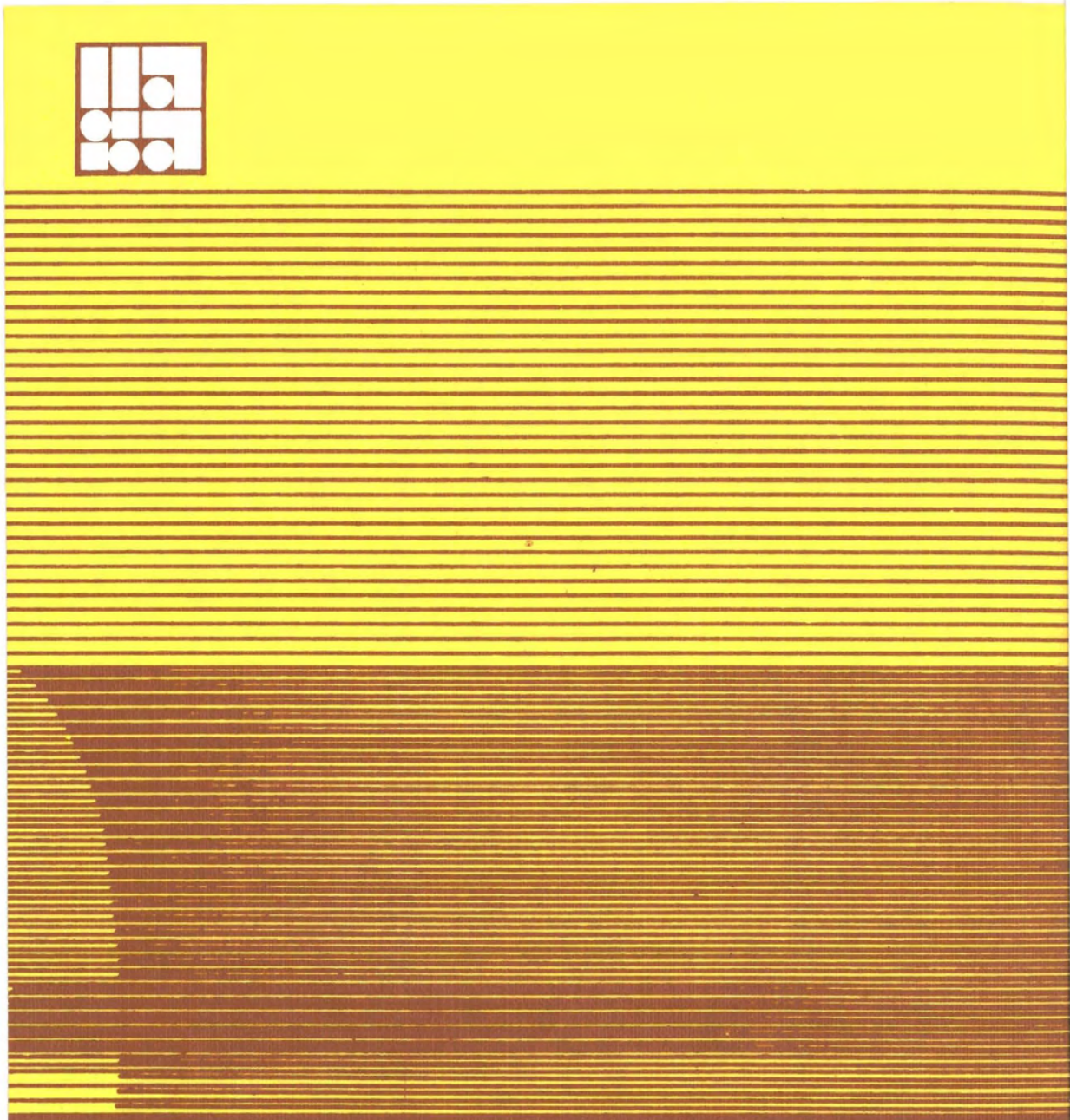

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Preface

One of the principal objectives of IIASA's research Task on Human Settlement Systems: Development Processes and Strategies is to delineate functional urban regions in the industrially advanced nations. These regions collectively exhaust the respective national territories, and usually consist of an urban core area and its functionally related hinterland area. The organization of small-area data based on these statistical regions will provide a more satisfactory basis for comparative analysis of the nature and significance of spatial differences in the economic and demographic structure, as well as evolution, of human settlement systems.

Under the auspices of IIASA's Hungarian NMO, this paper has been developed by a team led by Dr. László Lackó. It presents the results of the delineation of Hungarian functional urban regions, analyzing some of the main characteristics of these regions, and gives a brief survey of the economic and historical elements shaping the recent regional development processes in that country. The work presented here will be extended and synthesized at IIASA along with work carried out for other countries, and the results of these efforts will appear in future IIASA publication series.

Tatsuhiko Kawashima
Task Leader
January 1978

Summary

This study focuses on the delineation of functional urban regions in Hungary and the regional survey of the economic and demographic characteristics of these regions. The work of delineation was primarily based on the criteria set forth by IIASA's research Task on Human Settlement Systems: Development Processes and Strategies. However, the methodological concept of functional spheres of influence was adopted as well. The delineation was made using 1970 Census data.

It was found that functional urban regions in Hungary differ from each other with respect to (1) the extent of urban agglomeration in core areas; (2) the level of industrial activities; (3) regional population size; and (4) core-hinterland population ratios. For example, among the 23 functional urban regions in Hungary, the Budapest region is the largest, comprising around 30 percent of the country's total population. There are three more regions whose core areas are formed by real urban agglomerations: Miskolc, Győr, and Pécs--regions with a population size running from 350,000 to 450,000. The centers of 19 other regions consist only of single urban settlements.

Functional urban regions in the northern part of Hungary in general are more industrially developed, while in the central and southern parts of the country development is rather less pronounced; no significant industrial urban agglomeration areas exist in the latter except the Pécs region. That region is unique in its mining activities and in the role of Pécs city as a cultural center since the medieval times.

The study shows that all functional urban regions except three, Budapest, Veszprém and Tatabánya, have experienced population increases in urban core areas and decreases in hinterland areas during the period 1960-1970.

In conjunction with the dynamics of regional features, data for Hungary indicate that migration movements significantly diminished in the period 1970-1975; that is, the great interterritorial shifts of the population seem to have come to an end, and only negligible alterations are likely to occur in the future.

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INTRODUCTION

Efforts aimed at exploring general and specific criteria of regional development play an ever increasing role in the economic policy and planning of several countries. Three years ago IIASA took one of the paths toward a solution of these problems by adding the research theme Comparative Urban Region Study (CURS) to its agenda.

In the course of this activity, the well-known difficulties of examining regional development have been aggravated by the international dimensions imparted to the research in order to gain comparable and evaluable results. IIASA has published several studies, and has organized workshops and held consultations. As a result, the principle of elaboration of CURS have taken shape: based on the past two to three decades, to create the possibility of evaluating internationally comparable observations of regional development, using so-called functional urban regions as territorial units.

A major problem was the selection and demarcation of the territorial units. As a result of the discussions, the nucleus and the hinterland territory of urban regions are defined on the basis of their role in the settlement network, daily commuting conditions, and a given size of population. The nucleus must exceed 50,000 inhabitants (multicenter territories and scarcely populated territories are naturally considered exceptions).

Another basic problem was the range of data to be collected and their territorial detailing and processing--work closely allied to IIASA's aims. The main objective was to make possible the comparison of regional growth from the point of view of economic growth, level of income, interrelations between the development of certain branches of the economy, changes in population size and in the number of working places, and quality of life. All these would have required enormous volumes of data, especially if we were to collect them for at least two dates. Since the project began, the target has therefore been altered toward realism and feasibility: data for population, employment, and commuting have been given priority. Processing these data for a number of countries will make a successful international evaluation and comparison possible. This can contribute to the reputation of the IIASA in the fulfillment of its original tasks.

Examination of the characteristics of regional development is one of the important questions of planning and socioeconomic development in Hungary. Geographers, economists, and regional

and urban planners carry out comprehensive research in this direction. That is why we responded with interest to the initiative of IIASA, participating from the outset in the work on urban regions. The present study is the result of this activity of ours and was completed under the auspices of IIASA's Hungarian National Member Organization.

In the course of the project we departed from two principles: implementation of CURS, and the best use of the relatively modest possibilities available to collect and process data.

