002	137 1.61	.001	551 1.61	.003	041 1.44
	17 Plast., rubber	.002	647 1.26	.009	470 1.21	.004	660 1.72	.000	554 7.07	.005	417 1.29
	18 Metal products	.004	609 2.77	.012	411 1.33	.006	704 1.44	.029	665 3.09	.003	626 2.28
6.	19 Machinery	.009	364 1.04	.005	668 1.22	.014	694 1.02	.016	808 1.30	.005	213 0.98
	20 Transp. equip.	.001	209 1.52	.001	076 1.61	.004	859 1.72	.005	614 2.77	.001	844 2.23
7.	21 Construction	.003	813 1.42	.004	795 1.45	.014	338 2.06	.004	326 2.31	.004	483 1.60
8.	22 Trade	.065	755 1.06	.062	333 1.13	.060	842 1.22	.039	000 1.22	.062	402 1.05
	23 Transport	.026	766 0.88	.024	836 0.85	.053	175 0.88	.034	933 1.03	.019	985 1.12
	24 Services	.039	047 0.85	.052	473 0.82	.041	522 1.03	.035	213 1.48	.041	751 0.95
	Value added	.514	813 0.29	.495	002 0.33	.559	017 0.17	.425	141 0.50	.466	929 0.27

*) The first figure is the arithmetic average, the second the coefficient of variation
Regreasion equations were found for the figures with , underlined figures greater than 1%

Table 7. (cont.)

	14	15	16	17	18
01	.031 282 1.77	.098 808 1.10	.000 526 3.67	.018 799 2.02	.000 515 4.99
02	.014 604 1.10	.001 024 1.76	.000 122 2.45	.002 581 2.94	.000 172 2.83
03	.000 178 2.04	.000 244 2.29	.000 058 2.62	.000 738 2.30	.001 001 3.00
04	.000 232 2.98	.000 422 3.08	.000 305 4.17	.004 583 4.34	.004 567 5.07
05	.003 188 2.21	.005 175 1.35	.002 494 1.87	.007 533 1.41	.005 210 1.22
06	.006 697 1.28	.010 344 0.71	.006 277 0.91	.012 887 0.64	.010 505 0.88
07	.000 076 3.76	.000 154 3.78	.000 077 5.45	.012 868 3.62	.005 769 3.62
08	.000 111 2.82	.000 150 3.39	.000 161 4.40	.000 381 1.90	.001 [illegible]03 2.42
09	.008 255 0.85	.003 818 1.28	.135 192 0.76	.012 481 0.95	.003 660 1.11
10	.011 160 0.96	.017 192 0.85	.017 191 0.83	.061 677 0.94	.011 909 0.92
11	.001 135 3.25	.003 966 1.58	.000 358 4.77	.004 149 1.52	.002 700 1.69
12	.001 434 2.07	.009 882 1.46	.002 865 2.08	.013 040 1.13	.150 322 0.94
13	.163 671 0.68	.038 897 3.02	.001 331 1.62	.027 514 0.86	.001 145 1.51
14	.093 149 0.57	.004 195 2.73	.001 092 1.97	.004 705 2.25	.000 484 1.83
15	.002 366 1.53	.138 249 0.56	.000 501 2.26	.007 752 1.85	.004 389 0.88
16	.002 651 1.61	.001 710 1.61	.036 620 1.51	.004 586 1.32	.001 829 1.43
17	.020 049 0.87	.008 644 1.17	.004 097 1.61	.048 592 0.94	.005 186 1.34
18	.003 430 1.08	.023 462 1.78	.002 375 2.20	.010 709 1.52	.039 216 1.36
19	.003 381 1.53	.009 090 1.53	.004 899 1.49	.009 951 1.54	.013 774 1.44
20	.002 178 3.64	.002 222 1.54	.001 046 1.87	.004 857 2.73	.003 546 3.49
21	.002 336 1.62	.005 646 1.69	.002 549 1.72	.010 777 3.16	.007 081 2.72
22	.087 598 1.11	.057 935 1.13	.032 338 1.49	.079 205 1.13	.038 223 1.04
23	.013 495 1.06	.033 673 0.99	.016 951 0.98	.029 809 1.37	.018 888 1.07
24	.037 784 1.16	.035 350 0.91	.047 503 1.07	.050 703 1.13	.043 000 1.21
VA	.456 326 0.28	.489 186 0.29	.510 810 0.50	.559 762 0.29	.485 554 0.48

Table 8. Summary of the regression analysis of the input coefficients for the UNIDO industries

(Values of the determination coefficients R^2 and frequencies of explanatory variables)

SIMV	UNIDO	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	No.eq.	y	p	d
1.	01 Agriculture	-	.27	-	-	-	.13	-	-	.16	-	-	-	.14	.31	-	-	-	-	-	-	-	-	-	.36	6	3	2	2
2.	02 Agri-food	.37	.16	-	-	.13	-	-	-	-	-	.91	-	-	-	-	-	.88	-	-	-	-	-	-	.13	6	3	3	2
3.	03 Coal mining	.15	-	.20	-	.10	.20	-	-	.67	.17	.15	.79	.22	-	-	.12	.46	.12	-	-	-	.09	.80	-	14	5	10	2
	04 Petroleum	-	-	-	-	.31	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-
	05 Petroleum p.	-	-	-	-	-	.26	.20	.07	.11	-	-	-	-	-	-	-	-	-	-	-	.10	-	.44	.38	7	4	-	5
	06 Electricity	.53	-	-	-	-	-	-	-	-	.37	.12	.31	-	-	-	-	-	-	-	-	.35	-	.16	.40	7	5	-	4
4.	07 Metal ore	-	-	-	-	-	-	.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-
	08 C. mining	-	-	.10	-	-	-	-	-	-	-	.12	-	-	-	-	-	-	-	-	-	.12	-	-	-	3	3	-	-
	09 Paper	-	-	.19	-	.10	-	-	-	-	-	.28	-	.39	.16	.87	-	.40	-	.11	.42	.43	.36	.33	-	12	10	1	3
	10 Chemicals	.14	-	-	-	-	.64	-	-	.32	-	-	.10	-	-	-	-	.11	.12	.67	-	-	-	-	-	7	3	1	3
	11 Non metals	.26	.68	.89	.92	.56	-	.65	.49	-	.45	.10	.42	.40	.74	.79	.91	-	.71	.35	.78	-	-	.89	-	18	9	16	1
	12 Metals	-	-	-	-	-	-	.07	-	-	-	-	-	-	-	-	-	.11	-	-	.11	.16	-	.16	-	5	4	1	-
5.	13 Textiles	-	.12	-	-	-	-	-	-	-	-	.44	-	-	-	-	.10	-	.10	-	-	-	-	-	-	4	2	2	-
	14 Apparel	-	.64	.10	-	-	-	-	.26	-	-	-	-	.11	.27	-	.11	-	-	-	-	-	-	-	-	6	3	2	1
	15 Wood prod.	-	-	-	-	-	-	-	-	-	.12	.24	-	-	-	-	.47	-	-	-	-	-	-	-	-	3	1	1	1
	16 Printing	.31	-	.16	-	.12	.21	.07	.10	.10	-	.31	.21	.22	-	.37	.16	.15	.35	.28	.44	.25	.19	.52	.38	20	20	1	1
	17 Plast. rub.	-	.43	.64	.92	.63	-	.80	.76	-	.56	.65	.63	-	-	.19	-	-	.25	.18	.16	.54	-	.30	-	15	5	13	-
	18 Metal prod.	.17	.11	-	-	.57	-	-	-	.12	.67	.63	-	-	.35	-	-	.45	.13	.35	.24	.25	.13	.12	-	14	9	5	5
6.	19 Machinery	.18	.42	-	-	-	.10	-	-	.21	.29	.46	.25	-	-	-	.34	.63	.27	.11	-	.24	-	.25	.18	14	12	2	7
	20 Transp. eq.	-	-	-	-	-	-	-	-	.10	.11	-	.30	-	-	.10	.12	-	-	.21	-	-	.15	.12	-	8	6	-	2
7.	21 Construction	.27	.10	.17	-	-	.18	-	-	.20	.26	.70	-	.10	.24	-	.20	.89	-	.16	.50	-	-	.12	.11	15	15	2	-
8.	22 Trade	.49	.29	-	-	-	-	-	-	.17	.20	-	-	.17	.19	-	.12	.36	-	-	-	-	-	.10	-	9	5	1	7
	23 Transport	.19	-	.79	-	-	.12	.90	.57	.19	.26	.26	.22	.41	-	.27	.25	.74	.18	.11	.23	-	.12	.13	-	18	8	4	8
	24 Services	.18	-	-	-	-	-	-	.15	.12	.19	-	.56	-	.10	-	-	.36	-	-	-	-	-	-	-	7	1	-	6
Value added		.36	.13	-	.21	-	-	.41	-	-	-	.29	-	-	-	.17	-	.46	-	-	-	-	.30	-	.71	9	3	7	4
No. of equations		13	11	9	3	8	8	8	7	12	12	15	10	9	8	7	11	13	9	10	8	9	7	14	8	229			
Frequency of variables	y	11	6	8	-	4	5	6	2	7	8	6	6	6	2	4	7	8	5	7	5	5	6	10	6		140		
	p	1	5	3	3	4	1	4	4	2	3	9	3	2	3	3	3	8	3	2	2	2	1	3	1			75	
	d	4	8	-	-	1	3	1	1	4	5	4	3	2	3	1	1	4	3	1	2	3	-	2	3				62

(Table 8)

Table [illegible] cont.)

	14		15		16		17		18	
01	.031 282	1.77	[illegible]08 1.10		.000 526	3.67	.018 799	2.02	.000 515	4.99
02	.014 604	1.10	.00[illegible]26		.000 122	2.45	.002 581	2.94	.000 172	2.83
03	.000 178	2.04	.000 [illegible]		.000 058	2.62	.000 738	2.30	.001 001	3.00
04	.000 232	2.98	.000 422 [illegible]		[illegible]00 305	4.17	.004 583	4.34	.004 567	5.07
05	.003 188	2.21	.005 175 1.3[illegible]		[illegible]04	1.87	.007 533	1.41	.005 210	1.22
06	.006 697	1.28	.010 344 0.71		.[illegible]	91	.012 887	0.64	.010 505	0.88
07	.000 076	3.76	.000 154 3.78		.000 [illegible]		.012 868	3.62	.005 769	3.6[illegible]
08	.000 111	2.82	.000 150 3.39		.000 161		[illegible]00 381	1.96	.001 163	
09	.008 255	0.85	.003 818 1.28		.135 192	0.76	[illegible]91	0.95	.003 [illegible]	.11
10	.011 160	0.96	.017 192 0.85		.017 191	0.83	[illegible]	0.94	[illegible]	0.92
11	.001 135	3.25	.003 966 1.58		.000 358	4.77	.004 [illegible]		[illegible]2 700	1.69
12	.001 434	2.07	.009 882 1.46		.002 865	2.08	.013 040 [illegible]		[illegible]50 322	0.94
13	.163 671	0.68	.038 897 3.02		.001 331	1.62	.027 5[illegible]		[illegible]5	1.51
14	.093 149	0.57	.004 195 2.73		.001 092	1.97	.00[illegible]	2.25	[illegible]	1.83
15	.002 366	1.53	.138 249 0.56		.000 501	2.26	[illegible]752	1.85	.004 [illegible]	
16	.002 651	1.61	.001 710 1.61		.036 620	[illegible]	[illegible]004 586	1.32	.001 829	
17	.020 049	0.87	.008 644 1.17		.004 092		.048 592	0.94	.005 186	1.34
18	.003 430	1.08	.023 468 1.78		.002 [illegible]		.010 709	1.52	.039 216	1.36
19	.003 381	1.53	.009 090 1.53		[illegible]	1.49	.009 951	1.54	.013 774	1.44
20	.002 178	3.64	.002 222 1.5[illegible]		[illegible] 046	1.87	.004 85[illegible]	2.73	.003 546	3.49
21	.002 336	1.62	.005 646 [illegible]		.002 549	1.72	.010 [illegible]27	3.16	.007 081	2.72
22	.087 598	1.11	.05[illegible]	[illegible]13	.035 338	1.49	.009 [illegible]05	1.13	.038 223	1.04
23	.013 495	1.06	[illegible]	0.99	.016 95[illegible]	0.98	.009 809	1.37	.018 888	1.07
24	.037 784	1.[illegible]	[illegible]5 350	0.91	.047 503	1.07	.050 703	1.13	.043 000	1.21
VA	.456 326	[illegible]	.489 186	0.09	.510 810	0.50	.559 762	0.29	.485 554	0.48

(Table 7)

Table 8. Sum[illegible] the regression analysis of the input coefficients for the UNIDO industries

(Values of the de[illegible]tion coefficients R^2 and frequencies of explanatory variables)

