THE INDUSTRIAL DEVELOPMENT LEVEL OF THE
NORTH-HUNGARIAN MACROREGION

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The most important element in the economic structure is industrial production which always defines the economic life of a given area. It is obvious that the economic activities which are sometimes in mutual connection with one another or they can be independent define the development level of the economy in a certain area but the industry which is predominant in this correlation is the most important in the characterisation at this level.

By defining the development level of industry we can research the industrial production of the rayons and this gives us the spossibility to analyse the industrial potential of the centres which are expressed through different levels and structural distribution. This also can be used to denote the tendency and the intensity of the development.

The method of the development of industrial production

The task can be summed up as follows:

An n number of economic regions is given and its industrial development level is represented by an m number of identical economic factors.

To denote the development level since it is relative a relative base is needed which in this case is provided by a fictitious economic unit which is equipped with the arithmetical average of the appropriate data of the regio number n. The creation of this fictitious regio is caused by the fact that characteristic criteria in the researched centres have considerably great dissipation depending on the centralisation or decentralisation of the industry. Since the data about the fictitious region are derived from original values so they are not independent of them, these are arithmetical averages, their dissipation is around the average, so they can be suitable relative bases for the practical counting.

A further essential element of the method is to make the data homogeneous which can be done in two phases.

1. Distorting effects in the size and population number of the researched regions must be avoided which can be done by carrying out the counting for one head of the population.

2. The relation to the appropriate data about the fictitious regions makes it unnecessary to use measurements.

After making these changes the necessary data are gathered to form a factor representing the development level from which the desired factor can be gained by doing "selfvalue" counting.

Mention must be made of the fact that the usage of this factor can result in

distorted pictures sometimes. Viz., some outstandingly great value of one or two economic factors can result in bigger values in the united factor in spite of the double relation. It is obvious that one or more bigger investment in one or two settlings cannot change the industrial tendencies of the environment because it does not result in the development of further factors. This fact refers to another essential fact: to the areal situation of the industry which must be reflected by the level of development.

To measure the areal situation of the industry we can use a certain *"industry-density"* factor.

Since the areal situation of the industry can be located exactly, to define the factor the settlings can be used as the smallest units.

The centralisation of the industry must be expressed in the *"industry-density"* factor (the proportion of settlings with industry), the industrial employment of the whole centre (the proportion of the industrial employment in the whole population of the centre), the employment degree of the industrial settlings (the proportion of the industrial employment in relation to the whole population of the industrial centre).

In the series of these factors the proportions improve one another and the areal distribution of the industry, the degree and proportion of the employment, is reflected by the size of the series. Since this factor has no measurement, it is only a relative number, its characteristics make it possible to modify the factor which refers to the counted development level. (The correctness of the modulation was proved in practice.)

The above-mentioned method describes the development level of the industry in an economic unit, the areal distribution of the industry as well as the weight of certain economic characteristics. Useful experience can be gained during the description of a centre in a given period of time (during a year). To evaluate the industrial production of an economic centre in its change and development attention must be payed to the qualitative and quantitative changes which take place during a certain period of time as well as to structural changes and their intensity. To carry out an analysis of this type the method which describes the dynamic development of the industry can be employed.

This method uses the development level to define the development dynamism. In a given period of time it is the development level that contains the most important employment and technical factors of the industrial branches. On the other hand it gives the relative weight of an economic unit in an economic region which belongs to a higher level. So the development dynamism can be expressed by the changes between the development level and proportion.

The quantitative changes of the most important economic factors and the changing of the population are expressed in the changing of the development level while the changes of the relative weight of the given economic centre is expressed in the change of the development proportion.

Since this present study presents the analysis of a dynamically developing regio of the people's economy, i.e. the industry, the tendency of the absolute changing is increasing while according to the different degrees of industrialisation the relative weight of the economic units is varying. So the synthesis of these two components which can be sometimes of different tendencies can be done by *"selfvalue"* countin in each micro-regions.