The study consists of four parts. The first reviews the main properties of the Hungarian settlement network, basically from the point of view of urban centers. The second one delineates functional regions, describing the influence of the role of the settlement network, of the gravitation and commuting of the labor force, and of a so-called functional gravitation upon the formation of the regions. The third part summarizes the brief characterization of the regions and the changes that took place in the period 1960-1970, especially the changes in the relations between center and hinterland. Finally, the fourth part reviews the possible directions of development.

For the computations we made use of urban and district data gained from the population Censuses of 1960 and 1970. In delineating urban regions, we took as a basis the space of gravitation of the main centers of the settlement network. Gravitation was calculated basically according to migration, commuting, and other conditions, taking into consideration the availability of data and the fact that every region should include entire districts. The population sizes of the urban regions thus are rather divergent: from 90,000 to 3 million inhabitants. This is a consequence of the structure of the society, the economy, and the settlement network. We sought to ensure the similarity of the urban regions--without forced standardization--so as to express the real territorial structure.

MAIN CHARACTERISTICS OF THE SETTLEMENT NETWORK

The Hungarian settlement network looks back to a history of several thousands of years. The activity of the Romans in developing settlements in Transdanubia proved to be the most lasting in the period preceding the settlement of the Hungarian people in the contemporary territory of our country. The period between the adoption of Christianity and the Tartar invasion (from the end of the 10th to the middle of the 13th century) can be regarded as the prehistory of Hungarian urbanization--the shaping of the first quasi-urban settlements. The period from the Tartar invasion of the country until its occupation by the Turkish Empire in the first half of the 16th century can be characterized as that of the consolidation of medieval settlement structure. The 150 years of Turkish occupation and the ravages of war induced by it led to the destruction and disintegration of the settlement network of the regions concerned. The period following Turkish

occupation--from the late 17th to the middle of the 19th century--saw the reconstruction of demolished settlements and construction of new ones, as well as reorganization of the historic settlement network in accordance with the new socioeconomic conditions. Due to rapid development after 1867, when the Compromise with the Habsburgs was reached, considerable changes took place in both the whole settlement network and the individual settlements. As the political, economic, cultural, and spiritual center of the country, Budapest showed especially rapid development. The settlement conditions and the quality of infrastructure of this era essentially determined the conditions and structure of urban and rural settlement network as it existed at the end of World War II.

During the years following the War, efforts were directed primarily at the reconstruction of industry, transportation, and communication and confined to the most vital activities. The socialist industrialization of the country induced the most radical changes in the spatial structure of the economy and the settlement and infrastructure conditions of the population. It led to considerable migration of dual character. A significant movement of population started, on the one hand, from the rural districts toward the capital and the cities and settlements situated alongside the "industrial axis", and on the other, toward cities and settlements where industrial enterprises assuring employment for a large labor force were established. The size of population living in the capital and industrial cities and settlements thus grew rapidly. The process of urbanization, however, took different forms in the individual districts of the country. The process was more rapid and dynamic in Transdanubia and the northern parts of the country; on the Hungarian Plain, the lopsided rural character of the economy slowed down urbanization. This imbalance led to many difficult problems, both in the economic-spatial structure and in the settlement network of the country.

Due to the unsatisfactory development of the infrastructure in the cities and settlements attracting migration, tensions emerged in the supply conditions of the population--housing, community institutes, and communal services. At the same time, the development of cities and settlements in the districts affected by considerable emigration came to a standstill, stagnated. From the 1960s on, the territorial development policy of the economy increasingly turned to the industrially underdeveloped districts. The changes in the territorial allocation of industry were reflected in the migration of the population and the transformation and development of the settlement network.

The largest city of the country is Budapest, and the greatest urban concentration is the Budapest agglomeration. There live almost one quarter of the entire population, and two fifths of the industrially employed. The great majority of the scientific, cultural, and educational institutes of the country is still concentrated in Budapest. In the last decade the rate of growth of the agglomeration--in terms of population and increase in industrial and other working places--exceeded that of the capital. The infrastructure could not keep abreast of this development.

Under the influence of urban development policies implemented since the early 1960s, the towns of county rank developed at a particularly rapid rate and now form the city network of our country (Miskolc, Debrecen, Szeged, Pécs, Győr). Despite this considerable, and in the last decade accelerating, development, these towns at present are in many respects unable to counterbalance the role and weight of Budapest in the economic, cultural, and intellectual life of the country.

Due to the provincial location of industry and concentrated infrastructural investments, rapid development can be observed also in other county seats: Nyiregyháza, Szolnok, Székesfehérvár, Veszprém, and Szombathely are important poles not only of the establishment of a more balanced national settlement network structure but also of a process aimed at creation of a more rational spatial structure of the economy.

The development of medium-size towns not assuming the functions of county seats has a particular pattern. Some of them, in line with the main stream of economic growth, are developing relatively rapidly; for example, Nagykanizsa, Dunaujváros, Ózd, Baja. Others are influenced by several factors of urban development (for instance, Sopron, Gyöngyös, Orosháza).

Similarly to our medium-size towns, the development of small towns is both particular and contradictory. Some are developing according to their size and character, others are stagnating, and the population of many of them even declining.

The new towns established in the process of socialist industrialization are a dynamic element in our urban settlement network.

Interesting processes can be observed in the development and transformation of the village network. Approximately 30 percent of the rural population live in 200 villages. 30 to 40 of the villages show a tendency toward urbanization. More than 1600 villages have a population of less than 2000, almost 700 of them less than 500. An increasing number of the villages located in the sphere of influence of the capital or of large and medium-size urban settlements is agglomerating with its center of gravitation. Agglomerations or agglomerating groups of settlements can therefore be found not only in the district of the capital but around Győr, Miskolc, Szeged, Pécs, Szombathely, Szolnok, and other cities.

FUNCTIONAL URBAN REGIONS

The regions were delineated partly by labor force attracting zones, partly by the general gravitation (services) of urban centers, and partly by the functional (hierarchical) situation of the central settlements. The urban labor force attracting regions are far from covering the whole territory of the country, but according to other calculations of attraction every settlement is linked to urban centers.

According to the population, employment, and commuting data of the 1970 Census we delineated 23 regions (see Figure 1). This relatively high number is explained by the small number of cities and major centers, and by the fact that for the greater part of Hungary the districts of gravitation of the small and medium-size towns typically are only loosely interlinked. One sees the strong polarization of the Hungarian economic spatial structure also in the formation of functional urban regions. The main features are the following (for data see Table 1).

The core area of only four regions (Budapest, 1; Miskolc, 4; Győr, 16; and Pécs, 23) is formed by urban agglomeration; the centers of other regions are single urban settlements. Two cities on the Hungarian Plain (Debrecen, 190,000, and Szeged, 160,000) might yet agglomerate the neighboring settlements, but to a lesser degree.

The Budapest region emerges very conspicuously from the rest. The core area--the Budapest agglomeration--taken in the strictest sense has a population of 2.3 million, the whole region having 3 million. The core of the second largest region, Miskolc, hardly exceeds 400,000, the whole region having .75 million.

The industrial-economic centers of the country were formed in the northern districts. Of the 23 regions, five are located alongside the northern border (the Budapest, Miskolc, Győr, Salgótarján, and Tatabánya regions) and comprise 4.7 million inhabitants, i.e., 45 percent of the population. Similarly strong is the territorial concentration of the industrially employed active earners; there is very strong interrelation between the geographic distribution of industry and that of the population. All the large cities are industrial; the Hungarian capital up to the mid-1960s was the largest industrial concentration of all Eastern Central Europe. More people worked in Budapest industrial enterprises than in those of the whole Upper Silesian industrial district of Poland.

In four regions the share of the industrially employed earners exceeds 50 percent of the active population. The Budapest district is situated in their center. The other three--centers of mining, metallurgy, and energetics--maintain close cooperation with the industry of the capital. A strongly specialized industrial ring surrounds the capital, disposing of tertiary functions of high level. In the relatively small territory of the four regions, exactly half of the country's industrially employed population is concentrated.

There are no significant industrial-urban agglomerations whose gravitation extends to considerable territory in the central and southern part of the country. From among Pécs, Szeged, and Debrecen--cities with 160,000 to 190,000 inhabitants--only Pécs has a definite zone of agglomeration; in the other two, the agglomerating process is still taking shape. In the Pécs district there are many functional zones with small sizes of population and territory that are linked to relatively small centers.