SITV	UNIDO	[illegible]	[illegible]	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	No.eq.	y	[illegible]	[illegible]
1.	01 Agriculture	-	[illegible]	[illegible]	[illegible]	-	.13	-	-	.16	-	-	-	.14	.31	-	-	-	-	-	-	-	-	-	.36	6	[illegible]	2	2
2.	02 Agri-food	.37	.16	-	[illegible]	.13	-	-	-	-	-	.91	-	-	-	-	-	.88	-	-	-	-	-	-	.13	6	[illegible]	3	2
3.	03 Coal mining	.15	-	.20	-	[illegible]	.20	-	-	.67	.17	.15	.79	.22	-	-	.12	.46	.12	-	-	-	.09	.80	-	[illegible]	5	10	2
	04 Petroleum	-	-	-	-	[illegible]	[illegible]	[illegible]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	[illegible]	[illegible]	-	1	-
	05 Petroleum p.	-	-	-	-	-	[illegible]	[illegible]	.07	[illegible]	-	-	-	-	-	-	-	-	-	-	-	.10	-	[illegible]	[illegible]	7	4	-	5
	06 Electricity	.53	-	-	-	-	-	[illegible]	[illegible]	-	.37	.12	.31	-	-	-	-	-	-	-	-	.35	-	[illegible]	.40	7	5	-	4
4.	07 Metal ore	-	-	-	-	-	-	[illegible]	[illegible]	[illegible]	-	-	-	-	-	-	-	-	-	-	-	-	[illegible]	[illegible]	-	1	1	-	-
	08 C. mining	-	-	.10	-	-	-	-	-	[illegible]	[illegible]	.12	-	-	-	-	-	-	-	-	-	[illegible]	[illegible]	-	-	3	3	-	-
	09 Paper	-	-	.19	-	.10	-	-	-	-	[illegible]	[illegible]	-	.39	.16	.87	-	.40	-	.11	[illegible]	[illegible]	.36	.33	-	12	10	1	3
	10 Chemicals	.14	-	-	-	-	.64	-	-	.32	[illegible]	[illegible]	.10	-	-	-	-	.11	.12	.67	[illegible]	[illegible]	-	-	-	7	3	1	3
	11 Non metals	.26	.68	.89	.92	.56	-	.65	.49	-	[illegible]	[illegible]	[illegible]	.40	.74	.79	.91	-	.71	[illegible]	[illegible]	-	-	.89	-	18	9	16	1
	12 Metals	-	-	-	-	-	-	.07	-	-	-	-	[illegible]	[illegible]	-	-	-	.11	[illegible]	[illegible]	.11	.16	-	.16	-	5	4	1	-
5.	13 Textiles	-	.12	-	-	-	-	-	-	-	-	.44	-	[illegible]	[illegible]	-	.10	[illegible]	[illegible]	-	-	-	-	-	-	4	2	2	-
	14 Apparel	-	.64	.10	-	-	-	-	.26	-	-	-	-	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-	-	-	-	-	6	3	2	1
	15 Wood prod.	-	-	-	-	-	-	-	-	-	.12	.24	-	-	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-	-	-	-	-	3	1	1	1
	16 Printing	.31	-	.16	-	.12	.21	.07	.10	.10	-	.31	.21	.22	-	[illegible]	[illegible]	[illegible]	.35	.28	.44	.25	.19	.52	.38	20	20	1	1
	17 Plast. rub.	-	.43	.64	.92	.63	-	.80	.76	-	.56	.65	.63	-	-	[illegible]	[illegible]	[illegible]	.25	.18	.16	.54	-	.30	-	15	5	13	-
	18 Metal prod.	.17	.11	-	-	.57	-	-	-	.12	.67	.63	-	-	[illegible]	-	-	[illegible]	[illegible]	.35	.24	.25	.13	.12	-	14	9	5	5
6.	19 Machinery	.18	.42	-	-	-	.10	-	-	.21	.29	.46	.25	[illegible]	[illegible]	-	.34	[illegible]	[illegible]	[illegible]	-	.24	[illegible]	.25	.18	14	12	2	7
	20 Transp. eq.	-	-	-	-	-	-	-	-	.10	.11	-	[illegible]	[illegible]	-	.10	.12	-	[illegible]	[illegible]	[illegible]	-	.15	.12	-	8	6	-	2
7.	21 Construction	.27	.10	.17	-	-	.18	-	-	.20	.26	[illegible]	[illegible]	.10	.24	-	.20	.89	-	[illegible]	[illegible]	[illegible]	-	.12	.11	15	15	2	-
8.	22 Trade	.49	.29	-	-	-	-	-	-	.17	[illegible]	[illegible]	-	.17	.19	-	.12	.36	-	-	-	[illegible]	[illegible]	.10	-	9	5	1	7
	23 Transport	.19	-	.79	-	-	.12	.90	.57	[illegible]	[illegible]	.26	.22	.41	-	.27	.25	.74	.18	.11	.23	-	[illegible]	.13	-	18	8	4	8
	24 Services	.18	-	-	-	-	-	-	[illegible]	[illegible]	[illegible]	-	.56	-	.10	-	-	.36	-	-	-	-	[illegible]	[illegible]	-	7	1	-	6
Value added		.36	.13	-	.21	-	-	[illegible]	[illegible]	[illegible]	-	.29	-	-	-	.17	-	.46	-	-	-	-	.30	[illegible]	[illegible]	9	3	7	4
No. of equations		13	11	[illegible]	3	8	8	[illegible]	[illegible]	12	12	15	10	9	8	7	11	13	9	10	8	9	7	14	[illegible]				
Frequency of variables	y	11	6	8	-	4	[illegible]	[illegible]	2	7	8	6	6	6	2	4	7	8	5	7	5	5	6	10	6	[illegible]	140		
	p	1	5	3	3	[illegible]	[illegible]	4	4	2	3	9	3	2	3	3	3	8	3	2	2	2	1	3	1			75	
	d	4	8	-	[illegible]	[illegible]	3	1	1	4	5	4	3	2	3	1	1	4	3	1	2	3	-	2	3				62

Table 9. Highest and lowest values of input coefficients and the number of non-zero coefficients *)

(24 UNIDO industry classification)

SIMV	UNIDO	01	02	03	04	05	06	07	08
1.	01 Agriculture	.000 .267 30	.015 .700 30	. .046 8	. .006 1	. .374 11	. .002 9	. .073 12	. .041 10
2.	02 Agri-Food	. .289 29	.045 .280 30	. .001 1	. .023 3	-.001 .010 9	. .009 6	. .004 4	. .005 4
3.	03 Coal mining	. .001 6	. .004 9	. .195 6	. .000 2	. .190 7	. .138 10	. .033 3	. .013 6
	04 Petroleum	. .012 4	. .009 4	. .002 2	. .271 6	. .398 7	. .058 5	. .009 4	. .012 1
	05 Petr. prod.	. .112 24	. .025 24	. .027 8	. .031 3	-.545 .333 22	. .117 24	. .010 15	. .104 15
	06 Electricity	. .012 25	. .030 29	. .089 10	. .018 5	-.050 .110 24	. .338 26	. .058 18	. .042 17
4.	07 Metal ore	. .020 10	. .016 7	. .013 1	. .241 2	-.049 .214 8	. .159 7	. .452 9	. .002 2
	08 Oth. mining	. .003 19	. .017 14	. .001 3	. .000 1	. .275 10	. .059 9	. .005 4	. .150 8
	09 Paper	. .007 22	. .106 29	. .001 5	. .001 6	-.018 .070 19	. .006 22	. .008 12	. .022 11
	10 Chemicals	. .082 27	. .030 27	. .022 8	. .015 5	-.102 .145 20	. .023 21	. .032 14	. .049 13
	11 Non-metals	. .012 20	. .020 25	. .037 6	. .087 5	-.004 .050 16	. .034 17	. .032 9	. .032 9
	12 Metals	. .023 16	. .015 19	. .041 6	. .005 3	-.065 .027 10	. .041 15	. .030 12	. .045 10
5.	13 Textiles	. .019 25	. .029 26	. .001 3	. .000 1	-.010 .003 8	. .003 12	. .003 6	. .011 9
	14 Apparel	. .027 15	. .014 18	. .007 7	. .001 3	. .002 5	. .035 9	. .071 6	. .010 5
	15 Wood prod.	. .008 23	. .015 26	. .014 5	. .001 2	-.006 .009 10	. .013 15	. .011 11	. .007 9
	16 Printing	. .004 13	. .025 222	. .004 5	. .009 4	. .024 12	. .005 17	. .006 8	. .010 8
	17 Plast.,rubber	. .013 27	. .011 25	. .037 8	. .087 6	-.006 .050 15	. .005 23	. .032 14	. .024 11
	18 Metal products	. .049 27	. .051 24	. .039 8	. .016 4	-.059 .126 18	. .022 19	. .061 14	. .025 12
6.	19 Machinery	. .043 25	. .026 24	. .079 9	. .017 6	-.029 .048 18	. .074 15	. .033 17	. .032 14
	20 Transp. equip.	. .051 26	. .031 18	. .004 5	. .006 6	-.031 .007 12	. .012 16	. .081 11	. .012 10
7.	21 Construction	. .049 11	. .016 17	. .036 5	. .147 5	-.028 .138 13	. .135 21	. .155 11	. .010 10
8.	22 Trade	. .260 27	. .239 27	. .035 8	. .013 5	-.021 .833 23	. .098 22	. .142 16	. .065 17
	23 Transport	. .047 27	. .171 27	. .462 10	. .067 5	-.068 .226 21	. .033 25	. 1.915 18	. .490 19
	24 Services	. .089 29	. .191 27	. .099 8	. .036 6	-.058 .177 21	. .257 26	. .291 17	. .110 16
	Value added	.388 .906 30	.091 .428 30	. .803 10	. .985 8	. 2.154 24	.448 .962 30	-.981 .900 21	. .957 19

*) The first figure is the lowest, the second figure the highest value of the input coefficient.
The third figure is the number of non- zero entries(max = 30). .000 means less than .0005,
means nul.

Table 9. cont.

	09	10	11	12	13	14	15	16	17
01	.243 21	.678 24	.014 18	.578 14	.352 28	.210 28	.453 27	.010 7	.137 21
02	.057 19	.604 30	.032 11	.005 9	.049 22	.055 25	.008 16	.001 8	.041 16
03	.037 9	.015 9	.028 10	.046 10	.003 9	.001 8	.002 8	.001 5	.007 8
04	.021 4	.026 4	.051 4	.018 14	.033 4	.003 4	.005 4	.007 3	.108 4
05	.050 24	.163 24	.163 24	.112 22	.049 24	.037 21	.028 23	.023 17	.054 23
06	.100 29	.064 28	.057 29	.111 27	.055 29	.044 26	.024 29	.022 23	.035 28
07	.016 8	.063 16	.174 16	.515 20	.008 3	.001 6	.003 4	.002 2	.248 11
08	.024 9	.221 14	.111 18	.088 15	.002 8	.001 8	.003 7	.004 2	.002 8
09	.457 26	.107 28	.054 29	.006 21	.038 28	.033 27	.017 23	.326 24	.040 27
10	.099 27	.331 27	.106 25	.037 25	.117 26	.042 26	.071 27	.057 23	.237 24
11	.008 17	.058 25	.233 28	.023 21	.003 12	.017 15	.031 22	.010 9	.029 23
12	.063 20	.048 23	.039 25	.577 25	.016 14	.011 17	.073 24	.030 20	.042 23
13	.081 24	.027 24	.027 19	.004 13	.390 28	.448 29	.622 23	.009 18	.073 24
14	.009 13	.010 17	.007 9	.010 13	.064 16	.230 28	.062 20	.010 15	.056 19
15	.086 22	.025 25	.012 24	.009 19	.015 22	.017 23	.316 27	.005 10	.071 24
16	.030 18	.073 21	.015 17	.011 16	.016 18	.017 18	.010 15	.255 18	.019 18
17*	.013 22	.051 25	.038 24	.018 21	.028 25	.072 27	.042 26	.025 21	.180 26
18	.032 21	.075 20	.048 24	.505 21	.043 22	.015 22	.229 25	.023 17	.063 22
19	.031 20	.032 23	.052 24	.072 23	.021 24	.022 20	.064 23	.027 17	.065 21
20	.005 14	.007 14	.040 17	.071 17	.021 16	.044 16	.012 14	.008 12	.070 17
21	.019 14	.022 16	.151 19	.028 15	.029 15	.017 16	.037 16	.015 13	.187 17
22	.288 26	.243 26	.318 27	.183 24	.232 28	.380 26	.323 26	.252 20	.328 26
23	.083 24	.062 25	.199 26	.140 24	.095 27	.064 26	.139 27	.060 22	.214 27
24	.116 25	.147 27	.193 25	.241 24	.189 27	.186 25	.103 25	.212 22	.222 26
VA	.3001.000 30	.243 .932 30	.279 .735 30	.884 28	.267 .596 30	.685 29	.064 .851 30	.969 25	.141 .837 30

(Table 9)

Table 9. cont.

