Chapter 2

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STRUCTURAL CHANGES AND SPECIALIZATION DIRECTIONS IN THE INDUSTRY OF EAST EUROPEAN COUNTRIES

1. General remarks

The slower growth of industrial output, as of total national products in the second half of the 1970's in the East was naturally associated with a greater of structural change. But in the area of CMEA there are diferences in growth rates between countries very closly associated with the levels of industrialization and economic development attained. Especially, there are differences in the pattern of development, ranging between the already strong industrial economies of GDR and the fast industrializing economies of Bulgaria and Roumania. In the region two periods of industrial development can be distinguished in the last ten years. In the first (1976—1980) a marked decelerating trends in gross industrial outout growth recorded — to an average rate of only 6 per cent annually. The slowdown was continued in the first half of 1980's and reached a lowest level in the entire historical industrialization process — only 3,5 per cent annually. The decline was more pronounced in the six east European countries than in the Soviet Union.

The low growth rate industrial of output in the socialist countries of eastern Europe appaers to be the main factor behind the rapid slowdown manpower. [1]. Despite of that one emphasize the exhaustion of easily accesibly fuel and raw materials in the most of the countries and in the western part of the Soviet Union.

However, the constrainary forces the marked slowing in industrial growth in the last five years varied between countries. The some factors which contributed to industrial slowdown in the period were analysed in the previous chapter (Chapter 1). Others, like slowdown of dynamic

[1] Decelerating industrial employment growth has been apparent since in pervlous five years (1976—1980), but it was very noticeable in the last period (1981—1985) the rise in employment solwed from 1,3 per cent annualy in 1976—1980 only 0,4 per cent in 1981—1985.

structural changes in an industrial output by branches, similarites in branch structures, patterns of inter-country specialization of output will be considered in the discussion which follows.

The statistical enquiry centres only on changes in structure and trends in the rate of expansion (or decline) of the selective variables. The basic variables are autput and employment and covers mostly concerning two periods 1976—1980 years and 1981—1985 years. The scope of the analysis is limited by the possibility of finding statistics in serious and differency in definition and classificatien industry branches in particularies countries of the CMEA area.

The present study concentrates only on selective aspects of industrial development: the changes of development and patterns of industrial within CMEA European countries.

It of course be misleading that we revels some estabilished „laws" of structural change and development industrial branches, by countries of east Europe. We only try to describe the general course of processes industrialization of the area and attemp to bring to light certain features common to many countries. We also attemp to display a some similarities and differences between national industrial structures.

Weaknesses in the international comparability of statiscal date impose large limitations on the depth of these analysis.

2. Changes in growth rates of manufacturing output by branches

The total manufacturing output of the seven east european socialist countries increased by 3,5 per cent a year from 1976—1980 to 1981—1985, and employment in manufacturing by 0,4 per cent (These rates are based on the unweighted average skan of the all shown countries). The range of growth rates in the last periods of 1980—1985 streches from over 4,2 per cent a year for „Engineering" and for „Chemicals", and 3 per cent for „Fod processing" — which can be regarded as the dynamic branches of manufacturing — down to 1,8—2,1 per cent for „Construction materials" and „Light industry". Of the other major branches „Wood processing and paper, „Electricity" and „Metallurgy" increased their output by 2,6—2,7 per cent a year — just below average. (See table I).

To illustrate the dynamics of structural change during the 1981——1981's the branches may be divided in three groups according to the elasticy of output growth (he ratio to the growth of manufacturing as a whole for the seven countries of CMEA).

Distribution groups of branches by growtch elasticity

Group 1. (High elasticity output above 1: „Chemicals", „Enginering"

Group 2. Elasticy output around 1: „Food processing", „Wood processing and paper", „Electricity", „Fuel".

Group 3. Low elasticity output: „Construction materials", Light industry", „Metallurgy".

The shift of output towards the more uniform and low the dynamics of structural change during the 1980's is very clear. The fast rate of output growth in „Chemicals" and „Engineering" for the period of 1976—1980 of over 10 per cent was declined to 4 per cent rise in the

first half of 1980's. On the other hand „Food processing", „wood procesing and paper", and also „Electricity" and „Fuel" showed no more than average dynamic in output its growth declined to only 2 per cent annualy.

