

The Development Path of the Miskolc Agglomeration (1970–2015)

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Abstract. The historical development of the socio-economic, environmental effects of the agglomerating process in the region of Miskolc has remained an unexplored area. The economic crisis and the signs of crisis present in the Miskolc agglomeration too have changed the attitudes of settlements towards agglomerating and suburbanizing processes. These changes also affect the suburbanizing processes in the Miskolc agglomeration, i.e. the intensity of suburbanization is decreasing. The suburbs of Miskolc have become more fragmented and polarized in terms of the society and economy. The geographical separation of high- and low-status suburbs proves the ever-increasing segregation within the metropolitan area.

Keywords: suburbanization, suburbs of Miskolc, agglomeration, segregation, metropolitan area

I. Introduction

Most studies dealing with the socio-economic changes in the agglomerations of Hungary are primarily concerned with Budapest and its surroundings as well as with large cities (e.g. Győr, Pécs, etc.) and their neighbourhoods most strongly affected by dynamic economic growth. Hungarian geographers define differently the agglomerations of Hungarian cities in time and space; moreover, the special set of concepts used by different branches of science also results in different interpretations (e.g. Tímár 2006, Nagy-Tímár 2010, etc.). One of the biggest shortcomings of research produced over the past half century is that it has not explored properly the historical stages and characteristics of the agglomerating process in the Miskolc metropolitan area. With respect to the historical background, it is important to emphasize that the development of agglomerations in Hungary was not a sudden moment but rather a long development path (Tóth 2006). One of the basic tasks of the historical research of agglomerations today is

still to interpret this development path and examine those factors that have led to the development of agglomerations and determined their evolution.

There is no consensus among scientists regarding the starting date, dynamics, and stages of development of the agglomerating process around Miskolc (e.g. Tóth 2004, 2006; Kőszegfalvi 2006, Kovács 2003, etc.). The reasons behind this may include the different interpretations of the extensive (e.g. population growth, housing construction, the establishment of the basic infrastructure network) and the intensive stages (a contiguous, physically integrated area of settlements is created, and formerly autonomous settlements may merge together; the system of linear infrastructure intertwines and integrates the whole area of the agglomeration, etc.) of the agglomerating process. The different pieces of research so far have focused on a specific point in time and have not dealt with the changes of factors in time that resulted in agglomerating processes and the changes in the geographical extension of the Miskolc agglomeration.

The aim of my study is to present how the socio-economic development (from simple migration to intensive agglomerating processes) of the past half century has affected Miskolc and the settlements located within its narrower socio-economic neighbourhood as well as the changes in vertical relationships and the horizontal extension of this settlement group (defined as agglomeration since 1970). This process has resulted in the restructuring of the agglomeration around Miskolc in two phases and in the social, demographic, economic, and functional differentiation of settlements.

II. Formation of the Miskolc Agglomeration

Miskolc lies at the meeting point of the Bükk Mountains and the Cserehát (the Miskolc Gate and its broader surroundings), and geographical energies, economic geographical position, and urban structure have always determined local people's living environment. From the second half of the 19th century, the development of the city accelerated and from the 1880s it became the centre of one of the fastest developing heavy industrial regions of historical Hungary. The city's population increased almost two and a half times between 1870 and 1910, and the surrounding settlements – which were formerly autonomous, but now they are part of Miskolc – also showed similar population dynamics (*Table 1*). The explosive population growth strongly correlated with the development of heavy industry.