	18	19	20	21	22	23	24	Aggregation inconsistencies (number of countries)
01	. .014 9	. .028 15	. .007 10	. .113 19	. .070 13	. .014 18	. .024 24	-
02	. .003 11	. .002 6	. .007 9	. .004 10	. .023 14	. .012 15	. .048 26	-
03	. .015 9	. .008 9	. .046 8	. .000 5	. .002 4	. .035 8	. .004 8	5
04	. .127 3	. .066 4	. .068 4	. .006 3	. .005 3	. .071 4	. .005 5	5
05	. .023 19	. .202 24	. .060 22	. .032 23	. .054 20	. .194 22	. .016 22	6
06	. .039 24	. .070 28	. .022 26	. .009 23	. .042 13	. .015 20	. .024 27	-
07	. .110 8	. .048 11	. .047 7	. .091 10	. .000 2	. .048 7	. .002 9	10
08	. .010 12	. .008 13	. .004 8	. .114 16	. .010 4	. .045 10	. .001 8	10
09	. .015 22	. .023 25	. .004 20	. .010 19	. .024 26	. .004 21	. .013 26	4
10	. .034 24	. .088 28	-.019 .004 26	. .031 28	. .021 21	. .019 23	. .015 24	-
11	. .022 20	. .036 24	. .041 24	. .252 29	. .005 16	. .018 17	. .007 25	-
12	. .495 23	. .264 26	. .281 26	. .114 26	. .046 10	. .005 15	. .004 16	3
13	. .007 16	. .018 24	. .020 23	. .021 15	. .010 21	. .004 13	. .009 21	3
14	. .004 13	. .058 19	. .011 18	. .006 10	. .009 14	. .023 18	. .024 21	3
15	. .013 11	. .107 27	. .029 25	. .112 29	. .017 21	. .006 21	. .011 23	-
16	. .009 15	. .019 17	. .008 17	. .005 16	. .040 20	. .015 20	. .029 21	5
17	. .024 22	. .050 26	. .159 26	. .049 24	. .009 21	. .046 27	. .012 25	3
18	. .214 23	. .109 24	. .223 23	. .100 25	. .006 17	. .031 19	. .006 20	5
19	. .093 20	. .196 27	. .443 27	. .059 26	. .052 20	. .039 24	. .022 26	1
20	. .068 17	. .049 19	. .286 26	. .018 18	. .028 19	. .115 27	. .013 23	2
21	. .103 13	. .026 16	. .015 16	. .213 14	. .063 19	. .121 20	. .056 26	-
22	. .137 24	. .148 28	. .222 25	. .365 24	. .156 21	. .204 24	-.000 .077 24	3
23	. .064 22	. .061 25	. .047 23	. .083 27	. .153 26	. .524 27	. .147 26	2
24	. .213 23	. .189 26	. .136 24	. .230 27	. .307 27	. .118 25	. .314 28	1
VA	. .885 26	.400 .890 30	. .937 29	.308 .678 30	. .996 28	. .949 28	. 1.000 29	-

the analysis of the input coefficients in the UNIDO 24 industry classification the zero values can be not only " trus"zeros, but can also results because of errors in data compilation or inconsistencies in the aggregation of the input tables from national classification schemes in the 24 industry UNIDO classification.

Information allowing to asses the reliability of data in the 24 industry classification is provided in Teble 9. For each cell one finds the information on the highest and lowest value of the coefficient and on the number of zero entries. One can see , that in certain cases negative values of coefficients appear in the 24 industry tables end that the number of zero elements is sometimes rether high. The high number of zero elements influences the average values of the coefficients for the sample of countries and causes often the negative value of the intercept.

It must be , however, stressed, that from the point of view of the theory of input- output analysis the values of input coefficients should be non-negative. Actual negative values are obviously wrong, negative values which would result from the application of the regression equations should be, ex definitione, replaced by zero.

The number of non- zero elements in the value added row of Table 9 also indicates the quality of data. Some industries in certain countries were lost during the processing by the RAS method. These losses are very high in industries 03- coal mining and 04- petroleum and influence negatively the analysis for the energy sector.

The very last column of Table 9. provides information about number of countries, for which the aggregation of the tables in original national industry classification into the 24 industry classification was not perfect. Inconsistencies in the aggregation could also have influenced the results of the regression analysis.

4.4 Dependence of the values of the input and technological coefficients on the output mix.

Following regression equations were tested:

$$(5) \qquad s_{ij} = c^{o}_{ij} + \sum_{n \neq j} c^{n}_{ij} s_n + \sum_{i \in m} c^{m}_{ij} s_m$$

For the coefficients on the main diagonal(for which i= j) a distiction between the second end third term of the equation cannot be made. The equations for the valued added (input) coefficients do not include the third term.

$$(6) \qquad t_{ij} = c^{o}_{ij} + \sum_{n \neq j} c^{n}_{ij} s_n + \sum_{i \in m} c^{m}_{ij} s_m$$

In this case, the equations for value added coefficients do not exist.

In both equations the output mix is measured by value added shares s_n and s_m respectively, which were defined by equation (1) in paragraph 2.

The rasults are presented in Tebles 10 and 11 respectively. Tha selection was made eccording to the F-values. The loweat F- value accepted was aqual to 2.85, which corresponds to 10% probability in the cese of one explanatory veriable.
The figures in Tables 10 and 11 ehould be reed in a way, which will be explained on the exemplé of the input coefficient for the input of energy into the equipment goods industry:

$$s_{36} = 0.082 \underset{(1\%)}{- 0.043}\, e_6 \underset{(5\%)}{- 0.059}\, s_{19} \qquad R^2 = 0.29$$

The value of the coefficient decreases with s_6, i.e. with the shere electricity, gas end water industry in the eargy sector and also with s_{19}, i.e. with the shere of machinery in the equipment goods sector.. Tha firat coefficient ia significant at 1% leval, the second one at 5% level.

A summary of the results ia presented in Table 12. The output mix explains the variability of the input coefficients for the SIMV input- output tables not much batter than GDP per head, number of population and populetion deneity. Threa values of value added coeffificients, 37 values of input coefficients end 38 valuea of tachnological coefficients could be explained by regression equations. One should, however, baar in mind that three SIMV eectors(as well aa value added) are identicel to tha UNIDO industries(agriculture, agri-food processing and construction) and that this type of analysis ia ex ante not applicable to 12 input and to nine technological coeffficients. The average values of tha R^2 ara 25.6 for the input and 25.1 for tha technologicsl coefficients.

The resulta for the technological coefficients ere aomehow "sharper" then for the input coefficienta, the number of explsnatory variables is smallar, but the frequency of coefficienta signifiaant at 1 % level higher.
There are also differencee in coverage by the SIMV aectors, The covarage is very good for the bssic products , light industry and services.

Whst is more important, tha frequency of the particular value added eharee in the equatione is rather different. First of ell, the s_m'e are slightly more frequently represented that the s_n's: 27 againat 25 for the input and 29 againat 22 for the tachnological coefficienta. Thet meena, that tha composition of the input is somehow more important than the composition of the output.
These figures, es well ae coverage by the 24 UNIDO industries, cen be found in Table 13. The coverage is,,ex definitione, nul for induetries 1,2 and 21. It is also nul for industry 20, but $s_{20} = 1 - s_{19}$. One can sae in tha very laat column, that the coverege is very high in the sector 4- basic products (7.9 ceses per industry) and in sector 8- servicaa(6 casaa per industry) and reletively low in sectors 3- energy and 6- equipment gooda.

Table 10. Dependence of the input coefficients on the output mix.

	Agriculture	Agri-Food	Energy	Basic Products	Light Industry	Equipment Goods	Construction	Services
1. Agriculture				0.030 0.21 0.528 S9 1%	0.002 0.32 0.200 S13 1%			
2. Agri-Food Processing			0.000 0.30 0.008 S4 1%	0.018 0.15 -0.035 S12 5%				-0.001 0.14 0.189 S24 5%
3. Energy			0.108 0.12 0.352 S3 10%	0.065 0.49 0.181 S3 1% -0.030 S6 5%	0.028 0.26 -0.057 S16 5% -0.022 S14 10%	0.082 0.29 -0.043 S6 1% -0.059 S19 5%	0.019 0.14 -0.011 S6 5%	0.047 0.27 -0.048 S24 1%
4. Basic Products	0.017 0.14 0.125 S9 5%	-0.005 0.27 0.129 S12 1% 0.062 S7 5%	-0.006 0.22 0.071 S6 1%	-0.019 0.43 0.643 S12 1% 0.593 S10 1% 0.283 S7 5%	0.065 0.41 0.153 S18 1% -0.159 S11 1% 0.126 S12 5%	-0.085 0.37 0.403 S12 1% 0.321 S10 1% 0.177 S7 5%	0.192 0.41 -0.598 S9 1% 0.226 S10 5%	-0.001 0.54 0.043 S9 1% 0.014 S23 1% 0.019 S12 5%
5. Light Industry	0.001 0.33 0.066 S18 1%	0.014 0.14 0.070 S18 5%	-0.001 0.41 0.068 S18 1% 0.014 S5 5%	0.074 0.47 -0.114 S14 1% -0.073 S8 1% -0.063 S12 5%	0.278 0.15 -0.511 S15 5%	0.124 0.31 -0.174 S14 1% -0.176 S16 10%	0.058 0.28 0.241 S18 1%	0.028 0.17 0.042 S18 5%
6. Equipment Goods Ind.			0.009 0.15 0.047 S3 5%	0.007 0.13 0.045 S11 5%				0.008 0.31 0.047 S23 1%
7. Construction				-0.015 0.23 0.044 S7 1% 0.074 S10 1%				-0.002 0.21 0.038 S24 5%
8. Services		0.179 0.11 -0.175 S23 10%	0.072 0.22 -0.127 S4 1% 0.139 S22 10%	0.116 0.11 0.181 S8 10%	0.099 0.11 0.287 S17 10%	0.060 0.19 0.153 S22 5%		
Value Added			0.667 0.14 0.184 S4 5%	0.725 0.44 -0.470 S12 1% -0.462 S10 1%	0.387 0.17 0.676 S15 5%			

(Table 10)

Table 11. Dependence of the technological coefficients on the output mix

	Agriculture	Agri-Food	Energy	Basic Products	Light Industry	Equipment Goods	Construction	Services
1. Agriculture				-0.044 0.25 0.843 S9 1%	0.013 0.31 0.355 S13 1%			
2. Agri-Food Processing			-0.001 0.37 0.045 S4 1%	0.044 0.23 -0.095 S12 1%				-0.008 0.17 0.089 S24 5%
3. Energy			0.593 0.22 -0.348 S6 1%	0.175 0.16 -0.087 S6 5%		0.122 0.10 -0.095 S6 10%	0.038 0.15 -0.022 S6 5%	0.227 0.21 0.226 S24 1%
4. Basic Products	0.166 0.11 -0.300 S11 10%	-0.006 0.31 0.181 S12 1% 0.079 S7 5%	-0.004 0.23 0.185 S6 1%	0.259 0.21 0.667 S12 5%	0.014 0.53 0.319 S18 1% 0.273 S12 1% -0.283 S11 1%	-0.019 0.54 0.866 S12 1% 0.777 S10 1% 0.434 S7 1% -0.324 S19 1%	0.407 0.36 -1.209 S9 1% 0.388 S10 10%	-0.013 0.73 0.138 S12 1% 0.154 S10 1% -0.057 S24 1% 0.069 S7 1% 0.101 S9 1%
5. Light Industry	0.009 0.25 0.193 S18 1%	0.021 0.12 0.094 S18 10%	-0.006 0.49 0.243 S18 1% 0.038 S5 5%	0.102 0.34 -0.263 S14 1% 0.130 S7 1%		0.249 0.20 -0.390 S14 5%	0.117 0.26 0.496 S18 1%	0.053 0.12 0.150 S13 10%
6. Equipment Goods Ind.			-0.025 0.28 0.117 S19 1%	0.007 0.28 0.135 S11 1%	0.012 0.12 0.078 S16 10%			0.036 0.32 0.239 S23 1%
7. Construction				-0.027 0.23 0.090 S7 1% 0.134 S10 1%	0.018 0.10 -0.036 S14 10%			-0.010 0.21 0.168 S24 5%
8. Services	0.145 0.14 0.349 S22 5%	0.260 0.13 -0.274 S23 5%		0.422 0.20 -0.649 S12 1%	0.472 0.23 -0.477 S13 1% -0.525 S18 5%	-0.095 0.24 0.423 S22 5% 0.465 S19 5%		0.603 0.10 -0.307 S23 10%

(Table 11)

Table 12. Characteristics of the equations on the dependence of the input and technological coefficients on the output mix

a. Distribution of the determination coefficients (R^2)

Value of R^2	Number of equations for:		
	a_{ij}'s	t_{ij}'s	total
0.10 - 0.14	10	9	19
0.15 - 0.19	6	3	9
0.20 - 0.24	5	11	16
0.25 - 0.29	5	5	10
0.30 - 0.34	5	4	9
0.35 - 0.39	1	2	3
0.40 - 0.44	5	-	5
0.45 - 0.49	2	1	3
0.50 - 0.54	1	2	3
0.55 - 0.59	-	-	-
0.60 - 0.64	-	-	-
0.65 - 0.69	-	-	-
0.70 - 0.74	-	1	1
total	40	38	78

b. Distribution of probabilities of the F- values

F- value upper limit	Number of variables for:		
	a_{ij}'s	t_{ij}'s	total
- 1%	28	33	61
- 5%	25	13	38
-10%	7	8	15
total	60	54	114

c. Features of the results for particular SIMV sectors

SIMV sector	a_{ij}'s row-wise cases	$\emptyset R^2$	a_{ij}'s column-wise cases	$\emptyset R^2$	t_{ij}'s row-wise cases	$\emptyset R^2$	t_{ij}'s column-wise cases	$\emptyset R^2$
1. Agricult.	2	26.5	2	23.5	2	28.0	3	16.7
2. Agri-food	3	19.7	3	17.3	3	25.7	3	18.7
3. Energy	6	26.2	7	22.3	5	16.8	5	31.8
4. Basic pr.	8	34.9	9	26.9	8	37.8	8	23.7
5. Light ind.	8	28.2	6	23.7	7	25.4	5	25.8
6. Equipment	3	19.7	4	29.0	4	25.0	4	27.0
7. Construct.	2	22.0	3	27.7	3	18.0	3	25.7
8. Services	5	14.8	6	27.3	6	17.3	7	26.6
Value added	3	25.0	-	-	-	-	-	-
Total (Av.)	40	25.6	40	25.6	38	25.1	38	25.1