Table I

GROWTH RATES OF MANUFACTURING OUTPUT AND GROWTH ELASTICITIES AND RANK BY BRANCHES (SEVEN COUNTRIES OF CMEA COMBINED)

Branches	Gross output at constant price					
	Growth rates		Growth elasticity		Rank	
	1976—80	1981—85	1976—80	1981—85	1976—80	1981—85
1. Electricity	7,6	2,8	1,3	0,7	3	5
2. Fuel	5,3	2,6	0,8	0,7	8	6
3. Metallurgy	6,1	2,4	1,0	0,6	6	7
4. Engineering	9,5	4,3	1,6	1,2	2	2
5. Chemicals	11,5	4,2	1,9	1,2	1	1
6. Construction materials	7,2	1,8	1,2	0,5	4	9
7. Wood processing and paper	6,2	2,6	1,0	0,7	5	4
8. Light industry	5,5	2,1	0,9	0,6	7	8
9. Food processing	4,0	3,0	0,6	0,8	9	3
Total	6,0	3,5	1,0	1,0	—	—

As arleady mentioned „Chemicals" and „Engineering" were the fastest grawing industries. They asumed either the first of the second rank in oder of output growh (table I). „Electricity", „Wood processing and paper", and „Construction materials" follwed in rank order.

Table II provides an summary picture of the differences of branch growth rates of various branches were not considerable, the degree of dispersion tending to be larger in the countries with faster growth rates, countries with a relatively higher total growth rate have tended to have a little higher growth rate in every branch. The comparative uniformity of the level of growth of the various branches (when compared with the corresponding branch in other countries (is exhibited by the particular figures in table II.,

Differences between countries in the rates of growth ot the various branches were not wide. As can bee seen from table II most of shown above (at the beginning of section 1) that on balance during the 1980's, national branch dynamic were tending to converge, to becoming increasingly similar. This general tendency cannot be examined in more detail on this stage of the analysis.

3. The branch structure of manufacturing output and employment

Together with profound slowdown industrial growth in the half past of the 1970's there is similary tendency for shifts in the structural changes by branches to become less visibled. Only a sketchy survey of this subject can, however be made since there are not data available which would allow a systematic treatment.

Table II

RATES OF GROWTH INDUSTRIAL GROSS OUTPUT BY BRANCHES
(ANNUAL PERCENTAGE CHANGES)

Branches	Bulgaria		CSRS		GDR		Hungary[c]		Poland		Romania		Soviet Union	
	1976 1980	1981 1985	1976 1980	1981 1985	1976 1980	1981 1985	1976 1980	1981 1985	1976 1980	1981 1985	1976 1980	1981 1985	1976	1981 1985
Total industry	6,9	4,6	4,7	2,6	5,0	4,0	3,4	2,4	4,7	2,9	9,5	4,2	5,8	3,7
1. Electricity	7,5	3,2	4,8	1,8	4,6	3,5	4,6	2,3	6,6	2,7	13,2	3,4	6,1	2,7
2. Fuel	8,3	4,6	2,6	0,2	4,0	4,1	1,8	2,0	6,2	2,6	4,1	3,1	5,3	1,6
3. Metallurgy	6,9[a]	4,1[a]	2,8	0,6	5,2	4,3	2,1	1,5	5,1	1,2	11,2	1,4	5,8	3,5
4. Engineering	9,4	5,4	6,8	4,1	9,0	4,6	5,3	3,6	8,9	1,9	13,8	4,5	8,9	5,6
5. Chemicals	5,9	5,9	5,8	3,0	6,1	3,7	9,4	3,8	3,6	2,6	19,5	4,9	9,2	4,6
6. Construction materials	8,6	3,2	5,4	0,5	5,2	1,1	5,5	1,4	5,3	0,1	10,1	2,3	7,2	3,9
7. Wood processing and paper	6,0	3,7	4,0	1,4	5,8	3,9	4,6	1,2	3,1	2,6	10,9	3,9	4,1	3,1
8. Light industry	5,2	2,9	4,3	2,4	5,0[b]	2,3[b]	2,7	2,9	4,1	1,4	8,9	1,4	3,9	2,1
9. Food processing	4,1	4,0	2,7	2,0	4,0	2,1	4,8	3,1	1,8	0,3	4,0	1,9	3,0	3,9

Source: National statistics and CMEA statistical yearbooks

a) Excluding non-ferrous metallurgy

b) Excluding textiles

c) State and cooperative industry only

On the basis of classification used here, the weight of the various branches in industrial gross output is very differentiate. Engineering is continued by for the most important branch, followed by food and light industry. There are a few number of branches where the weight is close to „average" (i.e. 9,97 per cent, as industry is broken down into 10 branches). Chemicals, metallurgy, and light indusrty belong to this group, five branches — fuel, electricity, wood processing and paper, construction material and other — a relaitvely small, their share generally falling well around 5 per cent.