Percentage distribution and change of characteristic indicators according to microregions

	Population			Profession			Place of work			Applied electric power			Fuel			Constant goods		
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
1.	4,8	5,3	13,1	9,2	7,4	5,8	9,9	8,4	23,0	13,5	13,6	56,1	17,8	14,3	16,3	12,8	9,0	5,7
2.	1,1	1,1	5,1	2,7	2,2	6,1	2,7	1,5	−20,3	3,4	2,7	25,5	5,3	3,5	−5,5	4,1	2,4	−2,6
3.	2,0	1,8	−4,1	1,6	1,3	8,4	1,6	1,4	29,0	0,7	0,6	23,9	0,9	0,8	26,1	1,3	0,9	20,1
4.	2,0	2,0	3,0	3,2	2,6	6,9	2,3	2,2	39,4	4,1	2,9	7,2	2,7	1,5	−20,0	2,3	1,7	22,1
5.	1,1	1,1	3,9	0,8	1,1	73,3	0,5	0,6	94,8	4,5	8,9	207,7	3,2	3,8	68,2	2,7	3,5	118,8
6.	1,7	1,7	1,5	2,1	2,5	55,9	2,7	2,9	52,3	1,6	2,3	126,0	3,1	6,0	174,2	2,4	5,6	289,7
7.	2,5	2,4	−1,4	2,0	2,2	43,8	2,4	2,3	38,7	1,3	1,3	50,2	1,4	1,5	49,0	1,8	1,7	57,3
Macroregoin	15,2	15,4	4,6	24,6	19,3	17,2	22,0	19,3	26,8	29,1	32,3	71,7	34,4	31,2	31,0	27,4	25,0	50,3
Country without Budapest	100,0	100,0	2,7	100,0	100,1	31,3	100,0	100,0	44,7	100,0	100,0	55,1	100,0	100,0	44,0	100,0	100,0	64,9

1 = Microregion Miskolc 2 = Microregion Ózd 3 = Microregion Sátoraljaújhely a = 1965
-4 = Microregion Salgótarján 5 = Microregion Leninváros 6 = Microregion b = 1972
Gyöngyös 7 = Microregion Eger c = 1972/65

The application of this method in the microregions of northern Hungary

Because of its rich natural resources the macro-region in northern Hungary became one of the most considerable industrial regions of the country. The development of the industry was defined by the heavy industry which was planted on the considerable coal-mining, and on the mining of different ores. Today coal-mining has lost its industry-forming power and together with the modernisation of the energy structure of the country its significance is decreasing. This does not modify or put an end to the industrial development and tendency of the macro-regions, but it leads to changes in the structure of the distribution of industrial branches which is the main tendency of our time.

The data in Table 1 prove the industrial tendency and the highly developed industrialisation of the region. The area of the regio occupies 14% of the country with 15.5% of the population. (The country-wide data exclude the data about Budapest.) The factor characterising the industry are above the values of the principle of proportional distribution. This is especially striking in the case of the technical factors of which the distribution of the macro-regions is $1 \times 4 - 1 \times 3$. Naturally the micro-region distribution describes essential differences.

The development between 1965 and 1972 is below the country-wide proportion on macro-region level. This is in harmony with the tendency which tries to distribute industry as well as helping to develop it on certain undeveloped parts of the country. Naturally the industrial traditions, the highly developed branches, the favourable possibilities for cooperation, the given and extendable infra-structural network as well as many other favourable conditions, make it possible to develop the industry so this region will be the representative of the considerable part of the industrial potential of the country in the future.

Areal distribution of industry

Agglomerations of considerable size developed in the area which define the areal distribution of the industry. The biggest industrial agglomeration is the Borsod concentration which starts in Ózd micro-region and comes along to Miskolc micro-region and extends as far as Leninváros micro-region. In the western part of the macro-region the Nógrád—Heves industrial agglomeration can be found which is in the area of Salgótarján and Gyöngyös micro-regions. There is a new industrial concentration around Gyöngyös and Eger which is independent of the above-mentioned concentrations and which has a concentration of a lower level. For the other areas of the macro-region localised grouped industrial centres can be found but there are considerable industrial undeveloped areas too.

On the basis of these industrial groupings it is understandable that there are big differences among the areal distributions of the micro-regions as well as within the micro-regions.

Ózd micro-region has the most favourable industrial density because its whole area is in connection with the Borsod concentration. Similarly to this the Salgótarján and Gyöngyös micro-regions are above the average as far as the industrial density is concerned, but the level of employment in them is lower than that in Ózd.