Table 13.
Frequency of value added shares as explanatory variables for the a_{ij} and t_{ij} coefficients

SITC Sector	UNIDO Industry	a_{ij}'s: i	j	i=j	v_j [2]	total	t_{ij}'s: i	j	i=j [1]	v_j	total	total: i	j	i=j	v_j	total	ø
1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
3	3	1	1	1	-	3	-	-	-	-	-	1	1	1	-	3	
	4	-	2	-	1	3	-	-	1	-	1	-	2	1	1	4	(3.5)
	5	-	1	-	-	1	-	1	-	-	1	-	2	-	-	2	
	6	3	1	-	-	4	4	1	-	-	5	7	2	-	-	9	
4	7	2	1	1	-	4	3	2	-	-	5	5	3	1	-	9	
	8	-	2	-	-	-	-	-	-	-	-	-	2	-	-	2	
	9	3	1	-	-	-	2	1	-	-	3	5	2	-	-	7	
	10	2	1	1	1	5	3	1	-	-	4	5	2	1	1	9	(7.9)
	11	1	1	-	-	2	2	1	-	-	3	3	2	-	-	5	
	12	4	2	1	1	8	4	2	1	-	7	8	4	2	1	15	
5	13	-	1	-	-	1	1	2	-	-	3	1	3	-	-	4	
	14	2	1	-	-	3	2	1	-	-	3	4	2	-	-	6	
	15	-	-	1	-	1	-	-	-	-	-	-	-	1	-	1	(4.5)
	16	1	1	-	-	2	-	1	-	-	1	1	2	-	-	3	
	17	-	1	-	-	-	-	-	-	-	-	-	1	-	-	1	
	18	5	1	-	-	6	4	2	-	-	6	9	3	-	-	12	
6	19	-	1	-	-	1	1	2	-	-	3	1	3	-	-	4	
	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	(8.0)
7	21	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8	22	2	-	-	-	2	2	-	-	-	2	4	-	-	-	4	
	23	1	3	-	-	4	1	1	1	-	3	2	4	1	-	7	(6.0)
	24	-	3	-	-	3	-	4	-	-	4	-	7	-	-	7	
Total		27	25	5	3	60	29	22	3	-	54	56	47	8	3	114	

1) Main diagonal
2) Value added

Table 14. Regression equations for value added shares (s_m, s_n)

UNIDC industry	Intercept	GDP per head	Population	Pop. density	Export share	R^2
1. Agriculture	-	-	-	-	-	-
2. Agri-food	-	-	-	-	-	-
3. Coal mining	-	-	-	-	-	-
4. Petroleum & gas	0.055	-	-	-	1.061 (1%)	0.74
5. Petr. & coal pr.	-	-	-	-	-	-
6. Electricity etc.	0.426	0.110 (5%)	-	-	-	0.15
7. Metal ore mining	0.073	-	-0.291 (5%)	-	1.870 (1%)	0.48
8. Other mining	0.125	-0.036 (5%)	-	-	1.312 (1%)	0.31
9. Paper & products	0.049	0.042 (1%)	-	-	-	0.41
10. Chemicals	0.239	-	0.360 (10%)	-	-	0.11
11. Non- metallic p.	-	-	-	-	-	-
12. Metals	0.120	0.048 (1%)	0.368 (5%)	-	-	0.22
13. Textiles	0.353	-0.064 (1%)	-	-0.075 (5%)	-	0.32
14. Wearing app.	0.288	-0.040 (5%)	-0.508 (5%)	-	-	0.22
15. Wood products	-	-	-	-	-	-
16. Printing & publ.	0.040	0.037 (1%)	-	0.043 (1%)	-	0.47
17. Plastic & rubber	0.115	-	-	0.051 (10%)	-	0.10
18. Metal products	0.082	0.057 (1%)	-	-	-	0.32
19. Machinery	0.479	0.053 (5%)	-	-	-	0.15
20. Transport equip.	0.521	-0.053 (5%)	-	-	-	0.15
21. Construction	-	-	-	-	-	-
22. Trade	0.399	-0.059 (5%)	-0.608 (5%)	-	-	0.19
23. Transport & com.	0.130	-	1.463 (1%)	-	-	0.58
24. Other services	0.588	-	-1.041 (1%)	-	-	0.29

But also the frequency of particulsr UNIDO industriea in the regression equationa is rather uneven. In the energy aector the frequency is rather high for industry 6- Electricity gaa and water, which appeaps very often as the row element and influencea the valuea of coefficienta for the energy input into the other sectora. In the baaic products aector the frequency is very high for industry 12- Metala and alao for industriea 7- Metal ore mining and 10- Chemicals. All these induatries are important row elements. In the light industry sector the frequency is high for industry 18- Metal products, again an important row element. On the contrary , an important column element is industry 24- Other aervices in the aervice sector.

4.5 Dependence of the output mix on GDP per head, population number, populstion density and endowment with natural resources.

The output mix, i.e. the industry composition of the vslue added of particular sectora is again probably dependent on the level of economic development, aize of the country and- also- on the endowment with natursl reaources.
The first three variables were alreddy used in the regression analysis for the input and technological coefficients of the tsbles in the SIMV aectoral clsssification and for the input coefficienta of the tablea in the UNIDO industry classification.
The endowment with natural reaources will be applied to certain industries only and will be meaaured by the exports shares in totsl exports. In particular, following export shares will be used:

SITC 321- Coal and coke ..... Industry 3- Coal mining
SITC 331- Petroleum crude..... Industry 4- Petroleum and gaa
SITC 33 - Petroleum and petroleum products .... Industry 5-Petroleum and coal products
SITC 28 - Metalliferous ore..... Industry 7- Metal ore mining
SITC 27 - Fertilizers and minerals..... Industry 8- Other mining

The values of these shares for the 30 countries of the sample are presented in Table 2.
The snalysis of the intercorrelation of the export shares with the other explanatory variables gsve the following results(regression coefficients R):

SITC	y	p	d
27	-0.2594	-0.0692	-0.1088
28	0.3061	0.1718	-0.1058
321	0.1358	0.1718	-0.1058
33	-0.2918	-0.0393	0.0910
331	-0.2842	-0.0262	-0.0795

The only correlation coefficient which cannot be neglected is that for the relation between between the export share of SITC- 28 (Metslliferous ore) and GDP per head. It equals to 0.3061, the regression equation reads as follows:

$exp_{28} = 0.072 - 0.019\ y$; $R^2 = 0.0937$ (St. error = 0.0661)

F value is equal to 2.895 and just at the limits of significance at 10% probability. This interrcorrelation could have some influence on the regrssion equstion for the share of industry 7.

The results of the regression analysis for the 24 UNIDO industries are presented in Table 14.No results could be- ex definitione- obtained for the industries 1,2 and 21, no results were obtained for industries 5- Petroleum and coal products, 14- Non-metallic products and 15- Wood products. Only linear regression equations were tried.

The most frequent explanatory variable is GDP per capita. The size of the country has an important role in shaping the output mix in the service sector. Out of the five export shares only three appear in the regression equation, the export shares seem to be not the best indicator of endowment with natural resources.

4.6 Brief summary

The results of various analytical calculations were presented in Tables 3 - 13. These data provide the basis for the investigation of factors influencing the values of input coefficients in input- output tables in the SIMV sectoral classification. Regression equations were used for the investigation of the input and technological coefficients of the SIMV tables, for input coefficients of input- output tables in the 24- industry UNIDO classification and for the output composition of the SIMV sectors by the UNIDO industries. Only linear regression equations were applied. The results are valid only for the set of data used, i.e. for standardized input output tables for 1970 for 30 countries. These tables were created on the basis of the data bank of the Bardford University.The reliability of these data is not known. These data also have no direct relation to the regional input- output tables to be used in the SIMV world model.

5. Evaluation of the results of the regression analysis

Evaluation of the results will be carried out by SIMV sectors, both column- and row- wise.

5.1 Agriculture

Sector of agriculture in the SIVM classification is identical to the same industry in the UNIDO classification.

The input coefficients in the column of agriculture are of different size. Four are large coefficients: a_{11}, a_{21}, a_{81} and e_{v1}; three coefficients are small: a_{51}, a_{61} and a_{71}. The variability of most input coefficients (also of the small ones) is relatively small (Table 3).

The values of the input coefficisnts depend of GDP per head- five coefficients (a_{21}, a_{41}, a_{51}, a_{61} and a_{71})increass with the GDP per head, the value added coefficisnt a_{v1} obviously decreases with GDP per head. Density of population has a positive impact on a_{21} and a_{81} , negative on a_{v1} . The size of the country has nsgative impact on a_{v1} only (Table 4).

A shift from input coefficients to technological coefficisnts is made easy by the fact that there is a good regression equation for a_{v1} . It brings important changes in the results, since it provides a regression equation for the intermediary deliveries within the agriculture , i.e. for t_{11}. On the other side most regression equations for the other coefficients, except for t_{21} and t_{71}) are no more significant (Table 5).

A look at the regression equations for the UNIDO industries gives only a partial explanation of the regression equations for the coefficients in the SIMV sectoral classification. The regression equation for a_{41} (basic products) might be due to regression equations for inputs into agriculture form industries 10 and 11 (chemicals and non- metallic minerals), in the light industry there is only one significant,but not very useful result (the intercept as well as the regression coefficient are close to zero) for industry 16 (printing and publishing). The regression equations for the three service industries which form the service sector are good, it seems that in particular trade plays important role (Tables 10, 11 and 12).

The attempt to explain the values of the input coefficients by the output mix of the sectoral inputs into agriculture gave poor results. Significant regression equations were found only for a_{41} and a_{51} as well as for t_{41} and t_{51}. Both coefficients are small. The input and technological coefficient for the input from the light industry to agriculture seems to depend on the share of industry 18 - Metal products, the input from the basic products sector on industries 9- Paper and paper products and 11- Non- metallic minerals alternatively. Relatively good regression equations are available for a_9 and a_{18}, no equation for a_{11} (Table 14).

To sum up : The results would allow to project the values of following coefficients: a_{v1} , a_{21} and a_{81} as well as t_{11}. The remaining coefficients are not very important and most of the regression equations problematic.

The input coefficients from agriculture into other sectors are important in two cases only: for the inputs into the agri- food processing (a_{12}) and into the light industry (a_{15}). The rest is of less importance.

The first coefficient depends on the size of the country and population density, the second one on the GDP per head. Population density explains also the value of the small input cosfficient for the service sector a_{18}. The results for the technological coefficients are rather similar (Tables 4 and 5).

Looking at the regression equations for UNIDO industries one can see, that the input from agriculture into the light industry can be explained by inputs into the textiles and apparel(industries 13 and 14) and the input into the service sector by the input into industry 24- other services (Tables 10,11, and 12). And among the regression equations explaining the input and technological coeffi-

cients one finds s_9 (paper) explaining the input into the basic products and s_{13} (textiles) explaining the input into the light industry.

To sum up: The inputs from agriculture to other sectors are important in two cases only: for the agri- food processing and for the light industry. The former input coefficient depends on the size of country and population density, the latter on GDP per head and is also linked with the inputs of agricultural raw material into the textile industry (which is one of the components of light industry sector). Explanation was also found for the input from agriculture into the basic products sector (due to the inputs into the paper industry) and for services, but both coefficients are rather small.

5.2 Agri- food processing

The sector of agri- food processing in the SIMV classification is identical to the same industry in the UNIDO classification.

The input coefficients in the column of agri-food processing are of different size. Four coefficients are large : a_{12}, a_{22}, a_{82} and a_{v2}, three are small: a_{32}, a_{62} and a_{72}.

The values of the input coefficients depend predominantly on the size of the country and population density. This applies to the value added coefficient (with positive coefficient for d, but low F value) and for the input from services (also positive coefficient for d and better value of F). On the contrary the coefficients of d for the inputs from agriculture and the intra- industry input are negative. The size of the country appears(number of population) only in the equations for a_{12} and a_{22} with opposite signs:there seems to be a shift in favour of inputs from agriculture at the expense of intra- industry inputs caused by the increase in the size of the country (Table 4).

A shift from input coefficients to technological coefficients did not bring profound changes: only the regression equation for a_{22} (with both values of F rather low) disappeared (Table 5).

Detailed regression equations by the 24 UNIDO industries bring very little additional information. The input from services seems to depend on the input from trade, but the regression equation includes three explanatory variables(y,p,d) and the F value of d is the lowest one (Annex).

The analysis of the dependence of the input coefficients on the output mix does not bring much additional clarity too. One can see the input from services to be dependend on the share of transport and communication , but the F value of the coefficient is low and the equation disappears for the technological coefficients (Tables 10 and 11).

To sum up: Regression equations for four large input coefficnts were found. The explanatory variables are density of population and the size of the country respectively, the results are rather difficult to interpret.

Row-wise there are only two important inputs from the agri- food processing sector: into agriculture and the intra- sectoral input. The other input coefficients are small, the agri- food sectors delivers most of the output to final demand. The variation of some of the input coefficients is rather large (Table 3).
The explanation of these small coefficients (the two large coefficients , s_{21} and s_{22} have been already dealt with) was found for the inputs into sector basic products (both for the input and technological coefficient). This input decreases with GDP per head (Tables 4 and 5). The regression equations for the 24 UNIDO industries bring no improvement, there is only one equation for the components of the sector basic products:for non- metallic minerals. The determination coefficient is very high - 0.91- but the number of countries with non - zero elements in this cell is only 9 (out of 30) and the explanatory variable is not y, but p (Tables 8,9 and the Annex).
The regression equations explaining the input coefficients by output mix bring three results (for rather non- important coefficients): the input into the energy sector is linked to the output share of s_4 (petroleum and gas), the input into the basic products sector is linked to s_{12} (metals) and the input into the service sector to s_{24} (other services). The results of regression analysis for the input and technological coefficients are rather similar (Tables 10 and 11).
To sum up: except for the link of the agri-food processing to agriculture and the intra- sectoral inputs the explanation of the inputs from agri-food processing to the other STMV sectors is rather poor But these inputs are not very important.