Detailed data on the national structures are presented in tables III and IV. The area averages shown in each of these tables are intended to bring out some overall features. They indicate that there have been only small changes in the relative importance of the various branches. The shares of some branches rose and those of others declined.

A general picture of distribution of output and employment according to the 10 branches used in the present analysis, is given in chart 1, for 1975 and 1980. Engineering ranks as the largest branch in terms of gross output (1973 prices) in 1980, accounting for nearly 26 per cent of total manufacturing output of the group. Food and light industry come next with more than 15 per cent each. These three branches make up almost three-quarters of total manufacturing output.

Chemicals, metallurgy and fuel account for 6 to 9 per cent each, the remaining three branches each accounting for less than 5 per cent. The distribution of employment between branches differs from that of output because of substantial differences in gros output per worker. Thus engineering, the largest branch in terms of employment showed the marked increase and also light industry experienced a some increase in share by employment, while shares of foot and chemicals falls in compare with ones in terms of gros output.

Although as the chart shows, there have not been a big changes in the relative importance of industrial branches, the changes in the branch concentration of output and employment have been rather small, the shares of the largest branches have been rising and others declining.

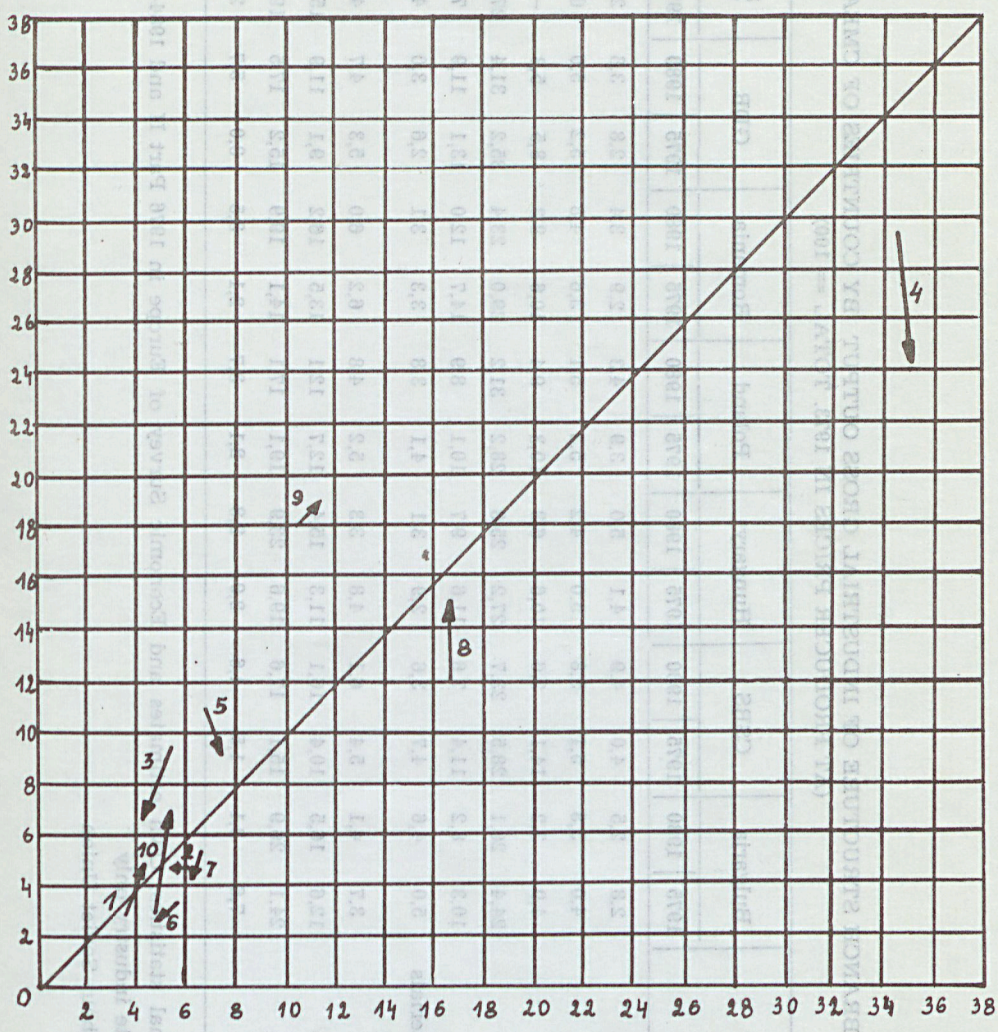
A more detailed picture of the distribution of gross output and employment in individual countries is given in tables I and tabels II. Observing the figures in these tables one can mention that national industrial structures differ very small and the differences have tended to narrow down over time. At the 1980, in terms of gross output, the share of engineering ranges between 23 and 29. This compares with a range of between 25 and 35 per cent in 1975. One could explain these changes an extremly rapid development of this branch in Bulgaria, and a significant decline the share in GDR and CSRS, and also Hungary and Soviet Union. The share of the food increased in the same period from a range of 15 to 25 per cent to a range of 17 to 27 per cent. In this case — the rapid increase was in GDR, Hungary and Romania, with little change taking place in the Bulgaria and CSRS. Other important changes in the structure of industrial ouput of CMEA countries associated with a movement towards convergence ar indicated in light industry and the chemicals. The light industry rose its share from a range of 9 to 15 per cent to a range of 11 to 16,5 per cent. The greatest arise in the share took place in CSRS and the smallest in GDR with and unmarked decline in Poland and Soviet Union. In the