Miskolc micro-region has a special situation. Although the greatest part of the Borsod concentration can be found in this micro-centre its industrial density is

hardly above the macro-region average. This is caused by the fact that the highly developed industrial area is concentrated in the wider Sajó valley and there is a sharp border between the other areas of the centre. There is a big area with a large population in front of it, on its northern part which is industrially undeveloped and in which the industry is located and is of small volume. There is hardly any industry in the area which is south of it.

The Eger, Leninváros and Sátoraljaújhely micro-regions have low industrial density. The developing industrial concentration around Eger cannot counterbalanc the undevelopment of industry in Eger micro-region. The situation is similar in Leninváros micro-region where, although the northern part of the area belongs to the Borsod concentration, at present it is only the industry of the centre which is outstanding.

Sátoraljaújhely micro-region has the most unfavourable industrial density. Only three bigger settlings have industry there.

Changes in areal distribution of industry between 1965 and 1972:

1. The degree of decentralisation is decreasing in the micro-regions so the employment level was dominant in the modulation of the industrial density.

2. The factor of industrial density increased in the micro-regions which were excluded from the traditional industrial agglomerations (Eger, Gyöngyös, Leninváros and Sátoraljaújhely micro-regions).

3. The fact that the highly developed and the undeveloped micro-centres got closer to one another, i.e. that the difference of industrial density decreased to a degree of 5.87 from 9.75 (in 1965) shows the industrial development of the micro-regions. Mention must be made of the fact that this tendency hardly touched the industrially undeveloped areas, these data refer to the developing industrial agglomerations, so the differences within the micro-regions became even bigger.

The order of development of microregions

The first principal problem of the analysis of the industrial development level is the right choice of the appropriate economic factors. The factors are supposed to represent the industry in the research centres as well as describing the real differences in their real proportions among the areal units. Besides this some practical rationalities and effects of statistical data must be taken into consideration.

Taking into consideration the above-mentioned problems the following economic factors can be used to describe the industrial development level:

1. Employment factors:
   a) The number of industrial employment,
   b) the number of workshops.

2. Technical factors:
   a) the electrical power consumed (1000 kw),
   b) the capacity of electric motors used for the operation of power machines (kw),
   c) the gross value of investment stocks (1000 Ft).

3. Development factor:
   a) the value of investments in 5-year periods (1000 Ft).

4. The factor of the areal distribution of industry:
   a) industry density factor (relative number).

Taking into consideration the above-mentioned factors the orders of micro-regions in northern Hungary are as follows:

1965

Order	Microregions	Development level	Development proportion
1.	Ózd	0,112	3,87 very well
2.	Miskolc	0,097	3,35 developed
3.	Salgótarján	0,041	1,41 developed
4.	Leninváros	0,013	0,45
5.	Gyöngyös	0,010	0,35 un-
6.	Sátoraljaújhely	0,0029	0,10 developed
7.	Eger	0,0028	0,098
	Fictitious	0,029	1,00

1972

Order	Microregions	Development level	Development proportion
1.	Gyöngyös	0,187	4,68 very well
2.	Ózd	0,094	2,35 developed
3.	Miskolc	0,050	1,25 developed
4.	Leninváros	0,041	1,03 medium
5.	Salgótarján	0,035	0,88 developed
6.	Eger	0,015	0,38 un-
7.	Sátoraljaújhely	0,005	0,13 developed
	Fictitious	0,040	1,00

The industrial development level of the micro-regions shows extremely big differences.

Ózd and Gyöngyös micro-regions belong to the highly developed category (the difference between them is 2.0:1). Ózd micro-region was one of the most highly-developed micro-regions on the bais of its development level but it showed a decreasing tendency during the researched period of time. The change is caused by the alteration of the industrial structure in the micro-region. The centre was outstanding on the basis of the production of its resource industry, the role of which was still dominant during the period of the research but the branches of light industry and food production show increasing tendencies which will lead to changes in the one-sidedness of the micro-regions.

Gyöngyös micro-region became one of the leading industrial centres of northern Hungary by 1972. While in 1965 with its undeveloped industry it belonged to the undeveloped category its industrial level became 18.7 times higher during the researched period. This dynamic development is only partly the consequence of its electric energy production and the attached coal-mining because the level of the manufacturing industrial branches became very high, too. (Outstanding branches are the machine industry, the textile industry, and the canning industry.) So the micro-centre can be characterised by a developed industrial structure and further development of the two industrial agglomerations in the area of the centre is expected.