5.3 Energy

The energy sector is composed of four industries: coal mining, petroleum and gas, petroleum and coal products , electricity, gas and water (Table 1).
Two industries of the energy sector seem to be very negatively affected by the processing of the input- output tables at Bradford. Non- zero values of value added (as well as of other intermediate inputs) are available for 10 countries only in the case of 03- coal mining and for 8 countries only in the case of 04- petroleum and gas (in spite of the fact, that these industries are contained in the original national classifications of the input- output tables). This ommission cannot be explained by inconsistencies between the original national classifications and the UNIDO 24 industry classification- such inconsistencies were found for four countries only (Table 9). This deficiency of the data affects negatively the analysis of the output mix and the regression analysis of the input coefficients at the 24 industry level.
It should not suprise, that the explanation of the composition of the sector by industries(of the output mix) is not good. No regression equations have been found for the shares s_3 (coal mining) and s_5 (petroleum and coal products). The share s_4 (petroleum and gas) depends on the share of exports of these products in total exports(i.e. on the proxy for natural endowment). Only s_6 (electricity, gas and water) is reasonably explained; it increases with GDP per head, but the equation

is no doubt negatively affected by the ommissions of the coal mining and petroleum and gas in 20 and 22 countries of the sample respectively.

In the column of the energy sector there are the following three large coefficients: a_{33}, a_{83} and a_{v3}. The other coefficients are small, their variation often large.

The explanation of the input coefficients by GDP per head, size of the country or population density did not perform well. Out of the three large coefficients the value added coefficient and the intra- sectoral inputs could not be explained, regression equation was found only for the inputs from the service sector: the coefficient increases with population density. But the corresponding technological coefficient could not be explained by the regression analysis.

Relatively good is the regression equation for the small coefficient of the input from construction (Tables 3 and 4).

The regression analysis of the dependence of the input coefficients on GDP per head, size of the country and population density at the 24 industry level gave no better results. Missing information for large number of countries could explain the poor results for industries 03- coal mining and 04 petroleum and gas- and also the negative intercepts in the regression equations.But the results are hardly better for industries 05 - petroleum and coal products and even for 06- electricity, gas and water (Tables 7,8,9 and the Annex).

An attempt to explain the input coefficients by output mix gave slightly better results. The coefficients a_{23}, a_{33}, a_{43}, a_{53}, a_{63}, a_{83} and a_{v3} are dependent on the shares s_3 , s_4, s_5 or s_6 respectively. But one should be very careful in the interpretation of these results. The first two shares appear most frequently and this might be due to the fact, that two thirds of their values are equal to zero. Parallel analysis for the technological coefficients gave different results (Tables 10 and 11).

To sum up: the data on the energy sector are strongly biased by the low quality of the input- output tables used for the analysis. Consequently are the results of the analysis of the dependance of the input coefficients on either GDP per head, size of the country and population density or on the output mix rather poor. This, however, does not prove, that such interrelations do not exist in the real world.

There are only two important inputs of energy into the other sectors:the intra- sectoral input, which was already dealt with, and the energy input into the basic products sector (a_{33}). The variability of all coefficients in the energy sector row is small (Table 3).

The important input coefficient for the input of energy into the basic products sector is explained by GDP per head, size of the country as well as by population density (Tables 4 and 5). This is not suprising, since a parallel analysis at the industry

industry level has explained most of the input coefficients at the intersection of rows of industries 03 - 06 (energy sector) and of columns 07 - 12 (basic products sector). Very well explained are in particular the links between industries 03 and 06 (coal and electricity) on the one side and 10, 11 and 12 (chemicals, non-metallic minerals and metals) on the other side (Table 8 and the Annex). The variability of the electricity input coefficients into industries 09- 18 is exceptionally low (Table 7). These findings are supported by the analysis of the influence of the output mix. The energy input into basic products, equipment goods and construction depends on the electricity share s_6. The output mix of the receiving sectors plays, however, also a rather strong role.The importance of the electricity share s_6 comes out even stronger from the analysis for the technological coefficients (Tables 10 and 11). One can also see, that the electricity share s_6 appears very frequently in the regression equations for the role of the output mix (Table 13).It is positively correlated with GDP per head (Table 14).

To sum up: in spite of the low quality of data on the energy sector, and in particular industries 03- coal mining and 04- petroleum and gas, the energy inputs into other sector seem to be relatively well defined. This is overhelmingly due to the industry 06- electricity. Electricity input coefficients in the other industries have a very low variability, the share of electricity in the energy sector influences the values of energy inputs into other sectors and is linked to the GDP per head.

5.4 Basic products

The basic products sector is composed of six industries: metal ore mining, other mining, paper and paper products, chemicals , non- metallic mineral products and metals. In 10 countries of the sample there were classification inconsistencies for the first two industries (09 and 10), which probably negatively influenced the results of the analysis. (Table 7 and 9).

The regression equations for the industry composition of the sector are relatively good. They show a positive dependence on GDP per capita for paper and paper products as well as for metals and a negative depndence for other mining. The size of the country influences positively the share of chemicals and negatively the share of other mining. The export share (used as proxy for natural endowment) influences the shares of the two mining industries. Only the explanation of the share of non- metallic minsral products is missing (Table 14).

In the column of the basic products sector there are four large input coefficients: a_{34}, a_{44}, a_{84} and a_{v4}. The variability of most input coefficients is small (Table 3).

The results of the analysis of the dependence of the input coefficients on GDP per head, size of the country and population density are rather weak. The value added coefficient is negatively correlated with GDP per head, the intra- sectoral inputs are positively correlated with GDP per head(but the F- velue is rather low) and the inputs from the service sector are positively correleted with population density. The last two results, however, do not come out in the analysis of the technological coefficients(Tables 4 and 5).

The energy input into the basic sector was touched upon above in paragraph 5.3. The reasons for the weak results for the other large coefficients can be understood if one looks at the regression analysis at the 24 industry level In the case of intra-sectoral inputs, only the inputs from non- metallic minerals could be well explained. The value added coefficient could be explained only for industry 07- metal ore and industry 11- non- metallic minerals. On the other side, the regression analysis for the transportation inputs into the industries of the basic products sector gave very good results. These inputs depend predominantly on the size of the country and on population density. (Tables 7,8,9 and the Annex).

The analyis of the dependence of the input coefficients in the column of the basic products sector has shown that two sectoral shares influence the intra- sectoral inputs and the value added coefficient. These are s_{10}- chemicals and s_{12} - metals. The impact on these two input coefficients is complementary, both shares are positively correlated with the intra- sectoral inputs and negatively with the value added coefficient. It could be very well a consequence of differences of the statistical treatment of intrasectoral flows in national input- output tables as well as of the aggregation of national tables of different size into the SNV classification framework.The analysis of the technological coefficients has shown only the influence of s_{12} on the intra- sectoral flows (Tables 10 and 11). Nevertheless, the shares of chemicals and metals, i.e. s_{10} and s_{12} appear rather frequently in the regression equations . Both are positively correlated with GDP per head, and the share of chemicals is also positively correlated with the size of the country (Table 14).
To sum up: the results of the analysis of the inputs into the basic products sector did give much satisfactory results. Good explanation was found only for the inputs from services and for the value added coefficients. The investigation of the role of the output mix has indicated the importance of the shares of chemicals and of metals respectively.

In the row of the basic products sector there are four important inputs: a_{44}, a_{45}, a_{46} and a_{47}; i.e the intra- sectoral inputs and inputs into the light industry sector, equipment goods industry sector and into construction. The variation of the coefficients in the basic products row is relatively small (Table 3).
The input into the light industry is linked with GDP per head (but the F- value of the regression coefficient is rather low); the input into the equipment goods sector is linked to the size of the country; the input into construction is negatively correlated with GDP per head. The parallel analysis of the technological coefficients has shown in the last case dependence on population density ;what makes the interpreation of the inputs into construction rather difficult(Tables 4 and 5).

The regrssaion analysis at the 24 industry level shows, that the inputs from the basic products sector to other sectors are predominantly determined by inputs from the following two industries: 09- papsr and paper products and 11- non- metallic mineral products. The firat case reflecta the demand on packing matsriel, the inputs depend positively on GDP per capita. The aecond case reflects inputs from the cement industry(building maintenance), the level of the inputs is positively correlated to the aize of the country. Both relstions can be economically easily understood (Table 8). It is also intereating to note, thet the variebility of the inputs from 09 to other industries is relatively small (Table 7).
In the explanation of inputs from the basic products aector to other aectors by output mix the same two shares as in the explanation of the input structure of the basic produca sector prevail. These are s_{10} - chemicals and s_{12} - metals. Parallel analysis for the technological coefficients confirmed this relation (Tables 10 and 11).

To sum up: the inputs from the baeic products sector to other aector , and in particular the important inputs, can be rather well explained by GDP per head, size of the country on the one aide end the output mix on the other side. In ths former case the relstion is mainly given by the inputs from the paper and non- metallic minerals industrise, in ths latter case, the shares of chemicals and metals play the main role.

5.5 Ligh industry

The light industry aector is composed of aix UNIDO industries: tsxtiles, wearing apparel, wood producta, printing and publishing, plastic and rubber and metsl producta. The explanation of the composition of this sector is rather good. Four industry shares sre depsnded on the GDP per hesd; two positively- printing and publishing snd metal producta-,two negetivsly- textiles snd wearing apparel.A negative dependence on population number was found for the share of wesring apparel, Population density enters three regression equations: with nsgstive sign for textiles, with positive eign for printing and publishing and plastic snd rubber. Contrsry to the role of the GDP per hesd is the role of the size of the country and of the population density not easy to undsretand (Table 14).

Thers are five important inputs into the light industry: a_{15}, a_{45}, a_{55}, a_{85} and a_{v5}; i.e inputs from sgriculture, basic products, serviess, ths intra- sectoral inputs and valus added. The rsmaining three inputs are small, the variation in general low (Table 3).

Only three importsnt inputs could be explained by GDP psr head, aize of the country or population density. No explanation was found for the value added coefficient snd for the intra- aectoral inputs. The explanatory variable for a_{15} and a_{45} is GDP per

hesd, for a_{85} tha population density. Thesa ralatione were confirmad by the anslysis for the technological coefficients (Tables 4 and 5).

The anslysis at 24 industry level helps to undarstand better the results at the 8 sector level. The inputs from agriculture are shaped msinly by inputs into industries 13- textilea and 14- wearing appparel (see also paragraph 5.1). The inputs from the basic productа sector are shaped mainly by inputs from 09- paper and paper products and 11- non- metallic mineral products.(See also paragraph 5.4). The inpute from the aarvice sector sre shaped mainly by trade and transportation margina, i.e. by industrias 22 and 23. It is however difficult to underatand, thst no ragression equation was found for the intraaectoral inputs a_{55}, since at the industry level 16 input coafficients (out of 36) could be explained by GDP per head, size of the country or populstion denaity. Particularly good is the explanation of coefficients in the row and colùmn of 16- printing and publishing and in the column of 18- metal productа (Tables 7,8,9 and the Annex).

Some sdditionsl informstion of the input structure is provided by the analysis of the influence of the output mix. In the output mix, the share of 15- wood products, plsys a strange role. It is positively corralated to vslua added coafficient and negativsly to the intra- sectoral inputs. Thie complementary impact(which csn also be due to methodological differencea in the treatment of flowa on the main diagonal), is of little analytical use, since no regression aquation hss been found for the explanatory varieble, i.e. for a_{15}. The equation for the inputs from agricultura only confirms tha decisive rola of tha taxtiles- a_{13}. The input from the bssic products sector is ahsped by metal processing, it depends both on the share of the delivering industry 12- metals sa wall as the share of the receiving industry 18- metal products.

Row- wise there are only thraa important inputs from the light industry sector: a_{55}, a_{56} and a_{57}; i.e. the intrasectorsl inputs, inputs into the equipment goods sector and into construction (Table 3).
Nome of these important coefficients could be explsined by GDP per head, size of the country or population density, but the regressaion analysis gsve good resulta for the other, small coafficients in the row of the light industry sector. Anslysis of technologicsl coefficients did not bring any substantial improvement (Tables 4 and 5).
The explanation of these poor results can be seen in the pattern of the results of the investigation at tha 24 industry level. The six industries of which the light industry sector is composed fall clearly into two groups: One group consists of industries 13- 15 (textiles, wearing apparel and wood products), delivering mainly for tha final demand. The explantion of their intermediate inputs into the other industries is rather poor. Tha other group consists of industries 16- 18 (printing, plaetic & rubber end metal productа). Their intermediate inputs into the other industries(and in particular the inputs from printing and publishing)

are rather often explained by the regression equations. These inputs depend mainly on GDP per head (for printing and publishing and metal products) or on the size of the country (plastic, rubber). In the latter case the result is probably influenced by the inclusion of ISIC 390- other industries, into industry 17- plastic and rubber (Tables 1,7,8,9 and the annex).