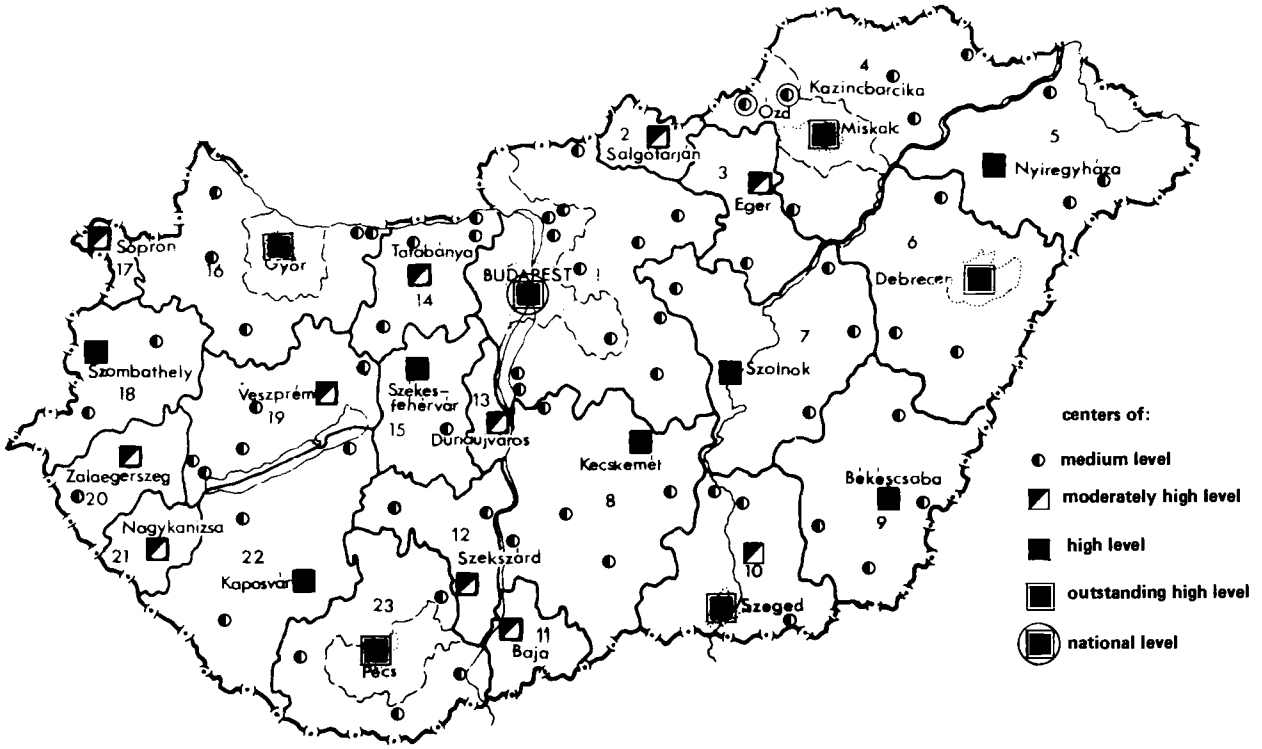

Figure 1. Functional urban regions and the basic elements of the Hungarian settlement network.

The economic-spatial structure of the Hungarian Plain and South-West Transdanubia is characterized mainly by regions that do not amalgamate into higher territorial units and maintain very loose economic relations with each other. The center of such a region frequently links to itself a large part of its functional zone not by economic and labor force attraction but by administrative, health, and educational gravitation.

The proportion of the population of the core and the attracted territories is very divergent. In the most highly developed (Budapest and Miskolc) regions the population of the core area is much larger than that of the attracted territory. In many respects these cores attract the whole territory of the country or several regions. On the other hand, some smaller towns of the Hungarian Plain--for instance, Békéscsaba with 62,000 or Szolnok with 72,000 inhabitants--have large territories of gravitation, but their intensity of gravitation is insignificant. In the Plain districts that are industrialized to a lesser degree, and also in the central and southwest districts lacking significant urban centers, a large part of the population is outside regular and strong urban gravitation.

In delineating the urban regions we took account of the results of a computation of functional spheres of influence obtained in another research activity. The sphere of influence of the settlements at the top of the settlement network hierarchy was determined with the help of a type of interaction model. From the methodological point of view we departed from the study of Hansen [1]. The interaction of centers of the highest level was computed so that factor values corresponded to the masses showing gravity. Using air kilometers with quadratic indices, 30 variables of factor analysis express the size, importance, and "capacity" of the settlements (number of inhabitants, industrially employed earners, and retail shops, hotel capacity, telephone stations, movie seating capacity). A more detailed evaluation of the results is to be found in the study of Lackó [2].

The spheres of influence of the centers of highest level are shown in Figure 2. It is noticeable that they are of very different size. Among the smallest are Hódmezővásárhely, Sopron, Eger, and Salgótarján, while the largest, apart from Budapest, are Miskolc, Debrecen, Győr, and Nyiregyháza. It is obvious that the formation of the "borders" depends in the first place on the situation of the settlements with respect to each other; but the delineation conceals other significant phenomena. Thus for instance the northern boundary of the sphere of influence of Pécs can be delineated only very conditionally, which reflects the lack of a center in this area. The situation of the centers surrounding the capital deserves still more attention. Here circles of small radius--compared to the neighboring settlements--were formed, and as a result the districts could not be closed in the direction of the capital. That is due to the differences in the size and importance of Budapest and other centers.

Table 1. Important data of urban regions.

Region Number and Name	Resident Population 1970	Resident Population Change from 1960 [%]	Net migration difference between 1960 and 1970	Industrial Earners 1970	Industrial Earners Change from 1960 [%]	Industrial earners as % of total earners 1970	Out-Commuters* 1970	Out-Commuters* Change from 1960 [%]
1 Budapest								
Core	2,351,635	104	+56,321	538,934	139	52.6	145,905	149
Attracted Area	*727,579*	*105*	*+ 6,932*	*125,234*	*210*		*148,256*	*166*
2 Salgó-tarjan								
Core	40,095	119	+ 4,357	16,033	191	60.3	983	154
Attracted Area	*86,308*	*101*	*- 4,119*	*13,249*	*145*		*18,497*	*129*
3 Eger								
Core	45,236	124	+ 8,358	11,680	204	23.2	711	103
Attracted Area	*157,091*	*90*	*-20,073*	*22,517*	*154*		*23,712*	*157*
4 Miskolc								
Core	383,456	126	+51,945	73,921	154	45.7	39,286	146
Attracted Area	*395,968*	*93*	*-58,491*	*49,041*	*163*		*50,645*	*161*
5 Nyiregyháza								
Core	73,013	124	+ 9,225	16,165	224	26.4	1,217	198
Attracted Area	*517,198*	*89*	*-92,510*	*48,194*	*188*		*42,105*	*235*

6 Debrecen	156,685	123	+24,172	43,765	191	31.8	2,483	218
Core								
Attracted Area	*374,823*	*91*	*-66,441*	*17,201*	*187*		*29,434*	*204*
7 Szolnok	61,559	137	+14,253	17,735	197	34.6	1,225	333
Core								
Attracted Area	*387,442*	*90*	*-25,894*	*51,776*	*159*		*30,022*	*150*
8 Kecskemét	77,963	119	+ 3,275	22,672	199	27.0	1,195	180
Core								
Attracted Area	*397,213*	*92*	*-41,395*	*37,729*	*199*		*28,496*	*185*
9 Békéscsaba	57,060	112	+ 4,629	17,418	173	29.0	793	158
Core								
Attracted Area	*389,345*	*90*	*-38,663*	*42,991*	*179*		*28,649*	*185*
10 Szeged	145,413	129	+27,600	39,012	172	36.4	3,056	269
Core								
Attracted Area	*295,986*	*95*	*-19,147*	*23,831*	*178*		*30,108*	*183*
11 Baja	34,650	115	+ 4,727	10,734	180	28.9	546	156
Core								
Attracted Area	*64,183*	*88*	*- 8,706*	*3,302*	*199*		*6,721*	*213*
12 Szekszárd	24,364	136	+ 6,005	5,763	267	30.6	303	165
Core								
Attracted Area	*157,317*	*90*	*-18,752*	*27,711*	*180*		*16,169*	*178*

*Number of persons working outside their place of residence.