Miskolc micro-region is highly developed industrially although there is a considerable difference between this micro-centre and the above-mentioned ones. During the researched period its industrial development factor decreased to one half of the original and its relative weight became 2.7 times smaller. Although there was a considerable increase in the values of the industrial factors, this increase was too small to counterbalance the different effect of the increase of population as well as the effect of the positive change in the macro-centre average.

The change in the structure of industry had an important role in the decrease of the development level besides the above-mentioned facts. The heavy industry especially the resource industry specialisations in the micro-region, but also the branches of manufacturing industry, are highly developed. During the researched period there was a considerable decrease in the resource industry in contrast with the dynamic development of the manufacturing industry. This change is the continuation of the process which started to change the structure and this can be considered as the expectable tendency of the further development.

Leninváros and Salgótarján are medium-developed industrially (in a country-wide research both can be considered as highly developed centres), but their tendency of development and dynamism are different.

The relatively small industrial development of Salgótarján micro-region could not counterbalance the dynamic development of other micro-regions, therefore there is a tendency in its relative and absolute values. This fact was caused by the reduction of coal-mining. The reconcentration of the employment made it necessary to create new work-opportunities which demanded the development of new industrial branches at the same time. This naturally led to the modulation of the industrial structure as well as to extensive development according to the problem. After initial differences the industrial development will become dynamic and extensive which will lead to the shifting of the industrial structure towards manufacturing branches.

Leninváros micro-region in contrast with the above-mentioned one is a dynamically developing economic unit. (It increased its level of development besides developing the average to an extent which is 3.7 times more than the original.) At present it is in the state of development. It is true that the central part of the industry was created as an organic unit of the Borsod concentration, but it started to develop on its own towards the end of the 60's and it formed a new micro-region separating from Miskolc micro-region. This is why at present it is only a one-sided resource industrial centre and according to the social economic conditions the development was strongest in these branches between 1965 and 1972. Among the branches of its manufacturing industry only the significance of the machine industry became stronger.

Eger and Sátoraljaújhely micro-regions are industrially undeveloped economic

units. The stronger and many-sided development of Eger micro-region is three times stronger than that of Sátoraljaújhely. Among the industrial branches it is the machine industry that represents a higher level and further industrial specialisation concerning this branch is expectable. There is no such kind of division of labour in Sátoraljaújhely micro-region. Although its sweet industry has a leading role within the micro-centre it can still be considered as an industrially undeveloped micro-region because of the low level of its total industry.

A dynamic industrial development took place in the micro-centre in the researched period. As a result of this changes took place in the order of the micro-regions which is due to the different development dynamism.

Using the changes of the absolute and relative values of the development level and on the basis of counting the development dynamism in this way a certain type of order of micro-region can be created.

Order	Microregions	Development dynamism	Development dyn, related to the average	
1.	Gyöngyös	22.97	13.5	development dyn.
2.	Eger	6.50	3.8	considerably
3.	Leninváros	3.90	2.3	above average
4.	Sátoraljaújhely	2.14	1.3	devt. dyn. above average
5.	Salgótarján	1.14	0.62	devt. dyn
6.	Ózd	1.04	0.61	below average
7.	Miskolc	0.64	0.4	
	fictitious	1.70	1.00	

The order created by the development dynamism supports the changes which took place in the orders created by the development level.

The most important characteristic features of the development dynamism

1. There was no centre of average development intensity during the researchde period of time which proves the unequal development among the micro-regions.

2. Development dynamism above the average is shown by the centres which were undeveloped in 1965. Mention must be made of the Gyöngyös micro-region which became the most highly developed micro-region with an intensity which was 13.5 times above the average. In the case of Eger and Sátoraljaújhely micro-regions the development dynamism which was above average could not change the development quality of the micro-region.

3. The regions which showed development dynamism below average belonged to the most highly developed areas in 1965 which also proves the fact that the industrial development took place in the areas which used to be undeveloped.

4. The differentiated development of the micro-regions is proved by the fact that the proportional differences are very big in the case of the centres which showed

higher development dynamism than average while in the case of the other regions
which belong to the other categories these differences can be neglected because
they represent identical development with their factors.

To sum up it can be declared that the areal distribution of industry became
more favourable in the researched period, although the size of the industrially
undeveloped places is still considerably big and the industrial development increased
the differences among the micro-centres parallel with changes in their order. (The
ratio among the most developed and most undeveloped micro-regions was 37.3:1
in 1965, this became 37.4:1 in 1972 and the relative differences increased from
38.7:1 to 44.5:1.)