Chart 1

PERCENTAGE DISTRIBUTION OF BRANCHES IN RESPECT OF CMEA TOTAL MANUFACTURING GROSS OUTPUT AND EMPLOYMENT 1975 AND 1980 (THE SEVEN COUNTRIES COMBINED)

Branch share of industrial gross output CMEA (area average)

1975 ——► 1980



Branch share of industrial employment CMEA (average) per cent

1 — Electricity, 2 — Fuel, 3 — Metallurgy, 4 — Engineering, 5 — Chemicals, 6 — Construction materials, 7 — Wood processing and paper, 8 — Light industry, 9 — Food, 10 — Other.

Table III

BRANCH STRUCTURE OF INDUSTRIAL GROSS OUTPUT BY COUNTRIES OF CMEA
(AT PRODUCER PRICES IN 1973. TOTAL = 100)

Branch	Bulgaria		CSRS		Hungary[a]		Poland		Romania		GDR		Soviet Union		CMEA (area average)	
	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980
1. Electricity	2,8	2,5	4,0	4,9	4,1	5,0	3,9	4,3	2,9	3,4	2,8	3,6	2,9	3,6	3,3	4,2
2. Fuel	4,0	3,8	5,1	5,8	5,0	4,2	5,3	5,1	3,6	4,8	5,2	5,0	6,0	5,9	4,8	4,9
3. Metallurgy	4,9	3,2	14,1	9,6	10,6	6,8	10,3	9,4	10,6	8,3	8,5	5,3	—	—	9,8[b]	7,1[b]
4. Engineering	24,4	26,1	28,5	23,7	27,2	25,8	28,2	31,2	29,0	23,4	35,2	31,4	27,5	23,6	28,5	23,1
5. Chemicals	10,3	8,2	11,4	7,6	11,6	9,7	10,1	8,9	14,7	12,0	13,1	11,9	7,1	9,7	11,1	9,7
6. Construction materials	5,0	4,6	4,7	3,6	2,9	3,1	4,1	3,8	3,3	3,1	2,6	3,0	4,1	4,2	3,8	3,6
7. Wood processing and paper	3,7	4,1	5,4	6,1	4,8	3,3	5,2	4,8	6,2	6,0	5,3	4,7	4,6	3,8	5,0	4,6
8. Light industry	12,6	16,5	10,4	16,1	11,3	15,4	12,7	12,1	13,5	16,2	9,1	11,9	15,0	14,8	12,0	14,7
9. Food	24,1	26,9	15,1	17,6	19,6	23,9	19,1	17,1	14,1	19,9	15,2	17,5	19,1	15,2	18,0	19,7
10. Other	7,6	3,1	1,5	4,6	2,9	2,8	2,1	3,7	2,1	3,5	3,0	5,7	2,0	9,1	3,3	7,4

Source: National statistics. Own estimates and Economic Survey of Europe in 1976 Part II and 1984—85.

a) State industry only

b) Without Soviet Union

chemicals the decline in the share was from a range of 10 to 15 a range of 7 to 12 per cent. CSRS showed the largest decline in this branch.

Convergence is indicated in the case of the employment — based structure also. But the extent of convergence in individuel branches was not the same reflecting in changes in labour productivity. The decline in the share of the engineering in industrial gross output in the Soviet Union and rise — almost the same extent — its share in employment is of interest. Mixed trends are also exhibited in other branches, especially light industry and food, where the share by employment fell slightly in Poland and the Soviet Union and rose elsewhere. Notable also is the slight increase of the share electricity and chemicals by employment in Bulgaria. Of course, there is a more cases where the change in the share in employment was in a different direction from that of the change in the share of total output. All that reflects large inter — country differences in the growth of factor productivity in individual branches.