Table 1. (cont'd)

Region Number and Name	Resident Population 1970	Resident Population Change from 1960 [%]	Net migration difference between 1960 and 1970	Industrial Earners 1970	Industrial Earners Change from 1960 [%]	Industrial earners as % of total earners 1970	Out-Commuters* 1970	Out-Commuters* Change from 1960 [%]
13 Dunaujváros Core	44,721	168	+14,374	19,672	178	54.7	642	455
Attracted Area	*54,890*	*102*	*- 2,279*	*13,451*	*184*		*9,983*	*127*
14 Tatabánya Core	65,274	132	+12,030	28,742	171	59.9	1,212	135
Attracted Area	*243,169*	*112*	*+ 9,515*	*41,389*	*158*		*35,997*	*138*
15 Székesfehérvár Core	73,949	140	+19,319	26,956	193	41.7	1,800	237
Attracted Area	*142,774*	*99*	*- 5,199*	*7,733*	*181*		*31,266*	*160*
16 Győr Core	168,929	109	+ 7,054	56,143	165	43.6	18,003	111
Attracted Area	*292,471*	*97*	*-21,207*	*27,206*	*162*		*35,774*	*153*
17 Sopron Core	44,956	117	+ 5,897	15,758	137	44.3	465	157
Attracted Area	*44,661*	*92*	*- 4,903*	*9,550*	*193*		*8,917*	*179*

18 Szombathely	64,485	121	+ 8,809	21,077	180	37.3	832	134
Core								
Attracted Area	*215,640*	*92*	*- 5,760*	*20,864*	*184*		*31,663*	*178*
19 Veszprém	36,938	145	+ 8,828	10,206	197	45.3	1,310	264
Core								
Attracted Area	*295,841*	*111*	*+ 9,260*	*57,528*	*164*		*43,103*	*151*
20 Zalaegerszeg	39,252	137	+ 7,775	10,979	250	33.8	915	376
Core								
Attracted Area	*123,602*	*87*	*-20,987*	*11,036*	*159*		*18,996*	*170*
21 Nagykanizsa	39,559	112	+ 3,465	12,081	227	33.5	750	145
Core								
Attracted Area	*64,366*	*86*	*-11,344*	*9,188*	*180*		*8,535*	*210*
22 Kaposvár	58,524	126	+10,884	18,340	199	27.7	850	240
Core								
Attracted Area	*304,551*	*93*	*- 6,600*	*14,980*	*190*		*34,497*	*179*
23 Pécs	204,894	114	+19,916	44,793	160	38.3	20,665	177
Core								
Attracted Area	*297,071*	*95*	*-22,671*	*35,856*	*155*		*34,288*	*158*

*Number of persons working outside their places of residence.

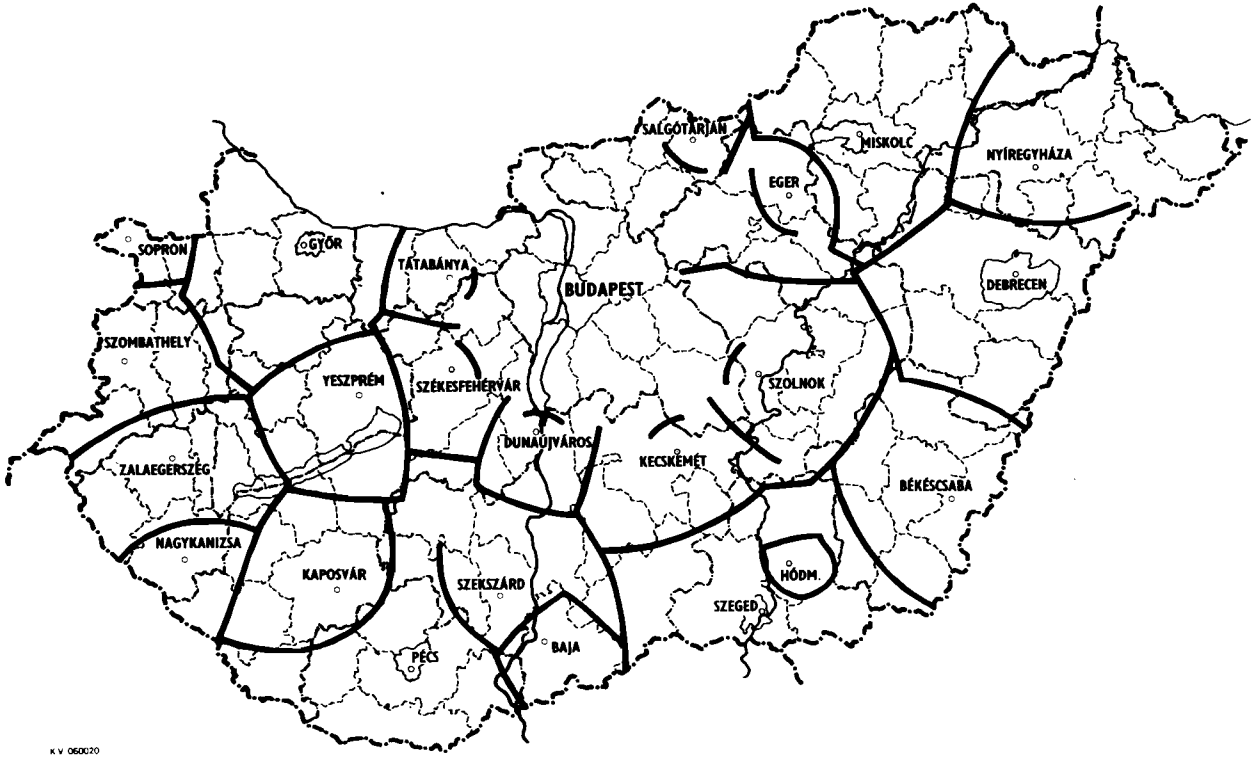

Figure 2. Spheres of influence of Budapest and centers of high level.

(The factor value for Budapest was 11.183, for Tatabánya 0.158, for Székesfehérvár 0.271, for Dunaujváros -0.003, For Kecskemét 0.196, for Szolnok 0.275, for Eger 0.074, and for Salgótarján 0.037.) The results of the computation cannot be evaluated horizontally. Figure 2 should be regarded as if Budapest were an outstanding platform and other centers were situated on a lower level; the "relief" is indicated by the small arcs.

The sphere of influence considerations helped in the delineation of urban regions and served as additional data for the solution of disputed questions.

DESCRIPTION OF THE REGIONS

The regions can be divided into three groups. The first includes Budapest itself. The second contains the large urban regions 4 (Miskolc), 6 (Debrecen), 10 (Szeged), 16 (Győr), and 23 (Pécs). The third includes the remaining centers which are medium-size towns. This group can be divided into subgroups: the heavily industrialized urbanized centers (for instance 14 and 19), and poorly developed regions whose centers have an administrative and service character rather than economic gravitation.

The Budapest Region

With its size and dynamism the capital plays an outstanding role in the economic-spatial structure of the country. The considerable decline of the number of industrially employed earners in the last years does not mean decreased significance of the capital, since all the commanding positions of political and economic life are there. The overwhelming majority of the industrial enterprises, the head office of all banks, are in the capital. The electric machine tool industry, precision engineering, and research and development in general are of outstanding importance in the industry of Budapest. About 30 percent of Budapest industry exports its products abroad. Next to Moscow, the Hungarian capital is the largest of the European socialist capitals, its attractive force extending not only to the whole country but in some respects beyond its borders.

The agglomerative ring sticking closely to the capital belongs to the core area of the region. Originally it was the commuting zone of the capital, but in the last two decades--mainly due to the resettlement of Budapest industry--its own industry has considerably developed and several dynamic satellite towns have been formed (Vác, Százhalombatta, and Gödöllő). The outer zone of gravitation of the region is also in the Budapest commuting region (approximately 220,000 persons commute daily to and from the capital). The population of the region shows rapid growth, partly due to the difficulties of moving into Budapest.