The structure of the industry is basically defined by the heavy industry as well
as its branches on both macro- and micro-region level. The resource industries play
a predominant role: their employment and technical factors are above the country-
wide average. Naturally there are specialisations in the above-mentioned branches
mainly in the micro-centres which belong to the traditional industrial agglomera-
tions. It is very interesting that the micro-regions are outstanding because of one
of their branches. Miskolc micro-region is an exception to this rule because its heavy
industry has a proportional areal distribution within the micro-region and its role
extends to the border of the micro-region. (See Fig. 1 and 2.)

According to the country-wide tendency a decrease in the weight of the heavy
industry could be traced in the researched period in the north Hungarian macro-
region (its size was the biggest in the resource industry), but this did not modify
the specialisation tendency of the region. Although in the case of some micro-regions
the structural shift towards light industry and food production was considerable
they could not counterbalance the heavy industry. There was no specialisation in
the light industry or in food production.

Researching the industrial structure in respect of the areal distribution the
effect of the natural geographical factors can be noticed. Branches of food produc-
tion become dense in settlings which are near the lowland while branches of heavy
industry are in a strong connection with the local natural resources as well as the
import-transporting roads. (See Fig. 3 and 4.) The branches which have nothing
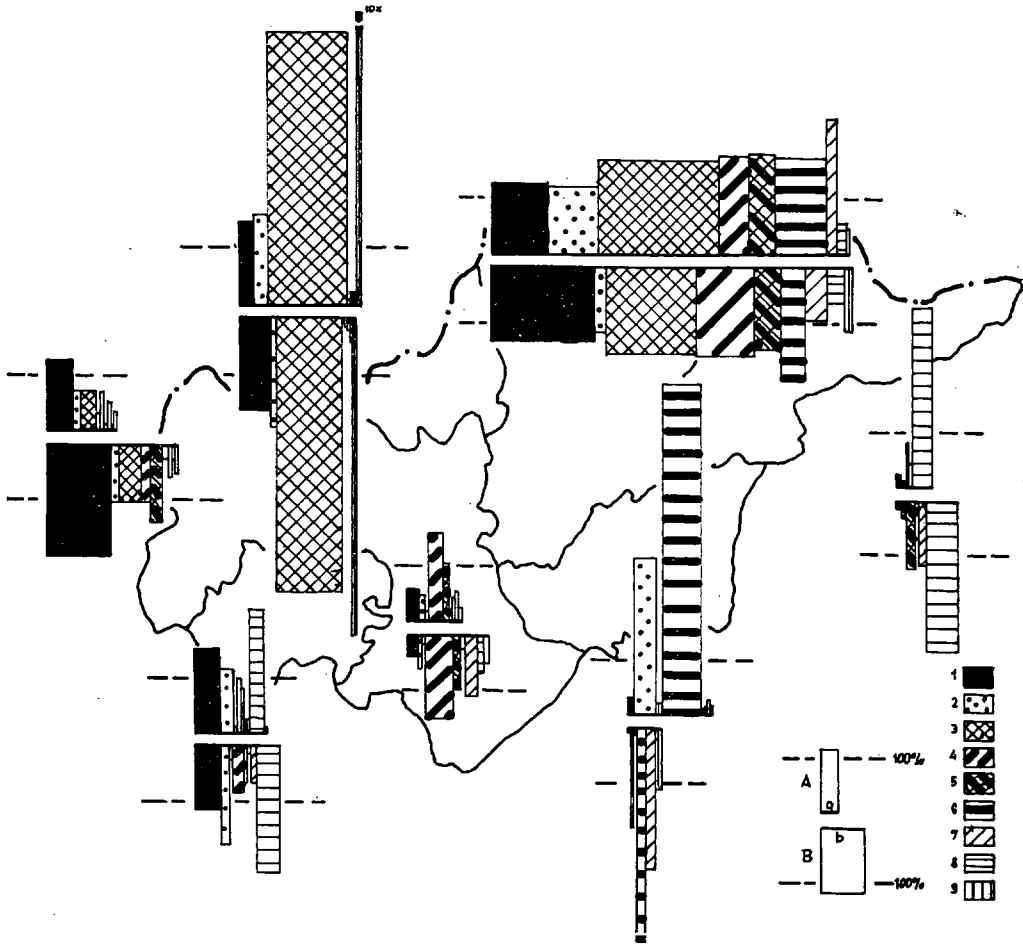to do with natural resources, e.g. the textile industry, do not show areal concentration.
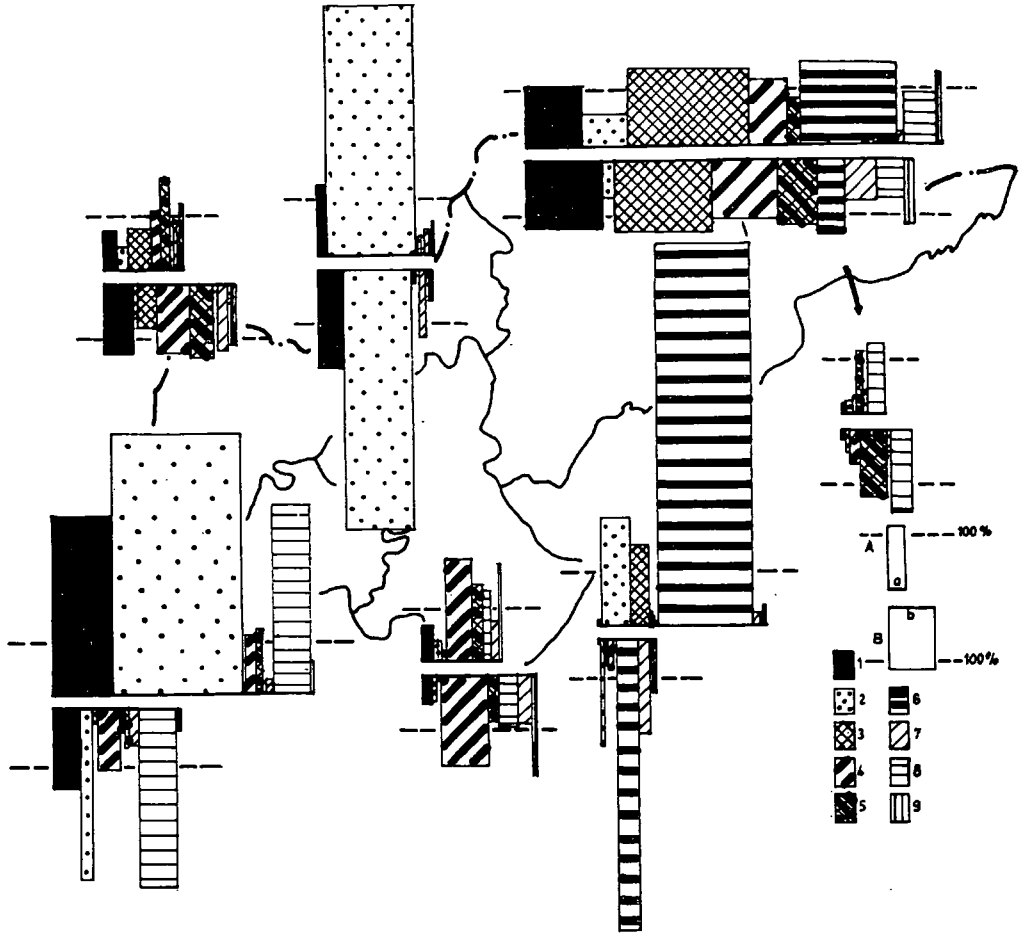
Fig. 1. Brutto value of investment stocks in the socialist industry and the distribution of the
employment accordings to industrial branches in microregions (1965)

1 = mining	A = brutto value of investment stocks
2 = electricity	B = number of employment
3 = metallurgy	a = 1 md Ft
4 = machine-industry	b = 10 000 people
5 = building material production	100 % = mezoregion average (for 1000 head)
6 = chemical industry	
7 = light industry	
8 = food-production	
9 = other branches	

Fig. 2. Brutto value of investment stocks in the socialist industry and the distribution of the employment according to industrial branches in microregions (1972)

1 = mining
2 = electricity
3 = metallurgy
4 = machine-industry
5 = building material production
6 = chemical industry
7 = light industry
8 = food-production
9 = other branches