Summing up this analysis one might mentiond that in the most branches the inter — country differences between narrowed over the second half of the 1970's — another indicate of increasing similarity of national structure of industries in the CMEA area. But there are a some examples (rather exceptions), the increasing dissimilarity coefficients of branch shares which might point to a movement towards greater structural complementarity.

4. Convergence and divergence of branch structures in the CMEA area

It was shown above that on balance, during the 1970's, national structures of CMEA countries were tending to converge, to becoming increasigly similar. This general point may be examined in more detail. The narrowing or widening of inter — country differences depends upon the interplay of the branch growth elasticies with the differing national shares at the beginning of the analysing period. In order to identify a widening (narrowing) of inter — country differences by branches it was necesary to use of data shown in tables I and II and chart I. The problem of detrmining the pattern of structural change by branches is approached by examining the trends of branch growth rates 1976—1980 and the standard list of branch shares of seven east — — European countries.

a) Dynamics branches (with high growth elasticities)

For „chemicals", the inter — country differences, by setting high growth rates in all the countries of the region have markedly narrowed. The countries in which the share of chemicals in total manufacturing was already relatively high — GDR, CSRS, Hungary — have showed rather lower growth elasticities. The chemical industry has been expanding fast of all in the Bulgaria and Romania, where the industry were smaller than in high — income countries. In the Soviet Union „chemicals" was one of the two major branches for which growth will not slow down. In appears, that the factors responsible for the fast development of the industry — by contrast with the prevailing trend, are plans that around one — half of the increase in agricurtural produc-

Table IV

INDUSTRIAL EMPLOYMENT IN CMEA COUNTRIES BY BRANCHES
(PERCENTAGE DISTRIBUTION. TOTAL INDUSTRY = 100)

Branch	Bulgaria		CSRS		Hungary[a]		GDR		Poland		Romania		Soviet Union		CMEA (Area average)	
	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980
1. Electricity	3,6	4,0	3,1	4,9	2,8	3,1	3,2	4,0	6,0	5,6	2,6	3,1	3,5	3,6	3,6	4,0
2. Fuel	5,3	4,9	6,0	5,2	4,5	4,2	5,9	4,9	6,1	6,3	4,2	3,9	5,4	5,5	5,4	5,0
3. Metallurgy	5,5	4,8	8,4	6,8	4,4	4,3	5,5	4,1	5,7	5,5	6,0	5,6	5,6	5,6	5,9	5,2
4. Engineering	26,5	28,0	38,4	36,2	42,1	42,5	32,6	33,7	32,2	33,7	29,1	31,5	39,1	39,4	34,3	35,0
5. Chemicals	6,3	9,4	6,5	5,9	10,7	8,4	5,6	6,7	6,7	6,6	6,8	8,0	5,2	5,6	6,9	7,2
6. Construction materials	4,9	5,1	5,0	6,1	5,8	5,0	6,6	5,0	6,0	5,7	6,0	6,2	6,1	6,2	5,8	5,6
7. Wood processing and paper	7,5	6,5	4,5	5,4	5,9	6,5	5,8	5,2	5,9	5,6	10,1	7,5	6,7	6,5	6,6	6,2
8. Light industry	17,8	18,0	13,3	13,7	12,8	13,6	16,1	16,5	17,3	16,6	20,8	19,0	16,4	16,3	16,3	16,1
9. Food	15,2	16,0	7,9	9,8	7,5	7,6	12,3	13,6	10,9	10,7	9,5	10,2	9,5	9,7	10,4	11,0
10. Other	6,4	3,3	6,9	6,0	3,5	4,8	6,4	6,2	3,2	3,7	3,9	5,0	2,5	1,6	4,8	4,7

Source: National statistics. Own estimates and Economic Survey of Europe in 1976 Part II, Economic Survey of Europe in 1984—1985, Changing trends in productivity growth, Economic Survey of Europe in 1981. New York 1983.