The agricultural and touristic functions of the region are important as well. The agriculture is highly intensive and the most advanced of the country. The capital-intensive development of agriculture was stimulated by the rapid decrease in labor force. The high level of development was influenced by the great importance of the branches of intensive plant cultivation--flowers, vegetables, fruit, and viniculture; by favorable market possibilities; and by many branches of industrial activity flexibly accommodating to the needs of the market and maintaining cooperation with the manufacturing industry. The natural conditions of agriculture, on the other hand, are poor.

The most important center of tourism is Budapest itself; in 1975 it was the final destination of half of the five million foreign tourists who stayed for longer periods of time in the country. The forest-clad mountains north of the capital and the Danube Bend are also centers of tourism of national importance.

All the main railway lines and highways converge in Budapest, and the Free Port on the Danube is there. The very favorable transportation-geographic situation was of great importance in the rapid economic development that took place at the end of the 19th century and will strengthen the preeminence of Budapest also in the future.

One can hardly observe the US type of suburban development in the Budapest agglomeration. The settlements of the commuters--the "dormitories"--have the character of rural areas where agricultural activity of the population is widely spread.

The Large Urban Regions

Three of the large urban settlements have traditional industrialized-urbanized core areas; the two Plain regions have preserved much of their rural past. Of the old industrial regions, two--Pécs and Miskolc--grew from their background of mining and energetics. In the past twenty years their production structure has been substantially enlarged; nonetheless, it is still rather lopsided, the manufacturing industry being insufficiently developed. The core area of the Győr region, on the other hand, is characterized by manufacturing industry. Although the center cities are not really large (Miskolc 200,000, Pécs 165,000, and Győr 120,000 inhabitants), they are quite dominant.

The structure of the *Miskolc region* is peculiar. Its core area is formed by the second-largest industrial district of the country, situated in the valley of the Sajó river from the border to the Tisza river. The industrial zone is the main metallurgical and chemical district of the country. Almost without transition, the area of gravitation surrounding the core is one of the most underdeveloped zones of the country, with backward agriculture, small villages becoming depopulated, and poor transportation. Only the fertile southern agricultural zone is able to keep some small towns.

Pécs and the surrounding mining district make up the core area of the *Pécs region*. The tertiary functions of Pécs are important. From medieval times onward it has been a cultural center; its university was founded in 1366. Its manufacturing industry is characterized by light industry, and there is lack of dynamic modern branches of industry. The development of the city is mainly due to its being the organizational center of this important mining district (occurrence of anthracite and uranium ore in the country), but in the long run that will not be sufficient. Plenty of small settlements are losing vitality in its attracted region, which is also an important zone of tourism.

The core area of the *Győr region*--the Győr agglomeration--is one of the oldest industrial-urban centers. Its development has been stimulated by its location halfway between Budapest and Vienna. Due to early industrialization, light industry is very important in its structure. Győr industry remained untouched by the great wave of industrialization following World War II. Mining and metallurgy were the first beneficiaries of changes; since the 1960s, Gyor has received high priority in the program for road vehicle production (lorries, dumpers, and various aggregates), which has strongly influenced the development of the whole city. Its tertiary functions, which for a long time were of little economic importance, also have started to develop. Following a vigorous immigration, the city has grown younger; the natural growth of the population is the highest of all cities, exceeding twice the national average.

The small town network of Győr's sphere of influence is well developed. Agriculture is intensive; stockbreeding for decades has been the most advanced in the country. Further advantages are assured by its nearness to Vienna and Bratislava, and transit is considerable.

The development and internal territorial structure of the large urban regions of the Hungarian Plain--the *Debrecen and Szeged regions*--are peculiar. Both cities have for centuries been important trade and cultural centers of the Hungarian Plain. Trade, however, has been limited to agricultural products--grain, beef cattle--which did not accumulate large amounts of capital, and cities remained almost completely untouched by capitalist development. In the period preceding World War II only insignificant industry settled there, with the foodstuff industry playing the dominant role. The administrative borders of the cities included a fair amount of agricultural territory, the majority of their population even in the period between the two World Wars being occupied with agriculture. The tertiary functions and cultural life of these "peasant cities" were, however, surprisingly developed: both cities have universities and research institutes of international reputation, and the literary, theatrical, and musical life is active.

Beginning in the 1960s, rapid development followed the stagnation of the one and a half decades after World War II. Considerable modern industry was settled in the cities, their tertiary

functions were strengthened, and the population rapidly increased. These rural cities were unable to employ the surplus labor force of their sphere of influence as they themselves disposed of considerable surplus labor, which was absorbed first by the newly settled industry.

There are relatively many medium-size towns in the sphere of influence, which developed like rural cities. For decades their population has stagnated, in some cases diminished. The region influenced is mainly agrarian. The Debrecen region is surrounded by an extensive agrarian belt with Debrecen as an island within it. The spatial structure of the Szeged region is more proportionate, the small towns being more important and the agriculture more intensive.

The Regions of Medium-Size Towns

The districts belonging to the third group of urban regions can be divided into three parts according to their common internal features. The first part includes districts with heavy industry, relatively small territory, and homogeneous economic structure (the Salgótarján, Dunaujváros, Tatabánya, and Nagykanizsa regions). Next there are the regions of common denominator where the influence of the center, while hardly disputable, is administrative only. Here the region is formed by a county and its seat; because of the weakness of an observable other attracting effect, it would have been unreasonable to split the counties (see 5, 7, 8, 9, and 22). The level of development of these mainly agrarian regions is rather low. Finally, there are the medium-size urban districts that have been formed largely on the basis of their industrial-production functions, with relatively strong urban gravitation (3, 15, 18, 19, 20).

The importance of commuting in various cities is illustrated in Table 2. Note that this coefficient is in loose relationship with the economic character of the cities, as there are industrial centers with high and with low level of commuting. A more definite interrelation can be seen in the fact that commuting is generally less important in the large cities than in settlements with small population. There is, however, an exception: Kecskemét, one of the medium-size towns, shows the lowest level of commuting of all urban settlements.

Obviously this picture is due partly to the fact that the evaluation was carried out according to administrative borders. Thus intratown commuting does not figure in the commuting data; for towns with large territory, for instance Kecskemét, relatively fewer, and for towns of small territory relatively more commuters are taken into consideration.

The central settlements of the urban regions are characterized by a fairly sizeable positive commuting difference. Only a subcenter of region 4, Kazincbarcika, is an exception: the

Table 2. Daily commuters in the centers of urban regions (1970).

	Incommuters as a percentage of resident earners	Net commuters (in-commuters minus out-commuters) as a percentage of resident earners
Budapest	15.8	14.2
Salgótarján	40.5	37.2
Eger	26.5	24.8
Miskolc	26.9	23.8
Kazincbarcika	35.8	23.5
Ózd	33.0	30.4
Nyiregyháza	25.6	24.4
Debrecen	17.4	14.7
Szolnok	28.5	26.7
Kecskemét	13.5	12.6
Békéscsaba	22.0	21.4
Szeged	23.9	19.9
Baja	24.8	23.3
Szekszárd	37.6	34.2
Dunaujváros	25.0	24.0
Tatabánya	21.0	18.5
Székesfehérvár	32.0	27.0
Győr	33.5	32.1
Sopron	23.0	20.5
Szombathely	31.0	28.9
Veszprém	32.0	28.0
Zalaegerszeg	32.5	26.9
Nagykanizsa	23.5	20.9
Kaposvár	23.8	22.5
Pécs	15.6	4.9

share of out-commuters exceeds 10 percent. This fact is connected with the multicenter nature of the region and the strongly industrialized character of the district.

DEVELOPMENT OF THE REGIONS BETWEEN 1960 AND 1970

The development of the population, urbanization, and industrialization of the regions in the period between 1960 and 1970 strengthened new trends. Naturally a single decade brings about no fundamental changes in regional structure; yet contrary to the territorial concentration of many decades, in the 1960s and the first half of the 1970s the effects of a decentralizing policy could be clearly observed. Territorial equalization was further strengthened in the 1970s.

The industrial enterprises have settled many factories in the provinces. The competence and material possibilities of the local authorities have been also amplified. Our study considers first the changes that took place in 1960-1970, as those were the years of population census. Since 1970 no regionally detailed data have been published on either the occupation structure of the population or commuting; other sources, however, enable us to outline the main features of the territorial changes brought about in the 1970s.