A = brutto value of investment stocks
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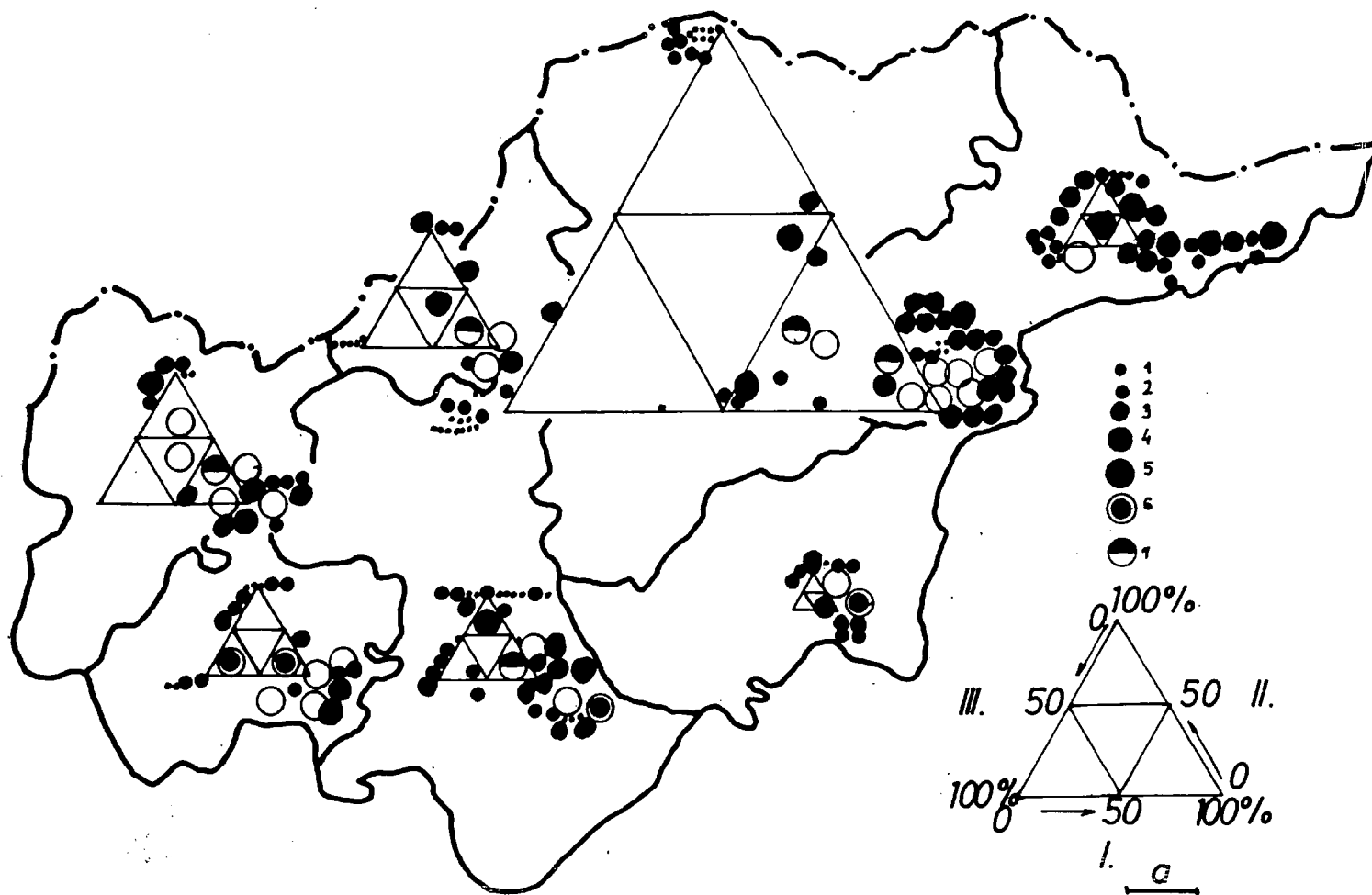100% = mezoregion average (for 1000 head)

Fig. 3. Regional and branch structure of industry according to the number of employment in the microregion in North-Hungary (1965)