The investigation of the dependence of inputs from the light industry sector on the output mix gave rather clear results. The two most important shares are those of metal products- s_{18} and of wearing apparel -s_{14}. They both depend on GDP per head, the former positively and the latter negatively. The share of wearing apparel is also negatively correlated with the size of the country (Tables 10, 11, 13 and 14).

To sum up: It was possible to explain a few inputs into the light industry sector, in particular those from agriculture and from basic products. At the industry level these inputs are shaped mainly by inputs of agricultural raw materials into textiles and by inputs of metals into metal products. The inputs from the light industry to other sectors are non- homogenous. They can be very well determined for three out of the six industries forming the light industry sector and very badly for the other three industries. The two industries which shape these inputs are 16- printing and publishing and 18- metal products.

5.6 Equipment goods

The sector of equipment goods consists of two industries: 19- machinery and 20- transportation equipment (Table 1). The share of the latter industry decreases with GDP per head (Table 14).

There are five important inputs into the equipment goods sector: s_{46}, s_{56}, s_{66} and s_{v6}; i.e. inputs from basic products, light industry, services, the intra-sectoral inputs and value added (Table 3).

The attempt to explain the input structure by GDP per head, size of the country or population density gave rather poor results. Only the intra- sectoral inputs (among the important coefficients) could be explained by GDP per head, the result was confirmed by the analysis for the technological coefficients (Tables 4 and 5).

The analysis at the 24 industry level allows to see the reasons for those disappointing results. For both industries 19 and 20 no explanation of value added coefficient was found. The inputs from the basic products sector could be explained for industries 09- paper and paper products, 10- chemicals and 11- non- metallic minerals. The inputs from the light industry sector could be explained for half of the industries only, the results confirm the finding about the non- homogenity of the output of this sector. Among the inputs from

from the service sector, only tha trensportstion inputs were expleined (Tables 7,8,9 end snnex).

Tha snslysis of the impact of the output mix has shown, thst threa important inputs into the equipment goods sector can be explained by the output mix of the delivering sectors. Inputs from the sector of basic products depend on the shares s_{10} and s_{12} (chemicals snd metals- ses also paragraph 5.4), inputs from the light industry on s_{14} snd s_{16} (wearing spparell snd printing and publishing- see also paragraph 5.5) and inputs from the servics sector on s_{22} (trada). The parsllel analysis for the technological coefficients brings similar results, the only change is ths role of the share s_{19} (machinsry), which explains the inputs from basic products and service sectors (Tables 10 and 11).

To sum up: the explanation of the input structure of the equipment goods sector by GDP per head, size of the country or population density is rather weak, but the explanetion by the output mix of certain delievering sectors gives rslatively good results.

The inputs from the equipment goods induatry to othar sectors sre not important (only the intra- sectorsl input coefficient s_{66} is large). Nevertheless, most of the small coefficients in the row of the equipment goods sector(and also most smell corresponding technological coefficients) can be very well explained by regression equations. The most frequent explanatory variable is GDP per head. This reflects the growing importance of equipment maintenance in the proceas of economic development (Tsbles 4 and 5).

Perallel snalysis et the industry level shows, thst this spplies mainly to industry 19- machinery (Tables 8,9 snd snnex).

The sttempt to explain the inputs from the equipemnt goods sector into tha other sectors geve good results only for energy(tha explanatory share is the s_3 , i.e. coal, which is s dubious indicator- ase paragraph 5.3), basic products (the explanatory variable is s_{11} , which cannot be explained by GDP per head, size of the country or population dansity) and services (the explsnatory vsriable is s_{23}- tranaport). Only the last interrelstion makes sense (Tsbles 10,11 and 14).

To sum up: the delivariss from the equipment goods sector to other sectors are not vsry important, but can be eesily explained by ths GDP per head. Thsy reflect the incrsase of the importsnce of repairs snd maintensnce of plant snd machinery in the process of economic development.

5.7 Constructien

The sector conatruction in the SIMV clasaification is identical to the industry 21- construction in the UNIDO classificstion.

There are four importsnt inputs into conatruction: s_{47},s_{57},s_{87} and s_{v7} ; i.s. inputs from basic products, light industry , services snd value sdded.(Table 3).

Only one important input coefficient could be explained by regression to GDP per head: a_{47}. It is negatively related to the per capita income, this relation was confirmed by the snalysis for the technological coefficients (Tsblee 4 and 5). Parallel analyais at the 24 industry level shows, that this is due to similsr regression for inputs from other mining and psper, but supriaingly, not from non- metsllic minerals. The inputs from induatries forming the light industry sector show the non- homogenity again (see also paregraph 5.5) the inputs from the equipment goods sector are determined for 19- machinery (Tables 7,8,9 and ennex).

The results of analysis of the role of the output mix are equally poor. Again, explanation of a single important coefficient , of a_{47} was found. Its value is agsin strongly determined by the share of paper and paper products- s_{10}. This relation is not essy to interpret (Tsbles 10 and 11).

To sum up: the explanation of the input structure of the sector construction is rather poor. Only one important input, that from the basic products sector, could be explsined, but even this explanation is not easy to interpret.

The inputs from construction into the other sectors are, in general, not important. Even the intra- sectoral inputs are , compsred to other sectors, rather small, but this is probably the consequence of the lack of more detailed clasaification of the construction sector in most input- output tsbles (Table 3).

Neverthelers,most inputs from construction into the other sectors could be well explained by the regression analysis, snd in particular by the level of GDP per head. Parallel analysis for the technological coefficients confirms these results (Tables 4 and 5). Analysis of the snme relation at the industry level runs in the aame direction (Tables 7,8,9 and annex). The explanetion is the same as for the equipment gooda sector, the results show the increasing importance of building msintenance at higher levels of economic development.

The attempt to explain the inputs from construction by output mix gave much worse results (regressions are, of course, ex ante excluded for a_{71}, a_{72} snd a_{77}). The delieveries to the basic products sector depend on the share s_7 - metal ore mining and s_{10} - chemicals(the former shsre is rather dubious due to large number of aggregation inconsiatencies (Table 8); the inputs into the service sector on s_{24} - other services (Tables 10 snd 11).

It is easy to sum the results: the inputs from the construction sector to other sectors are not very important, but can be esaily explained by regression to GDP per head.

5.8 Servicea

The service aector is compoeed of three industries: 22- trade, 23- trseportstion and communication end 24- other aervices. The composition of the service sector can be quite well explsined by the size of the country: the share of transportation and

communications is increasing with the size of the country at the expense of the shares of trade and other services. The share of trade is also negetively related to the GDP per head (Teble 14).

The only two important inputs into the service sector are the intra- sectoral inputs and the value added, all other inputs are small, but have a relatively low variation. The value added coefficient is almost a constant (Table 3).

But the regression analysis allows to explain the values of the small input coefficients only, the prevailing explanatory variables are size of the country and GDP per head. Parellel analysis for the technological coefficients brings a good explanation for the intra-sectoral inputs and stresses the importance of the size of the country as explanatory variable (Tables 4 and 5).

Regression analysis at the industry level helps to understand the result at the sectoral level. Transport and communicetions is both responsible for the good results for the intermediate inputs and for the bad result for the value added. In the latter case an assumption of constancy could be good hypothesis(Tables 8,9 and annex)

An attempt to explain the inputs into the service sector by output mix gave similar results: good equations for the small coefficients, bad equations for the two important coefficients. Only the technological coefficient for the intra- sectoral flows can be expleined (but the F value is rather low). The output mix is in most cases represented either by s_{23} - transport and communications or by s_{24} - other services (Tables 10 and 11).

To sum up: the important inputs into the service sector cannot be expleined, the less important inputs can bs easily explained by GDP per head, size of the country as well as by the shares of transport and communications or of other services.

All inputs of the service sector to the other sectors are important, the average values of the input coefficients in the service sector row are in the intervel between 0.075 (agriculture) to 0.135 (light industry). Their variation is rather small (Table 3).

Five of these input coefficients can be expleined by regression anslysis, the predominant explanatory variable is population density. A parallel analysis of technological coefficients gave, however, much less satisfactory reaults. (Tables 4 and 5).

The reasons of the results of the analysis at the sectoral leval can be found in the results of the investigation at the industry level. The best explanetion was found for the inputs of 23- transportation and communication (18 coefficients out of 24). These coefficients are strongly dependend both on GDP per head and the population density (Tables 7,8,9

The attempt to explain the inputs from the service sector gave results, which are only partly good. The shares of 22 (trade) and 23 (transportetion and communication) prevail, the share of 24(other services) plays no role either for the input or for the technological coefficients (Tables 10 and 11).

To sum up: the inputs from services to the other sectors can be relatively well explained by the population density, less well by the output mix. In both cases the transportation and communication plays an important role.

5.9 Value added

All value added coefficients are important coefficients. Their average values range from 0.228 (agri- food processing) to 0.769 (services). Their variation is very small (Table 3).

The small variation might be one of the reasons, why the attempts to explain the value added coefficients by various regression equation gave results which are not very satisfactory and which also make the use of the technological coefficients difficult (values of technological coefficients can be determined only if the value added coefficients are known.).

The results of calculations were already dealt with in paragraphs 5.1 - 5. 8, but will be briefly summarized again.

a_{v1} (agriculture) : the value of the coefficient is decreasing with GDP per head and also with population density (Table 4).

a_{v2} (agri- food processing): the value of the coefficient is increasing with population density (Table 5).

a_{v3} (energy): the value of the coefficient is increasing with the share of industry 4- petroleum and gas (Table 10). The value added coefficient of industry 4 depends on the size of the country (Annex).

a_{v4} (basic products): the value of the coefficient is decreasing with GDP per head (Table 4) and also with the shares of industries 10 - chemicals and 12- metals. The value of the coefficient at the industry level could be determined only for industries 7- metal ore mining and 11- non- metallic mineral products (Annex).

a_{v5} (light industry) :the value of the coefficient depends on the share of industry 15- wood products (Table 10). The share of industry 15 in sector 5 could not be explained (Table 14). At the industry level, the value added coefficients could be explained only for industries 15- wood products and 17-plastic and rubber products. They depend both on the size of the country, the latter coefficient depends also on population density (Annex).

a_{v6} (equipment goods industry): No explenation of the value added coefficients both at the sectoral and industry level was found.

a_{v7} (construction): No explanation of the value added coefficient was found.

a_{v8} (services): No explanation of the value added coefficient at the sectoral level was found. At the industry level, value added coefficients for 22- trade and 24 - other services could be explained. , They both depend(negatively) on the size of the country, the latter coefficient depends also(negatively) on GDP per head.(Annex). The very small variation of a_{v8} allows the hypothesis, that the value added coefficient is almost constant.

6. Very tentative conclusions

The variability of input- output coefficients was investigated for a sample of 30 countries which differ in the level of economic development (measured by GDP per capita) size (measured by the number of population)and population density (Table 2) National input- output tables, adjusted at the Bradford University to the 1970 output levels, were the only source of data. These tables were aggregated first into a 24- industry framework and , in the next step, into a 8- sector SIMV framework (Table 1). Details about the adjustment procedures carried out at Bradford are not known, the quality of data is probably not very good (at least of the data on two industries of the energy sector).

In spite of the problematic data quality the investigation provided several interesting and reasonabl results. Since, however, a similar investigation for a similar set of data was never carried out, it is difficult to assess how good and important these results are.

The input coefficients of the 8- sectors SIMV input- output table are of different size and can be divided into the following three groups: into 26 " large", 18 " medium size"end 28 " small" coefficients (Table 3). The large coefficients are concentrated in three parts of the SIMV table: On the main diagonal, in the row of the service sector end in the value added row. The remaining large coefficients allow to locate the following important intersectoral relations: (i) between agriculture and agri-food processing- a_{12} and a_{21};(ii) between agriculture and the light industry- a_{15}(in fact a link to industry 13- textiles); (iii) between energy and basic products- a_{34}; (iv) between basic products on the one side and light industry(in fact a link between metals and metal products), equipment goods and construction on the other side- a_{45}, a_{46} and a_{47}.

The following results are of certain interest:

A. The variability of the input coefficient is decreasing with their size. It is very low for the value added coefficients, and in particular for the value added coefficient of the service sector, which can be held for constant. The variability of input coefficients at the 24 industry level is very low for the inputs of industry 06- electricity into the other industries- the electricity input coefficients can be held for a kind of " technological constant". This is also true, but to lesser degree , for inputs from industries 09- paper and paper products and 10- chemicals (Tables 3 and 7).

B. A number of coefficients can be explained by GDP per capita, size of the country or population density. This is in particular true in the following cases:

1. GDP per capita:

(i) The need for maintenance and repairs of fixed capital is increasing with GDP per capita. Consequently, the inputs from sectors equipment goods(and in particular from industry 19- machinery) into other sectors are increasing with GDP per capita.

(ii) The inputs from the sector basic products to other sectors are increasing

with GDP per capita. This is mainly due to industries 09- paper and paper products and 12- metals. Inputs from these industries into the other industries increase with GDP per capita, the same is true for the shares of these industries on the output mix (Tables 8 and 14).

(iii) The intermediate inputs into agriculture increase, the value added(input) coefficient decreases with GDP per capita (Table 4).

(iv) The pattern of the light industry sector changes: the shares of industries 16- printing and publishing and 18- metal products increase, the shares of industries 13- textiles and 14- wearing apparel decrease with GDP per capita. The inputs from the former two industries into the other industries increase with GDP per capita (Tables 8 and 14).