[a] State industry only.

tion and some two — thirds of increase in that of light industry had to been obtained with the help of a application of chemical produts. In the second dynamic branch „engineering" the inter — country differences have narrowed, but not by very much. In most european socialist countries share of the industry remain virtually stable for the period. Development of the engineering industry in the CMEA area has been characterized by wide diversity of products. Greater self — suffiency in mostly sub — branches of engineering a number of countries partly was reflecting the especialy „advanced" structure of industry in that country like to some countries more developed in relation to their per capita income levels. It must be rememberd that engineering is a bulk and very heterogeneous branch extending from heavy electrical generating plants at one extreme to light electronies at the other.

b) Average growth branches (with growth elasticities close to unity)

On average „food" show a growth elasticity around unity, but differences between countries are very small. As the industry has developed fast in GDR, Romania and Bulgaria, the shares of branch were large increased in 1976—1980 hence inter-country differences were markedly narrowed. Although the expansion of the branch was dependend on agricultural performance and on the avaiability of imported inputs.

For „fuel" output elasticities are everywhere below unity; inter--country differences in shares have tendend to narrow. The branch, by contrast with „food" is related closly with industrial policy directed towards lowering fuel and energy and shifting the pattern of fuel consumption. In „electricity" the growth elasicities of unity or a little above was in almost of countries (but excluding GDR, where was a little below of unity). A notable feature was the relatively rapid growth of elastictiy production in Romania and Bulgaria. The growth rate in Romania — 13,2 per cent — was significantly higher than the growth rate of production in 1976—1980's. The feature of developments in the period was a narrowing down of inter-coluntry differences in shares of „electricity" in industries of all countries.

Changes in the rate of expansion of „wood processing and paper" did not follow a uniform pattern (table II). In the Hungary, Romania and GDR output elasticies was a little abovę unity, but in all remain countries rate of growth accelerated somewhat less than the rate of expansion of total production. In results inter-country differences in shares have tended to narrow, but not very much.

c) Slow — growth branches (with low growth elasticities)

In three branches growth elasticities are markedly below unity in most countries: in the 1975—1980's, the inter-country diferences narrowed in two of the branches („metallurgy" and „construction materials") and widened in one („light industry").

The narrowing of differences in „metallurgy" seems to by due largely to the relatively fast growth in Romania and Bulgaria, where the initial

shares of the branch were somewhat below the average for the seven countries. Slowdown the branch in the remain countries is more associated with transition in direction of raising the share of quality steel and non — ferreous metallurgy and widening the range of shapes and sizes of rolled products, improvement of product assortment.

In the second slow-growth branch „construction materials" the inter--country differences have narrowed, although somewhat less extent. The growth elasticity was, for example relatively high the praticularly large Soviet Union industry. The growth rates were particularly fast in Romania and Bulgaria too, where the industry was very small in the middle of 1970's.

The last remaining branch „light industry" showes an unmarked widening of national differences. Its spread of growth rates and growth elasticites is not particulary wide, but two of the countries (Romania and Bulgaria) showed the largest growth. In both countries the untypically high rates are partly associated with large net exports, but to large extent is has depended on the ability to meet the domestic demand for wider assortment of products and fashion goods as income has risen. On the whole, in this countries in 1975—1980's the industry has developed fastest.

5. Some associations the branch pattern of growth with structural changes

In the developments which followed by five-years period (1975—1980) not only the less industrialized countries of East tend to catch up with the countries more advanced in the technology of production goods industries, but differences between structures of countries at similar level of development also tended to appear. General, the movement towards convergence industrial structures have narrowed differenecs in per capita industrial production from a ratio of 1,7:1 o 1,5:1.[2] In the two least industrially developed countries — Bulgaria and Romania — markedly slowing down of growth has been in evidence over the period, with growth rates of 6 to 9,5 per cent a year being maintained But in the most industrialized — the German Democratic Republik and Czechoslovakia — growth rates slowed down sharply towards the end of the period. Thus in Bulgaria and Romania structures by gross output in the end of 1970's were indeed broadly in line with those expected to be found in more industralized economies, relatively ligh of engineering, chemicals and metallurgy, but also high shares of food, wood processing and paper and light industry.

These patterns of growth and structural change were less marked among the other countries. In Hungary the share of engineering was much higher than in CSRS, wheras in Czechoslovakia it was near the level of Romania. The chmicals industry was highly developed in Romania, but its share rapid decreased in GDR and CSRS and rose in Soviet Union. The share of metallurgy was higher in Romania than in the GDR and as high as Poland, and the share of fuel in Soviet Union was the highest in the area.

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[2] Taking gross output per capita of two highest against the average of the two lowest indices.