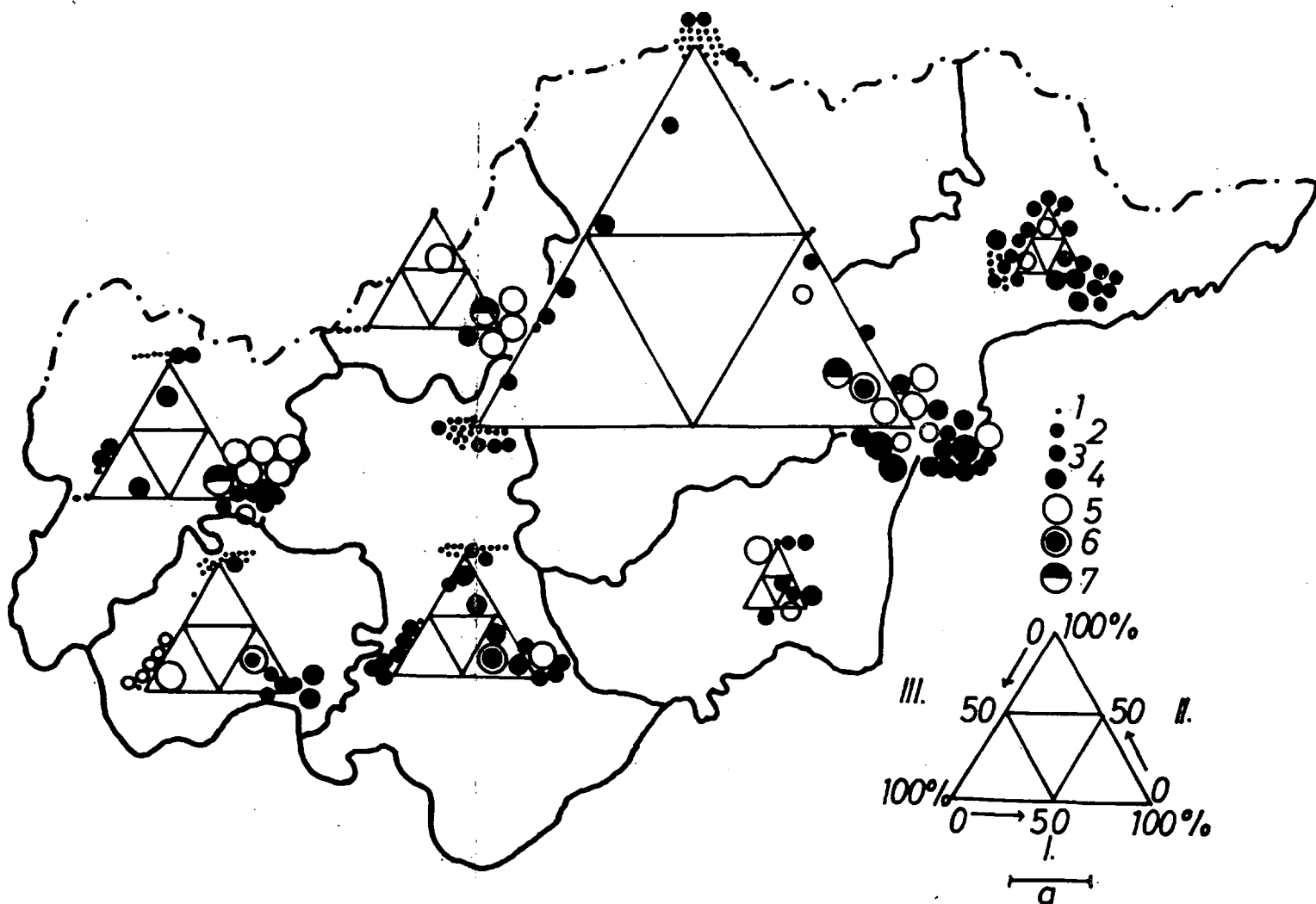| I = heavy industry	1 = < 10	people
II = light industry	2 = 11 — 100	people
III = food-production	3 = 101 — 500	people
a = 10.000 people	4 = 501 — 1000	people
	5 = 1001 — 5 000	people
	6 = 5001 — 10 000	people
	7 = > 10 000	people

Fig. 4. Regional and branch structure of industry according to the number of employment in the
microregion in North-Hungary (1972)

I = heavy industry	1 = < 10	people
II = light industry	2 = 11 – 100	people
III = food-production	3 = 101 – 500	people
a = 10 000 people	4 = 501 – 1 000	people
	5 = 1001 – 5 000	people
	6 = 5001 – 10 000	people
	7 = > 10 000	people