2. Size of the country:

(i) The inputs into the service sector increase with the size of the country. This is mainly due to the inputs into 23- transportation. The pattern of the output mix also changes, the share of trasporation increases with the size of the country at the expense of both 22- trade and 24- other services (Tables 4,8 and 14).

(ii) The inputs from the industry 11- non- metallic minerals (mainly cement) into other industries increase with the size of the country. The same is true, to a lesser degree, for industry 13- plastic & rubber(inclusive other manufacturing). The latter relation cannot be so easily interpreted (Table 8).

3. Population density

(i) The inputs from the service sector into most other sectors increase with population density. This relation holds also for the three industries of which the service sector is composed (Tables 4 and 8).

C. A number of coefficients depend on the output mix. The following cases are of interest:

(i) In the energy sector, the share of 06- electricity influences the inputs from the energy sector into other sector. This might be due to the relative stability of the energy input coefficients (Tables 7,10 and 14).

(ii) In the basic product sector, the share of 12- metals has strong impact both on the inputs into and the outputs from this sector(Tables 10 and 14).

(iii) In the light industry sector , the share of 18- metal products has a strong impact on the inputs from the sector to other sectors(Tables 10 and 14).

Annex - Regression equations for the input coefficients for the 24 UNIDO industries

Agriculture, Agri- food processing

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	01	-	-	-	-	-
02		0.007	0.033 (1%)	-	0.036 (5%)	0.37
03		-0.000	0.000 (5%)	-	-	0.15
04		-	-	-	-	-
05		-	-	-	-	-
06		0.001	0.002 (1%)	-	-	0.53
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		0.015	0.008 (5%)	-	-	0.14
11		-0.001	0.001 (1%)	0.008 (10%)	-	0.26
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		-0.000	0.000 (1%)	-	-	0.31
17		-	-	-	-	-
18		-0.002	0.003 (5%)	-	-	0.17
19		0.002	0.004 (5%)	-	-	0.18
20		-	-	-	-	-
21		0.000	0.005 (1%)	-	-	0.27
22		0.029	-	-	0.066 (1%)	0.49
23		0.010	-	-	0.008 (1%)	0.19
24		0.010	0.009 (5%)	-	-	0.18
01	02	0.338	-	0.588 (5%)	-0.097 (5%)	0.27
02		0.157	-	-0.203 (10%)	-0.030 (10%)	0.16
03		-	-	-	-	-
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		-	-	-	-	-
11		0.001	0.001 (5%)	0.020 (5%)	0.005 (1%)	0.68
12		-	-	-	-	-
13		0.006	-0.002 (10%)	-	-	0.12
14		0.001	-	-	0.004 (1%)	0.64
15		-	-	-	-	-
16		-	-	-	-	-
17		0.000	0.001 (1%)	0.020 (1%)	-	0.43
18		0.909	-	-	0.007 (10%)	0.11
19		0.001	0.001 (10%)	-	0.006 (1%)	0.42
20		-	-	-	-	-
21		0.002	0.001 (10%)	-	-	0.10
22		0.107	-0.026 (1%)	-0.190 (1%)	0.044 (10%)	0.29
23		-	-	-	-	-
24		-	-	-	-	-

Annex (cont) Coal mining , Petroleum and gas

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	03	-	-	-	-	-
02		-	-	-	-	-
03		-0.010	0.013 (5%)	0.152 (1%)	-	0.20
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-0.000	0.000 (10%)	-	-	0.10
09		-0.000	0.000 (5%)	-	-	0.19
10		-	-	-	-	-
11		-0.002	0.001 (1%)	0.068 (1%)	-	0.89
12		-	-	-	-	-
13		-	-	-	-	-
14		-0.000	0.000 (10%)	-	-	0.10
15		-	-	-	-	-
16		-0.000	0.000 (5%)	-	-	0.16
17		0.000	0.063 (1%)	-	-	0.64
18		-	-	-	-	-
19		-	-	-	-	-
20		-	-	-	-	-
21		-0.001	0.004 (5%)	-	-	0.17
22		-	-	-	-	-
23		-0.006	-	0.072 (1%)	-	0.79
24		-	-	-	-	-
01	04	-	-	-	-	-
02		-	-	-	-	-
03		-	-	-	-	-
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		-	-	-	-	-
11		-0.003	-	0.153	-	0.92
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		-	-	-	-	-
17		-0.003	-	0.153	-	0.92
18		-	-	-	-	-
19		-	-	-	-	-
20		-	-	-	-	-
21		-	-	-	-	-
22		-	-	-	-	-
23		-	-	-	-	-
24		-	-	-	-	-

Annex (cont.) Petroleum and coal products, Electricity, gas and water

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	05	-	-	-	-	-
02		-0.000	0.001 (10%)	-	-	0.13
03		0.002	0.009 (10%)	-	-	0.10
04		0.010	-	0.532 (1%)	-	0.31
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		-0.002	0.004 (10%)	-	-	0.10
10		-	-	-	-	-
11		0.001	-	0.080 (1%)	-	0.56
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		-0.000	0.002 (10%)	-	-	0.12
17		-0.000	-	0.084 (1%)	-	0.63
18		-0.001	-	0.208 (1%)	0.017 (1%)	0.57
19		-	-	-	-	-
20		-	-	-	-	-
21		-	-	-	-	-
22		-	-	-	-	-
23		-	-	-	-	-
24		-	-	-	-	-
01	06	-0.000	0.000 (10%)	-	-	0.13
02		-	-	-	-	-
03		0.018	-	0.200 (5%)	-	0.20
04		-	-	-	-	-
05		0.051	-0.012 (5%)	-	0.361 (5%)	0.26
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		0.002	-	-	0.006 (1%)	0.64
11		-	-	-	-	-
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		0.001	0.000 (5%)	-	-	0.21
17		-	-	-	-	-
18		-	-	-	-	-
19		0.014	-	-	0.009 (10%)	0.10
20		-	-	-	-	-
21		0.004	0.012 (5%)	-	-	0.18
22		-	-	-	-	-
23		0.008	0.003 (10%)	-	-	0.12
24		-	-	-	-	-

Annex (cont.) Metal ore mining , Other mining

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	07	-	-	-	-	-
02		-	-	-	-	-
03		-	-	-	-	-
04		-	-	-	-	-
05		0.031	-0.011 (5%)	-	-	0.20
06		-	-	-	-	-
07		-0.003	0.021 (10%)	-	-	0.07
08		-	-	-	-	-
09		-	-	-	-	-
10		-	-	-	-	-
11		-0.004	0.003 (1%)	0.062 (1%)	-	0.65
12		0.002	0.002 (10%)	-	-	0.07
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		0.000	0.000 (10%)	-	-	0.07
17		0.000	-	0.005 (1%)	-	0.80
18		-	-	-	-	-
19		-	-	-	-	-
20		-	-	-	-	-
21		-	-	-	-	-
22		-	-	-	-	-
23		-0.048	-	3.326 (1%)	-	0.90
24		-	-	-	-	-
01	08	-	-	-	-	-
02		-	-	-	-	-
03		-	-	-	-	-
04		-	-	-	-	-
05		0.028	-0.006 (10%)	-	-	0.07
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		-	-	-	-	-
11		0.001	-	0.054 (1%)	-	0.49
12		-	-	-	-	-
13		-	-	-	-	-
14		0.000	-	0.010 (1%)	-	0.26
15		-	-	-	-	-
16		-0.000	0.001 (10%)	-	-	0.10
17		0.000	-	0.041 (1%)	-	0.76
18		-	-	-	-	-
19		-	-	-	-	-
20		-	-	-	-	-
21		-	-	-	-	-
22		-	-	-	-	-
23		0.015	-	0.762 (1%)	-	0.57
24		0.017	-	-	0.018 (5%)	0.15

Annex (cont) Paper and paper products, Chemicals

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	09	0.005	0.019 (5%)	-	-	0.16
02		-	-	-	-	-
03		0.001	-	0.063 (1%)	-	0.67
04		-	-	-	-	-
05		0.019	-0.004 (10%)	-	-	0.11
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		0.025	-	0.128 (1%)	-	0.32
11		-	-	-	-	-
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		0.003	0.003 (10%)	-	-	0.10
17		-	-	-	-	-
18		0.002	0.002 (10%)	-		0.12
19		0.005	0.003 (5%)	-	0.005 (5%)	0.21
20		0.001	0.001 (10%)	-	-	0.10
21		0.001	0.002 (5%)	-	-	0.20
22		0.057	-	-	0.046 (5%)	0.17
23		0.024	-	-	0.016 (5%)	0.19
24		0.036	-	-	0.018 (10%)	0.12
01	10	-	-	-	-	-
02		-	-	-	-	-
03		0.001	-	0.016 (5%)	-	0.17
04		-	-	-	-	-
05		-	-	-	-	-
06		0.009	0.010 (1%)	-	-	0.37
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		-	-	-	-	-
11		0.007	0.092 (1%)	-	-	0.45
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		0.004	-	0.019 (10%)	-	0.12
16		-	-	-	-	-
17		0.001	0.003 (1%)	0.090 (1%)	-	0.56
18		0.001	0.006 (1%)	-	0.020 (1%)	0.67
19		0.001	0.003 (1%)	-	0.004 (5%)	0.29
20		0.000	0.001 (10%)	-	-	0.11
21		0.001	0.003 (1%)	-	-	0.26
22		0.053	-	-	0.050 (5%)	0.20
23		0.013	0.007 (5%)	-	0.013 (5%)	0.26
24		0.047	-	-	0.030 (5%)	0.19

Annex (cont.) Non-metallic mineral products, Metals

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	11	-	-	-	-	-
02		-0.001	-	0.056 (1%)	-	0.91
03		0.005	-	0.038 (5%)	-	0.15
04		-	-	-	-	-
05		-	-	-	-	-
06		0.024	-	-	.009 (10%)	0.12
07		-	-	-	-	-
08		0.043	-0.011 (10%)	-	-	0.12
09		0.015	-	-	0.011 (1%)	0.28
10		-	-	-	-	-
11		0.036	0.015 (10%)	-	-	0.10
12		-	-	-	-	-
13		0.001	-	0.045 (1%)	-	0.44
14		-	-	-	-	-
15		0.002	0.001 (5%)	-	0.002 (5%)	0.24
16		-0.000	0.002 (1%)	-	-	0.31
17		0.002	-	0.065 (1%)	-	0.65
18		0.000	0.002 (5%)	0.081 (1%)	-	0.63
19		0.004	0.004 (10%)	0.078 (1%)	0.012 (1%)	0.4E
20		-	-	-	-	-
21		0.004	-	0.249 (1%)	-	0.70
22		-	-	-	-	-
23		0.043	-	0.240 (1%)	-	0.26
24		-	-	-	-	-
01	12	-	-	-	-	-
02		-	-	-	-	-
03		-0.000	-	0.080 (1%)	-	0.79
04		-	-	-	-	-
05		-	-	-	-	-
06		0.012	0.009 (1%)	-	0.013 (5%)	0.31
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		0.005	0.003 (10%)	-	-	0.10
11		-0.001	0.003 (1%)	0.037 (1%)	-	0.42
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		0.000	0.001 (5%)	-	-	0.21
17		0.001	-	0.031 (1%)	-	0.63
18		-	-	-	-	-
19		0.004	0.010 (1%)	-	-	0.25
20		0.003	-	-	0.014 (1%)	0.30
21		-	-	-	-	-
22		-	-	-	-	-
23		0.028	0.170 (1%)	-	-	0.22
24		0.024	-	-	0.063 (1%)	0.56

Annex (cont.) Textiles, Wearing apparel

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	13	0.128	-0.034 (5%)	-	-	0.14
02		-	-	-	-	-
03		0.000	-	0.005 (1%)	-	0.22
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		0.002	0.002 (5%)	-	0.008 (1%)	0.39
10		-	-	-	-	-
11		0.000	-	0.005 (1%)	-	0.40
12		-	-	-	-	-
13		-	-	-	-	-
14		-0.001	0.004 (10%)	-	-	0.11
15		-	-	-	-	-
16		0.001	0.002 (1%)	-	-	0.22
17		-	-	-	-	-
18		-	-	-	-	-
19		-	-	-	-	-
20		-	-	-	-	-
21		0.002	0.002 (10%)	-	-	0.10
22		0.054	-	-	0.044 (5%)	0.17
23		0.016	0.023 (1%)	-	-	0.41
24		-	-	-	-	-
01	14	0.019	-	0.310 (1%)	-	0.31
02		-	-	-	-	-
03		-	-	-	-	-
04		-	-	-	-	-
05		4	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		0.007	-	-	0.004 (5%)	0.16
10		-	-	-	-	-
11		-0.000	-	0.032 (1%)	-	0.74
12		-	-	-	-	-
13		-	-	-	-	-
14		0.080	-	0.322 (1%)	-	0.27
15		-	-	-	-	-
16		-	-	-	-	-
17		-	-	-	-	-
18		0.003	-	-	0.004 (1%)	0.35
19		-	-	-	-	-
20		-	-	-	-	-
21		0.000	0.002 (1%)	-	-	0.24
22		0.133	-0.033 (5%)	-	-	0.15
23		-	-	-	-	-
24		0.034	-	-	0.023 (10%)	0.10