Table 1. Population change in settlements attached to ‘Greater Miskolc’ (1870–1949)

Settlements	1870	1880	1910	1930	1941	1949
Miskolc	21,535	24,319	49,182	61,559	77,362	103,690
Diósgyőr	4,312	4,630	17,204	20,854	26,539	N/A
of which: Vasgyár and Újdiósgyőr	N/A	approx. 2,000	7,771	6,187 +3,479	6,886 +2,452	N/A
Pereces	N/A	N/A	2,312	3,007	2,902	N/A
Görömböly	1,175	1,160	1,840	2,296	2,845	2,177
Hejőcsaba	1,542	1,570	3,184	6,356	5,036	N/A
of which: Martintelep	N/A	N/A	493	1,935	1,331	N/A
Hámor	1,011	827	978	1,053	1,030	1,321
Szirma	1,114	1,163	1,545	1,794	1,899	1,958
Total	30,689	33,669	73,933	93,912	114,711	109,146

Source: edited by the author according to census data (1870–1949)

The role and position of Miskolc, whose relationships with settlements in southern Borsod were intensifying, fundamentally changed with the Treaty of Trianon. Before the Treaty of Trianon, Miskolc was the 12th most populous city in historical Hungary, whereas after the treaty it became the 6th one. Miskolc became the leading city (with no other competing cities such as Kosice) of the region, and it turned into the industrial, commercial, financial, and cultural centre of Northern Hungary.

Between the two world wars, the close relationships among Miskolc and the surrounding settlements were also reflected by the dynamic population growth. The population of the city together with that of Diósgyőr grew to over 100,000 as early as 1941 (*Table 1*), and it was only a matter of time before the functionally integrated settlements would be merged through law (‘Greater Miskolc’). The idea of creating ‘Greater Miskolc’ occurred as early as at the turn of the 19th and the 20th centuries, but it became reality only in 1945, when Diósgyőr, Hejőcsaba, and Tapolca (which was separated from Görömböly) were attached to Miskolc. The area and population of ‘Greater Miskolc’ increased further in 1950, when Görömböly, Hámor, and Szirma were also attached to its area; thus Miskolc became the second largest city in Hungary (*Table 1, Map 1*).

At the dawn of the Second World War, the intensity and depth of the socio-economic relationships probably reached the level what is called today ‘settlement group’. Partly due to special circumstances, the precursors of the Miskolc agglomeration should primarily be investigated in this settlement group.



Source: edited by the author based on historical maps

Map 1. *Territorial expansion of Miskolc, changes in built-up areas (1773–2015)*

After the Second World War, the primary goal of the fundamentally altered settlement policy was to establish the conditions for socialist industrialization at the level of settlements, but at the same time industrialization was also one of the most important tools of settlement development. In this respect, the development of Miskolc was prioritized and the city also received distinguished political attention. Research on Hungarian settlement groups and agglomerations (e.g. Főrizs 1967, Perczel 1964, etc.) has shown that the concentration of socialist productive forces played the most important role in the formation of agglomerations. Margit Főrizs grouped 35 settlements into the Miskolc settlement group based on four factors (healthcare, secondary education, retailing, and industrial commuters). The most striking features of this process for researchers investigating the extent of agglomerating in Hungary were rapid population growth and extensive commuting, although the intensity of these factors (especially of the former one) has significantly decreased since the end of the 1980s. Besides the geographical concentration of industrial production, the population and infrastructure development also supported the formation of agglomerations (Kőszegfalvi 1979). When the proportion of industrial commuters was examined, it was found that in 1960 the number of commuters arriving in Miskolc was the second highest in Hungary after Budapest. At that time, the number of inbound commuters was 24,197 (24.6%), which added to the number of local workers in Miskolc (73,918), which means that there were almost 100,000 jobs in the second most populous city of Hungary (*Table 2*). Meanwhile, the number of inbound commuters in the case of other Hungarian cities with a population over 100,000 was under 10,000 (e.g. the number of inbound commuters was 8,896 in Pécs, 8,518 in Szeged, and 7,900 in Debrecen).