Similar development pattern folowed in the more industrialized group of countries — GDR, CSRS and Poland. For example, the growth of the food industry in the German Democratic Republic was fast enough to reach the corresponding share in Czechoslovakia. The growth of the engineering industry in Poland was much faster than in CSRS, so that by the end of the period the shares of engineering in output were about equel. Similary rapid growth of engineering in Bulgaria resulted it its share coming closer to the share of the branch in Poland.

The effect of such a development pattern was that, many differences which might be attribueted to relative developmental levels tended to disappear. By the second half od 1970's, the share of the electricity branch had fell in all east-european countries belong to CMEA (in except of GDR) to a level somewhere near the area average. A fairly similar situation existed in the chemicals industry and only in Romania share of branch continued to be highest of the all countries of CMEA.

Most unexpected feature of industrial development almost in all countries of the area is a sharp turn to increase production of the food and light industry, the shares of which in total output rose a much faster than others branches. In Czechoslovakia the share of the light industry continued to be highest in the area like of food in Bulgaria and Hungary.

It do not appear that at present structural differences might reflect to any large extent differences in natural resource endowments (apart from a few cases such as food, fuel, wood processing). Instead of, they are reflection of a development strategy geared to industrialization, but are conditioned by the level and pattern of industralization that existed in each country at the begining of the 1970's.

Although the branch profile of industrial growth in mostly CMEA european countries was similar, there were wide enough differences between national branch growth elasticities to produce the effect of convergence of branch industrial structures. It may be noted that exist of relationship between national differences in the growth elasticities of particular branches and national differences in branch shares at the begining of 1975 year. While the growth elasticies tended to be lower or higher, as compared with the area average for given branch, the branch share was the relatively lower or higher to begin with. A general result of this clear tendency was to come the industrial structure of the less developed countries (of the lower per worker gross industrial output closer to the most developed countries) of the higher gross industrial output per worker.

6. The patterns of national specialization

For purpose to answer the question, how far has each country tended to develop specialization in a particular branch, the measure of specialization used the ratio of the precentage share of given branch in the country to the unweighted average percentage share of this branch for all the CMEA area. When the ratios in substantially above 1 we shall describe this branch as a „specialization" for the country concerned: when it falls substantially bellow 1, we shall describe the branch as „domestic" for the country. These ratios, named a „specialization coefficients", are set out in table V for gross output, and the countries are grouped as follows:

Table V

RELATIVE CMEA COUNTRIES SPECIALIZATION IN MANUFACTURING OUTPUT BY BRANCHES 1975 AND 1980 (AT 1973 PRICES)

Branch	Bulgaria		CSRS		GDR		Hungary		Romania		Soviet Union		Poland	
	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980	1975	1980
1. Electricity	0,84	0,59	1,21	1,11	0,84	0,85	1,24	1,11	0,87	0,85	0,87	0,85	1,18	1,02
2. Fuel	0,83	0,77	1,06	1,08	1,08	1,02	1,04	0,85	0,75	0,97	1,25	1,22	1,10	1,04
3. Metallurgy	0,50	0,45	1,43	1,35	0,85	0,74	1,08	0,95	1,08	1,16	—	—	1.05	1,16[a]
4. Engineering	0,85	1,12	1,00	1,22	1,52	1,40	0,95	1,11	1,01	1,01	0,95	1,02	0,98	1,35
5. Chemicals	0,92	0,84	1,02	0,78	1,18	1,07	1,00	0,91	1,32	1,23	0,63	1,00	0,90	0,91
6. Construction materials	1,31	1,27	1,23	0,94	0,68	0,83	0,76	0,86	0,86	0,86	1,07	1,16	1,07	1,05
7. Wood processing and paper	0,74	0,89	1,08	1,22	1,06	0,89	0,96	0,71	1,24	1,20	0,92	0,82	1,04	1,04
8. Light industry	1,05	1,12	0,86	1,10	0,75	0,82	0,94	1,04	1,12	1,11	1,20	1,00	1,05	0,82
9. Food	1,33	1,37	0,83	0,89	0,84	0,88	1,08	1,21	0,78	1,00	1,06	0,77	1,06	0,86
10. Other	2,30	0,41	0,45	0,56	0,90	0,77	0,87	0,41	0,63	0,47	0,60	1,15	0,63	0,50

Source: Table III

a) without Soviet Union

Note: Specialization is defined here as the ratio each branch share to the unweighted mean for the seven CMEA countries.

a) the three South — Eastern countries: Bulgaria, Romania and Hungary
b) CSRS and GDR
c) Poland and Soviet Union.

a) Bulgaria, Romania and Hungary: The output pattern is of course marked by the resource-based specialization in „light industry" and to a less extent in food. This pattern changed little over 1976—1980's Bugar's specialization in „other" industries fell away but the share of gross product in „engineering" may have sharply increased. In this country, specialization in „food" is increasingly marked. Romania shows the highest specializatien in „chemicals" and „wood processing and paper". „The light industry" and „food" tend to by somewhat less represented. Sharply increased here position of „metallurgy". The specialization coefficient for „food" in Hungary is one of the highest shown for the period of 1976—1980s, but „engineering" and of the period.