Changes in the Number of Population

In the course of the decade considered, the growth of population has slowed down considerably, the yearly natural growth barely exceeding 0.2 percent--one of the lowest rates throughout the world (Figure 3). Migration has played a significant role in the territorial changes of the population, although it was slower than that induced by the great wave of industrialization of the 1950s (Figure 4). The collectivization and rapid mechanization of agriculture that took place in the early 1960s induced important migration movement.

The districts of the country releasing and absorbing population have not undergone alteration; thus the regional concentration of the population has continued, although at a slower rate. The population of the most important industrialized northern districts has shown neglibible increase only; it has even diminished in the Miskolc region. This is partly due to the decentralization of Budapest industry, but is also connected with the fact that the traditional activity of the old industrial districts (regions 2 and 4)--mining--has declined.

Budapest immigration has become negligible (and is aimed at tertiary functions). The population of the outer belt of the agglomeration has increased more rapidly, but only to the level of the national average. The core area of the Miskolc region, on the other hand, owing to the establishment of a huge chemical complex, has continued increasing its population.

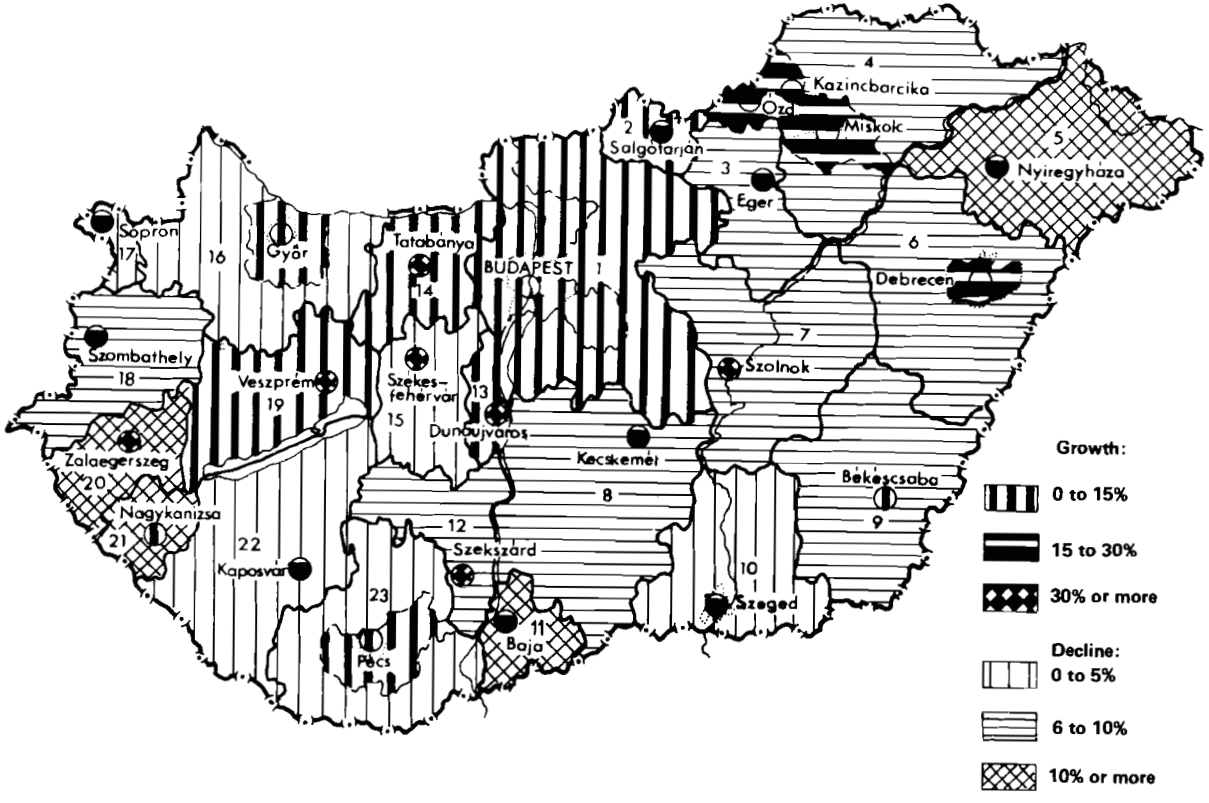

Figure 3. Changes in the number of population, 1960-1970.

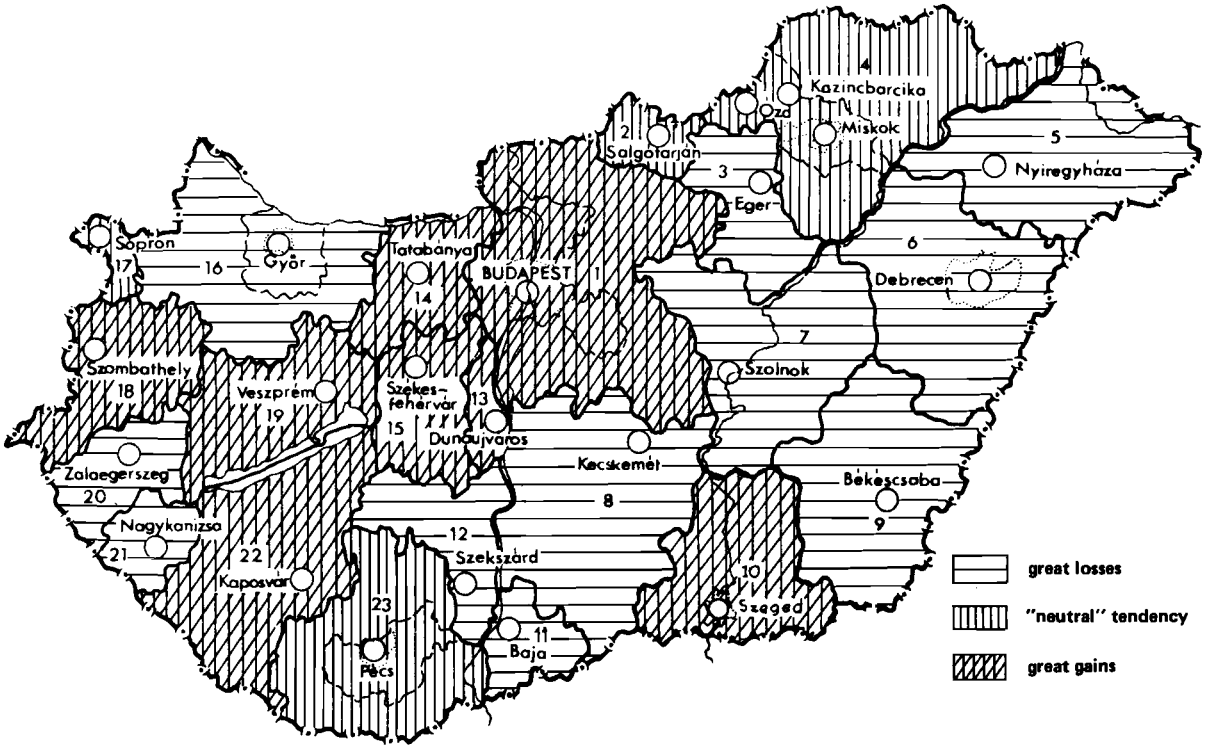

Figure 4. Migration differences 1960-1970.

The network of medium-size towns has shown the most dynamic development during the period under study. The urban settlement network has become more proportionate; Budapest has developed at the lowest rate, the five large provincial cities (macroregional centers) have shown more rapid development, and the medium-size towns (50,000 to 70,000) have grown the fastest.

The regional centers are still relatively weak in the southern and eastern, previously agrarian, districts. Although their population has increased considerably, they could not absorb all the surplus labor force available in the district of their influence; the bulk of it thus left for more distant parts of the country. Many of the emigrants have not left the district for good but have become weekly commuters, returning home only once a week. This stratum of itinerant workers represents one quarter of the commuters (300,000 persons); during the week they live in workers' hostels and work mainly in the Budapest and Miskolc region. The weakness of the centers in the Hungarian Plain is illustrated by the fact that the center of region 5, Nyiregyháza, could absorb less the 10 percent of the 12,000 emigrants from its district of influence. The share of Békéscsaba and Kecskemét from their district of gravitation is the same.

The migration movements of the 1950s led to great regional shifts in the country from southeast toward northwest. During the 1960s this process slowed, but the difference between the rapidly growing medium-size towns and their district of influence was pushed to extremes. Because development concentrated on the medium-size towns, the small urban settlement network stagnated on the Hungarian Plain; similarly to the villages, it even lost population.