Annex (cont.) Wood products, Printing and publishing

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	15	-	-	-	-	-
02		-	-	-	-	-
03		-	-	-	-	-
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		-0.001	0.003 (1%)	-	-	0.54
10		-	-	-	-	-
11		-0.000	0.001 (1%)	0.058 (1%)	-	0.79
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		-0.000	0.001 (1%)	-	-	0.37
17		0.007	-	0.045 (5%)	-	0.19
18		-	-	-	-	-
19		-	-	-	-	-
20		0.001	0.001 (10%)	-	-	0.10
21		-	-	-	-	-
22		-	-	-	-	-
23		0.029	-	-	0.028 (1%)	0.27
24		-	-	-	-	-
01	16	-	-	-	-	-
02		-	-	-	-	-
03		-0.000	0.001 (10%)	-	-	0.12
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		-	-	-	-	-
11		-0.000	-	0.017 (1%)	-	0.91
12		-	-	-	-	-
13		0.001	-	0.007 (10%)	-	0.10
14		0.000	0.001 (10%)	-	-	0.11
15		0.000	-	0.008 (1%)	-	0.47
16		0.010	0.020 (5%)	-	-	0.16
17		-	-	-	-	-
18		-	-	-	-	-
19		0.004	-	-	0.007 (1%)	0.34
20		0.000	0.001 (10%)	-	-	0.12
21		0.000	0.002 (5%)	-	-	0.20
22		0.061	-0.017 (10%)	-		0.12
23		0.007	0.007 (1%)	-	-	0.25
24		-	-	-	-	-

Annex (cont.) Plastic and rubber products, Metal products

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	17	-	-	-	-	-
02		-0.000	-	0.072 (1%)	-	0.88
03		0.000	-	0.012 (1%)	-	0.46
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		0.002	0.007 (1%)	0.034 (10%)	-	0.40
10		0.038	0.018 (10%)	-	-	0.11
11		-	-	-	-	-
12		0.007	0.004 (10%)	-	-	0.11
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		0.002	0.002 (5%)	-	-	0.15
17		-	-	-	-	-
18		-0.001	0.005 (1%)	0.111 (1%)	-	0.45
19		-0.003	0.006 (1%)	0.123 (1%)	-	0.63
20		-	-	-	-	-
21		-0.008	0.004 (5%)	0.335 (1%)	-	0.89
22		0.102	-0.026 (5%)	-	0.071 (1%)	0.36
23		0.013	-	0.845 (1%)	0.016 (1%)	0.74
24		0.041	-	-	0.053 (1%)	0.36
01	18	-	-	-	-	-
02		-	-	-	-	-
03		0.001	-	0.011 (10%)	-	0.12
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		0.011	-	-	0.006 (10%)	0.12
11		-0.001	0.001 (1%)	0.040 (1%)	-	0.71
12		-	-	-	-	-
13		0.000	0.000 (10%)	-	-	0.10
14		-	-	-	-	-
15		-	-	-	-	-
16		-0.000	0.001 (1%)	-	-	0.35
17		0.004	-	0.035 (1%)	-	0.25
18		0.016	0.017 (10%)	-	-	0.13
19		0.002	0.007 (1%)	-	0.011 (5%)	0.27
20		-	-	-	-	-
21		-	-	-	-	-
22		-	-	-	-	-
23		0.016	-	-	0.014 (5%)	0.16
24		-	-	-	-	-

Annex (cont.) Machinery, Transport equipment

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	19	-	-	-	-	-
02		-	-	-	-	-
03		-	-	-	-	-
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		0.003	0.002 (10%)	-	-	0.11
10		0.011	-	-	0.022 (1%)	0.67
11		0.004	-	0.054 (1%)	-	0.35
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		0.000	0.002 (1%)	-	-	0.28
17		0.010	-	0.056 (5%)	-	0.18
18		0.005	0.017 (1%)	-	-	0.35
19		0.059	0.016 (10%)	-	-	0.11
20		-0.001	0.005 (5%)	-	-	0.21
21		0.001	0.003 (5%)	-	-	0.16
22		-	-	-	-	-
23		0.011	0.005 (10%)	-	-	0.11
24		-	-	-	-	-
01	20	-	-	-	-	-
02		-	-	-	-	-
03		-	-	-	-	-
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		0.000	0.001 (1%)	-	-	-
10		-	-	-	-	0.42
11		0.002	-	0.071 (1%)	-	-
12		0.050	-	0.211 (10%)	-	0.78
13		-	-	-	-	0.11
14		-	-	-	-	-
15		-	-	-	-	-
16		-0.000	0.001 (1%)	-	-	-
17		0.049	-0.013 (5%)	-	0.002 (1%)	0.44
18		0.000	0.020 (1%)	-	-	0.16
19		-	-	-	-	0.24
20		-	-	-	-	-
21		-0.000	0.003 (1%)	-	-	-
22		-	-	-	-	0.50
23		0.011	-	-	-	-
24		-	-	-	0.010 (1%)	0.23

Annex (cont.) Construction, Trade

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	21	-	-	-	-	-
02		-	-	-	-	-
03		-	-	-	-	-
04		-	-	-	-	-
05		0.009	-	-	0.005 (10%)	0.10
06		0.002	-	-	0.002 (1%)	0.35
07		-	-	-	-	-
08		0.035	-0.010 (10%)	-	-	0.12
09		-0.000	0.001 (1%)	-	-	0.43
10		-	-	-	-	-
11		-	-	-	-	-
12		0.032	-	0.139 (5%)	-	0.16
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		0.000	0.001 (1%)	-	-	0.25
17		0.004	-	0.078 (1%)	-	0.54
18		0.022	0.008 (10%)	-	0.020 (1%)	0.25
19		0.013	0.008 (1%)	-	-	0.24
20		-	-	-	-	-
21		-	-	-	-	-
22		-	-	-	-	-
23		-	-	-	-	-
24		-	-	-	-	-
01	22	-	-	-	-	-
02		-	-	-	-	-
03		-0.000	0.000 (10%)	-	-	0.09
04		-	-	-	-	-
05		-	-	-	-	-
06		-	-	-	-	-
07		-	-	-	-	-
08		-	-	-	-	-
09		0.002	0.004 (1%)	-	-	0.36
10		-	-	-	-	-
11		-	-	-	-	-
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		0.002	0.004 (5%)	-	-	0.19
17		-	-	-	-	-
18		0.000	0.000 (5%)	-	-	0.13
19		-	-	-	-	-
20		0.002	0.003 (5%)	-	-	0.15
21		-	-	-	-	-
22		-	-	-	-	-
23		0.026	0.013 (10%)	-	-	0.12
24		-	-	-	-	-

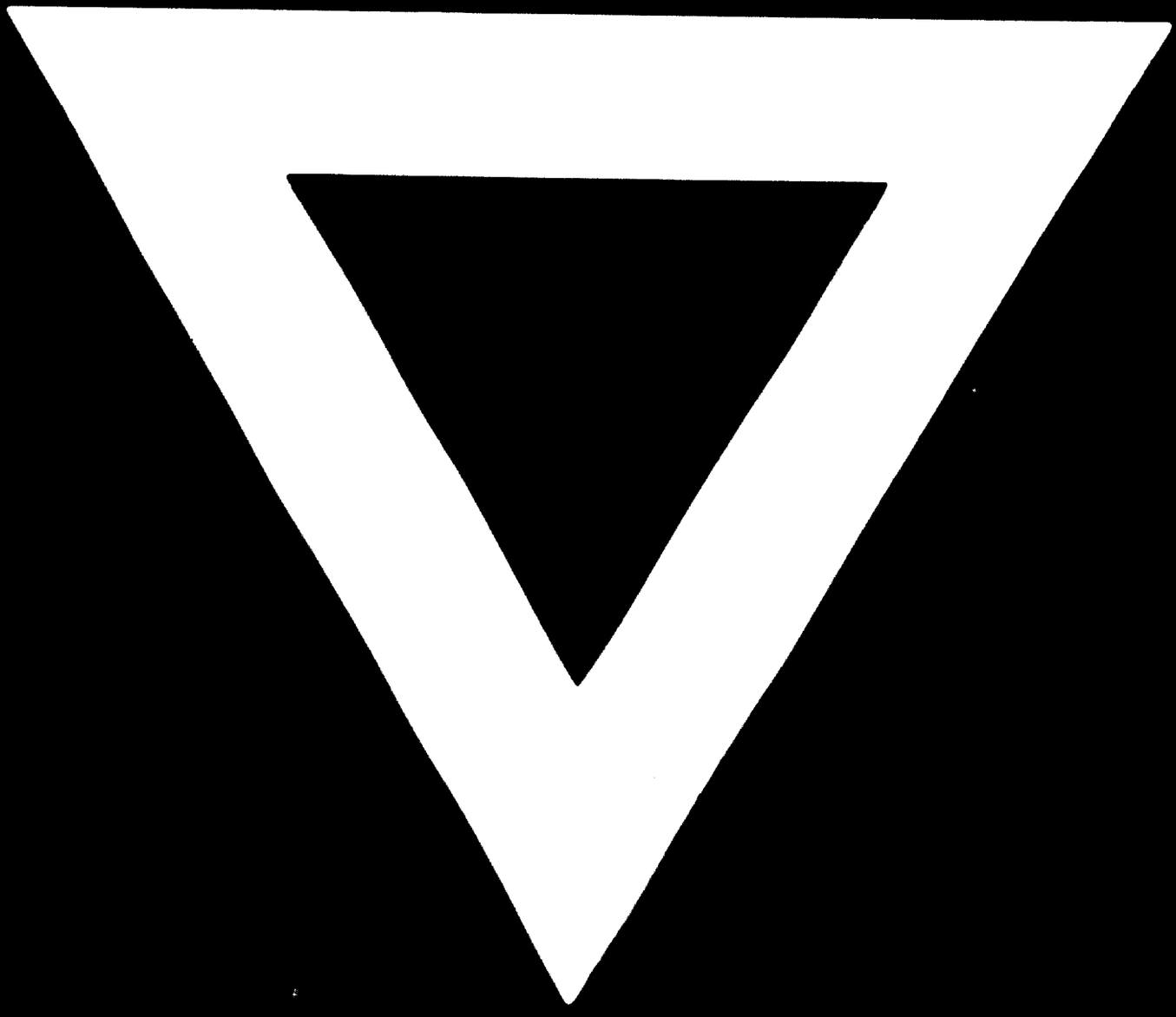
Annex (cont.) Transport and communication, Other services

Row	Column	Intercept	GDP per head	Population	Population density	R^2
01	23	-	-	-	-	-
02		-	-	-	-	-
03		-0.000	-	0.006 (1%)	-	0.80
04		-	-	-	-	-
05		0.046	-0.012 (5%)	-	0.046 (1%)	0.44
06		0.004	0.002 (5%)	-	-	0.16
07		-	-	-	-	-
08		-	-	-	-	-
09		0.000	0.001 (1%)	-	-	0.33
10		-	-	-	-	-
11		-0.000	-	0.032 (1%)	-	0.89
12		0.000	0.001 (5%)	-	-	0.16
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		-0.000	0.002 (1%)	-	-	0.52
17		0.009	-	0.074 (1%)	-	0.30
18		-0.000	0.002 (10%)	-	-	0.12
19		0.001	0.004 (1%)	-	-	0.25
20		0.036	-	-	0.020 (10%)	0.12
21		0.005	0.011 (10%)	-	-	0.12
22		0.053	-0.014 (10%)	-	-	0.10
23		0.014	0.020 (5%)	-	-	0.13
24		-	-	-	-	-
01	24	0.003	-	-	00006 (1%)	0.36
02		0.008	0.005 (5%)	-	-	0.13
03		-	-	-	-	-
04		-	-	-	-	-
05		0.002	-	-	0.004 (1%)	0.38
06		0.003	0.002 (5%)	-	0.005 (1%)	0.40
07		-	-	-	-	-
08		-	-	-	-	-
09		-	-	-	-	-
10		-	-	-	-	-
11		-	-	-	-	-
12		-	-	-	-	-
13		-	-	-	-	-
14		-	-	-	-	-
15		-	-	-	-	-
16		0.002	0.004 (1%)	-	-	0.38
17		-	-	-	-	-
18		-	-	-	-	-
19		0.001	0.002 (5%)	-	-	0.18
20		-	-	-	-	-
21		0.015	0.005 (10%)	-	-	0.11
22		-	-	-	-	-
23		-	-	-	-	-
24		-	-	-	-	-

Annex (cont.) Value added

Row	Column	Intercept	GDP per head	Population	Population density	R^2
VA	01	0.791	-0.059 (1%)	-	-0.107 (1%)	0.46
	02	0.280	-	-	0.046 (10%)	0.13
	03	-	-	-	-	-
	04	0.147	-	1.600 (5%)	-	0.21
	05	-	-	-	-	-
	06	-	-	-	-	-
	07	0.732	-0.109 (5%)	-2.695 (1%)	-0.281 (5%)	0.41
	08	-	-	-	-	-
	09	-	-	-	-	-
	10	-	-	-	-	-
	11	0.581	-	0.534 (1%)	-	0.29
	12	-	-	-	-	-
	13	-	-	-	-	-
	14	-	-	-	-	-
	15	0.465	-	0.580 (5%)	-	0.17
	16	-	-	-	-	-
	17	0.616	-	-0.984 (1%)	-0.087 (1%)	0.46
	18	-	-	-	-	-
	19	-	-	-	-	-
	20	-	-	-	-	-
	21	-	-	-	-	-
	22	0.782	-	-1.257 (1%)	-	0.30
	23	-	-	-	-	-
	24	0.865	-0.034 (5%	-1.560 (1%)	-	0.71

C-150



80.04.16