On the whole, all three countries moved rather closer to the more advanced pattern of industrial structure of the CMEA countries the specialization were somewhat reinforced.

b) CSRS nad GDR: Both countries are rather strikingly similar in the industrial structures but indicating a quite marked and rather decreasing complementarity at the 10 — branch level of aggregation.

The changes in the pattern of specialization for both countries have not been large during the five year period. The main features of this pattern are relatively high share of engineering and chemicals for the GDR, of „metallurgy", and „wood processing" and „paper" for Czechoslovakia. Thus GDR exhibits a particulary high relative specialization in metal produts, electrical machinery and CSRS in „metallurgy". The specialization GDR in chemicals diminished. In CSRS relatively expanded specialization in „wood processing and paper", as wellas „fuel" and „light industry" as disappeared in „construction materials" and „chemicals".

The tendency for the branch structure in both countries by the second half of 1970's to become more similar means, of course, that at least at the branch level the degree of inter-country specialization has tended to become smaller.

c) Poland and Soviet Union: Structural changes in the period of 1970's markedly narrow the differences between two countries. Both countries show specialization in „metallurgy, engineering as also fuel, construction materials an wood processing and paper". Within this broadly similar pattern, the Poland exhibits a particulary high relative specialization in „engineering" and „metallurgy" and Soviet Union in „fuel" and „construction materials". The major difference between Poland and Soviet Union, lies in the big size rather than in the structure of the manufacturing section. The difference in size is reflected in the trade positions (compare Chapter 5). In both countries, the emphasis during of all the period on the development of heavy industry has resulted in higher shares for „fuel", constructions materials'", „metallurgy" and lower shares for „wood processing and paper", „light industry" and „food".

The pattern of national specialization according to the criteria used here, may be summarized from table V using the gross output statistics. It should be mentioned that the statistic of employment (table IV) in several cases give different results, but this is partly due to differences in relative labor productivity.

Table VI

PATTERNS OF NATIONAL SPECIALIZATION BY BRANCH 1976—1980

Country	Branches of specialization	Branches of domestic range (non-specialization)
1. Bulgaria	Food, Light industry, Construction materials, Engineering	Other, Electricity, Fuel, Metallurgy, Chemicals, Wood processing and paper
2. CSRS	Metallurgy, Fuel, Engineering, Electricity, Light industry	Food, Other, Chemicals, Construction materials
3. GDR	Engineering, Chemicals, Fuel	Electricity, Other, Metallurgy, Construction materials, Light industry, Food, Wood-processing and paper
4. Hungary	Food, Electricity, Eingeering, Light industry	Wood processing and paper, Other, Fuel, Construction materials, Chemicals, Metallurgy
5. Poland	Eingineering, Metallurgy, Construction materials, Wood processing and paper, Fuel, Electricity	Other, Light industry, Food, Chemicals
6. Romania	Chemicals, Wood processing and paper, Metallurgy, Light industry, Engineering,	Other, Electricity, Food,
7. Soviet Union	Fuel, Other, Construction materials, Engineering	Food, Chemicals, Light industry, Electricity, Wood processing and paper

Source: Table V

7. Summary

Generally the growth rate of overall industrial production in all countries was rather similar throughout the area in the period 1971—1980. Engineering and chemicals expanded at a much faster rate than industry on the average. Fuel, wood processing and paper as food and light industry expanded at a lower rate. The growth rate of the remaining branches electricity, metallurgy ,construction materials tended to be the CMEA area average branch.

An analysis of inter-countries of branch structure show a high degree of similarity patterns of structural change. The extent of the production shifts varies between particularies countries as effect differences between national branch growth elasticities. Thus, changes in the shares of mostly branches have evidently contributed towards convergence of industrial structures. But it does not mean the lack of the factors working for some diversity of industrial structures between countries in the pattern of structural changes by branches were the basis for the intra — area pattern of specialization in output.

This picture is reflection of the national policy tended to increase the importance of domestic markets for capital goods in association with general task of bulding up a more diversifed industrial structure in every country of eastern Europe.