Territorial Changes of the Industrially Employed Population

In the period between 1960 and 1970 the dynamic growth of the number of the industrially employed earners continued, especially in the first half of the decade (Figures 5 and 6). This was connected with transmigration of the rural labor force into industry after the collectivization of agriculture. The abundant labor force slowed down the increase in industrial productivity, while the productivity of agriculture increased rapidly. This period is also characterized by the postwar "baby boom" generations reaching employment age. Thus in several regions the industrial personnel at least doubled. The comparison of Figures 2 and 3 still reveals and important correlation between industrialization and population growth although the interrelations are far from unambiguous, like those characterizing the period between 1949 and 1960.

The growth in industrial personnel was the slowest in the core area of the Budapest region. In this nucleus territory--the Budapest agglomeration--the continuous growth of a century in industrial personnel came to a halt; since 1967, a decline

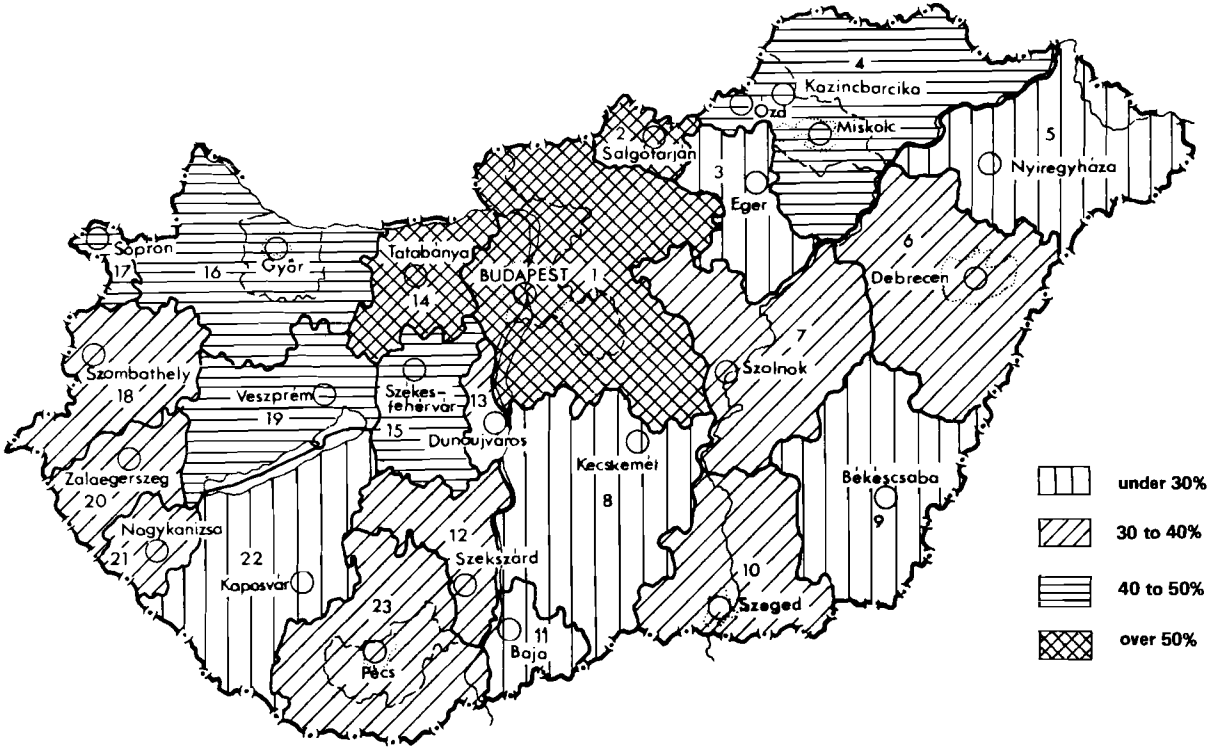

Figure 5. Industrial earners as a percentage of total number of earners, 1970.

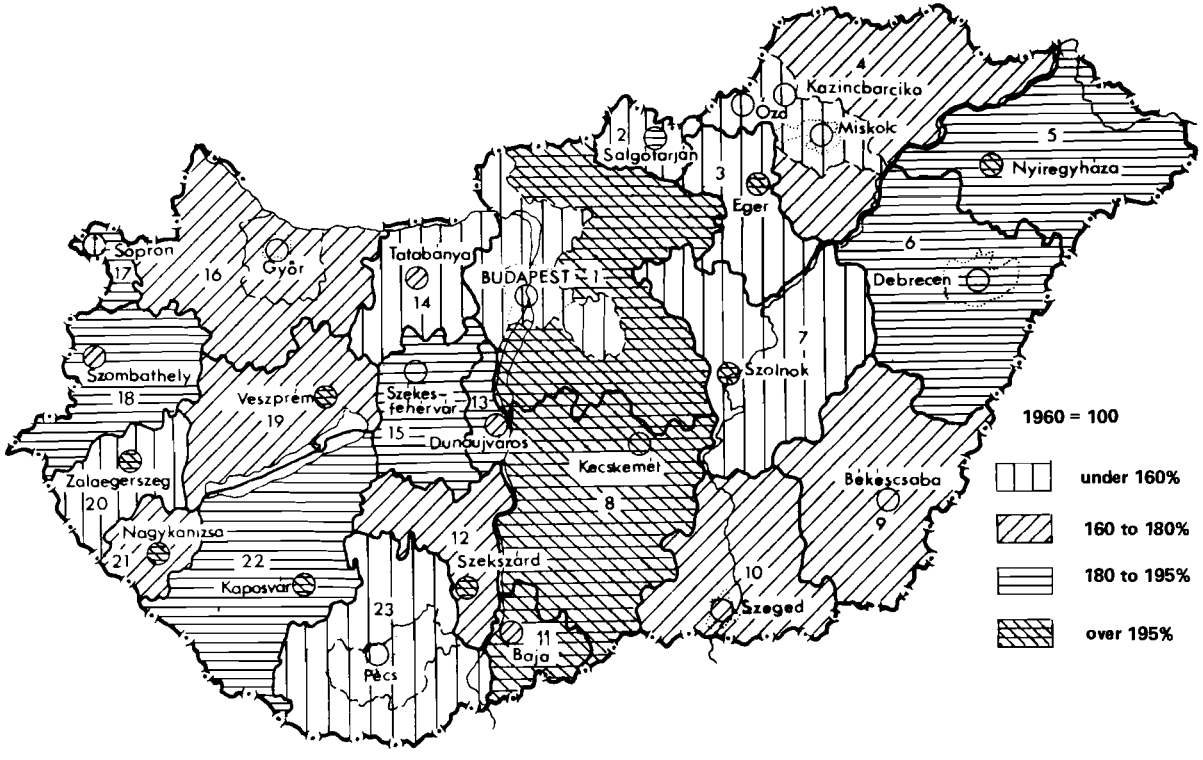

Figure 6. Increase in the number of industrial earners, 1960-1970.

has even started. The industrial personnel of the capital diminished to 30 percent of the national one, in 1950 having been almost 50 percent. In the district of gravitation, however, the industrial personnel showed rapid growth. This can be explained partly by the extension of the commuting zone and partly by the resettlement of Budapest industry.

The development of the medium-size towns, already mentioned, has considerably amplified their industrial functions. In ten years the medium-size towns, marching at the head of population growth more than doubled the number of their industrial personnel.

Industrial development generally slowed down in the northern industrial zone, due to the policy of decentralization of the industry and the already mentioned structural problems of the older industrial districts (dominance of mining).

Industry generally developed rapidly in the industrially backward districts. It showed the highest rate of growth in the districts between the Danube and the Tisza, but the rate of growth of the northern Plain and Southeast Transdanubia also exceeded the average. The development of industry in the districts of the Hungarian Plain was aimed at absorbing the surplus labor force and improving the urban network. The process of equalization began also in the territorial location of the industry.

CHARACTERISTICS OF DEVELOPMENT AFTER 1970

The 1970s proved to be a special era in the development of the Hungarian economy.

During the period 1971-1975 the natural growth rate of the population about doubled (reaching 2.1 percent in five years) with the country having passed the demographic nadir. The territorial stability of the population further strengthened, and migration strongly diminished. The territorial concentration of the population almost ceased. For instance, during the period 1960-1970 the population diminished in seven counties while during 1971-1975 it diminished in only one county; the profit of Budapest from migration amounted to 0.97 percent of the population, while in 1975 it was 0.24 percent. The great territorial shifts of the population came to an end; only negligible alterations can be expected in the future in the present geographic map of population.

The main characteristics of the development of the urban network are the following. First, the growth of population in the large urban settlements has become independent of the development of industry; these settlements have entered a kind of postindustrial phase. Second, the medium-size towns go on showing the highest rate of growth, but on the other hand the situation of the small urban settlements has also been released from the deadlock. The economic upswing of the small towns has been brought about mainly by the decentralized development of industry,

but the service functions have been considerably amplified as well. The number and the influence of the secondary local centers inside the functional urban regions have also increased.

The number of permanent migrants has considerably decreased, while that of commuters has greatly risen--by 20 percent in five years. Some research workers consider the increase in commuting as an unfavorable phenomenon; but in our view, the unfavorable effects can be largely neutralized by developing transportation.

Important changes have occurred in the geographic distribution of the industrially employed population. The number of this sector of the population increased by only 1 percent during the period 1971-1975. A fresh labor force entered mainly the tertiary sectors. The changes in the industry of the Budapest region are very conspicuous. Although in the outer district of gravitation the industrially employed population somewhat increased, it declined strongly in the core--by 12 percent in five years. Especially significant was its decline in the capital, where in ten years (1965 to 1975) it diminished by 120,000. At the same time it continued to grow relatively rapidly in the industrially backward regions of the Hungarian Plain and South Transdanubia--by 16 percent in five years (region 5, Nyiregyháza, by 37.4 percent). As a result of this development with contradictory directions, the share of the industrially backward regions in the industry of the country had increased by 1975 to 21 percent, from 18.5 percent in 1970, that of the Budapest region having fallen back to 31.5 percent from the 1970 level of 40.1 percent.

The decentralized territorial development of industry is due to two factors. First, in the contemporary system of economic management the industrial enterprises make independent decisions in many matters of development. As a result of the chronic lack of labor force in Budapest, the enterprises of the capital have established many factories in the urban and large rural settlements of the Hungarian Plain that dispose of a free labor force. Second, in order to spur more rapid development of the backward regions, a central fund for territorial development was established in the State budget, the bulk of which has come into the development of industry. Two thirds of this fund has been used in four regions (5, 6, 7, and 9) of the Hungarian Plain. Region 5 alone received half of the fund.

The main features of the territorial location of industry have also formed. Further territorial dispersion is expected to slow down, with technical reconstruction coming into the spotlight. Coal mining again looks forward to certain developments to improve the situation of the old industrial regions. (In region 2, Salgótarján, during the period 1970-1974 the number of people employed in coal mining dropped by 30 percent. Through accelerated development of other industrial branches and dropping the pensionable age to 55 for miners, problems of employment were avoided in the region.) In region 14, influenced by increases in the oil price, decisions have been adopted to open new mines, which in the long run may happen in region 4 as well.

A new industrial center can be shaped in region 12 where the first atomic power station of the country is being erected on the Danube, which is a favorable factor for its siting.

The districts of influence of several urban regions--for instance 5, 9, and 22--may preserve their agricultural character. Because of the rapid modernization of agriculture and the equalization of industrial and agricultural income levels, this should cause no particular social problems, although it is accompanied by slow emigration of the population. Large-scale agriculture has developed several industrial and service activities that slow down rural emigration.

ANTICIPATED DIRECTION OF SETTLEMENT NETWORK DEVELOPMENT

The concept of developing the settlement network adopted by the Government of the Hungarian People's Republic in 1971 measured and outlined the prospective directions and proportions of the process of national urbanization, the ways and possibilities of developing our urban and rural settlements for the forthcoming decades. The predictive conclusions and observations of the development concept basically refer to the turn of this century. The population of Hungary is estimated at 11.5 to 11.9 million by the year 2000, a one-million growth over the present number of population. In two and a half decades, two thirds of the population of the country is expected to be urban. It is probable that those living in villages will enjoy conditions similar to those of urban life. The socioeconomic development and wide proliferation of scientific and technical progress are expected to bring about important changes in employment structure. While in 1960, for instance, almost 40 percent of the population of working age was occupied in agriculture, by the turn of the century this share will have diminished to between one third and one quarter. During the second half of the 1970s the number of those employed in industry is expected to grow slightly; then this process will be replaced by the development of the tertiary sector, the service sphere, with ever increasing dynamism. According to the estimates, it is probable that by the turn of the century almost two fifths of the active population will find employment in these branches.

The sites of the extractive industry are determined by the location of the mineral and other resources. The options to choose locations for manufacturing plants are influenced, however, by the ability of the individual districts to adopt industry, their facilities. In the long run, industrial development of the southern part of the present lopsided northeast-southwest industrial axis is expected; thus the territorial concentration of economic growth beyond the already established industrial regions north of this line will take place in the geographically wide belt bordered by Nyiregyháza, Szolnok, Dunaujváros, Székesfehérvár, and Szombathely. In agriculture, further strengthening of the process of territorial concentration of productive forces is expected; in

districts with unfavorable soil and other natural conditions, changes in the structure of production and proper use of, for example, forest plantation or grassing are probable. Under the influence of the probable changes in the location and territorial structure of productive forces, a grouping of the population will take place in the belts of the growth poles with the most favorable conditions and level of infrastructural development. This expected trend is to be determined by the basic processes of national urbanization.

Formation of a hierarchical settlement network assuring the best territorial distribution of the population will remain a basic requirement of social policy, as will the development of a spatial structure stimulating economic growth in the most effective way. The most reasonable means of meeting this requirement is to develop the system of regional sources of labor supply at the primary, secondary, and highest levels. The expected economic, demographic, infrastructural, and other changes will strongly influence the historically established settlement network; one can reckon with the development of interrelated systems of urban and other settlements, agglomerating settlement ensembles. Disintegration of traditional settlements systems--small villages, detached-farm districts--is expected to accelerate.

A basic question for the future healthy development of the Hungarian urban network is how to assure the correct proportion in the development of the capital and that of the provinces. The most reasonable way of solving it is comprehensive and purposeful development of the large and medium-size urban settlement network. Thus, more proportionate location of the industrial productive forces representing the main element of the economic growth of the country, and the formation and development of a healthier structure of the settlement network and systems of infrastructural supply than the present one can be stimulated. By establishing and developing a well functioning large and medium-size urban network, appropriate conditions can be created for a more proportional structure of the future settlement network. Only a complete large and medium-size urban network can serve as counterbalance to the present unhealthy, lopsided concentration of population and industry in our country.

Owing to their location and their role in the spatial structure of social and economic life, the large cities are the centers of population, industry, the multilaterally developed supply and service network, and the different communication lines. The population of some of them already exceeds 100,000 inhabitants, and others are approaching this figure. Their gravitation extends into districts with populations of many hundreds of thousands, in some cases even half a million or a million; their industry and their role in the organization and direction of economic life are often of national and international importance.

According to these main criteria, the contemporary cities of county rank--Miskolc, Pécs, Szeged, Debrecen, and Győr--can be placed into this category. The comprehensive consideration

of the dynamic growth of two cities--Székesfehérvár and Szolnok--in the past decade gives reason to include them into this category. If we consider the development of the past decade and the favorable possibilities of future growth, we may draw the conclusion that Nyiregyháza and Szombathely should also be regarded as possible members of the large urban network.

Apart from the development of the large urban network, the comprehensive development of the medium-size urban settlement network is another important requirement of forming and developing a proportional settlement structure. Under the conditions prevailing in our country the three main criteria for this are the following.

- The medium-size urban settlement should be able to render supply and service of medium level to its 80,000 to 100,000 inhabitants and to the settlements of its countryside;

- It should be the center of transportation, assuring satisfactory transportation lines to large urban settlements and the settlements within its sphere of influence;

- It should provide the employment possibilities required by the given situation of the labor force for itself and its sphere of influence.

The number of urban settlements that eventually may become members of a medium-size urban network is estimated at 50 to 55. Calculations based on the concept of development of the settlement network suggest that by the turn of the century, the share of the population living in settlements of urban status will be almost two thirds; and we expect the share of the population having urban conditions of life to be considerably higher still.

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