Table 2. *Inbound commuters in Miskolc in the percentage of active earners (1960)*

Settlements	Commuters	Active earners	%	Settlement	Commuters	Active earners	%
Hejőbába	519	768	67.6	Szikszo	790	3,072	25.7
Sajóbábony	975	1,497	65.1	Vatta	140	552	25.4
Felsőzsolca	1,026	1,695	60.5	B.szt.lászló	95	375	25.3
Szirmabesenyő	710	1,454	48.8	Taktaharkány	448	1,790	25.0
Alsózsolca	792	1,752	45.2	Mályi	195	796	24.5
Kistokaj	225	500	45.0	Emőd	631	2,597	24.3
Nyékládháza	567	1,353	41.9	Gesztely	226	942	24.0
Arnót	188	492	38.2	Ónod	268	1,125	23.8
M.nyárad	306	818	37.4	Aszaló	253	1,066	23.7
Onga	571	1,607	35.5	Sajópetri	153	669	22.9
Tiszalúc	658	1,860	35.4	Sajóecseg	86	446	19.3
Hejőkeresztúr	159	451	35.3	B.aranyos	113	647	17.5
Sajókeresztúr	187	589	31.7	Taktaszada	175	1,039	16.8
Berzék	147	476	30.9	M. keresztes	467	2,785	16.8
Sajólád	311	1,050	29.6	Mezőkövesd	1,620	9,670	16.8
Halmai	218	749	29.1	F. dobsza	111	800	13.9
Bócs	335	1,156	29.0	Mezőcsát	440	3,222	13.7
S.pálfala	99	342	28.9	Boldva	120	987	12.2
B.szt.kereszt	157	543	28.9	B.ábrány	114	938	12.2
Hernádnémeti	448	1,588	28.2	Sajóvamos	124	1,221	10.2
Harsány	266	970	27.4	Szerencs	251	4,054	6.2
Kisgyőr	244	935	26.1	Sajósztpéter	224	5,073	4.4

Source: edited by the author based on census data (1960)

The fact that more than 30 thousand (30,479) people migrated to Miskolc between 1949 and 1960, which is the third highest number after Budapest (267,663 people) and Pécs (30,596 people), well illustrates the extent of the population concentration. The regional gravity intensity of Miskolc is shown by the fact that 48.3% of in-migrants arrived from the county (Borsod-Abaúj-Zemplén), 27.5% arrived from neighbouring counties, 15.3% from other counties, and 8.9% from Budapest.

The above data unambiguously suggest that by 1960 Miskolc had fulfilled the criteria for the first stage of the agglomerating process (developing functional relationships among settlements such as commuting between the place of residence and work), i.e. it is evident that Miskolc and the surrounding settlements together had become an agglomerating region. The basis for further development was created by the socialist socio-economic policy, which started in the 1960s and evolved in the 1970s (such as collectivization, industrial development, investments in infrastructure, etc.), as well as by political conditions (e.g. new economic mechanism etc.) and by the National Settlement Network Development Concept (1971).

III. The Development of the Miskolc Agglomeration (1970–1990)

During the second stage of the agglomerating process, settlements interlock in space (Enyedi 1984, Tóth 1988, 2004) and later they coalesce (e.g. a common infrastructure network is established; a contiguous, physically integrated settlement area emerges, etc.). We can speak about an agglomeration when functional and spatial relationships are well established. In this respect, at the end of the 1970s, only the agglomerations of Budapest and Miskolc were regarded as fully developed in Hungary (Kőszegfalvi 1979, Süli-Zakar 1985, Tóth 1988).

Several pieces of research have been conducted on the agglomerative gravity intensity of Miskolc and the surrounding settlements, some of them (e.g. Koleszár 1980, Lukács–Perger 1975, Süli-Zakar 1985, etc.) focusing on a central issue (e.g. demographics, labour force commuting, retail gravity zones, etc.), while another group of researchers identified the area of the Miskolc agglomeration according to complex indicators (e.g. Szántó 1979, Süli-Zakar 1989, etc.).

Lukács and Perger (1975) identified the Miskolc agglomeration on the basis of 23 indicators (e.g. concentration of productive forces, population and supply of services, etc.). They grouped those settlements into the agglomeration whose indicators were the closest to those of Miskolc, used as a benchmark, while the minimum was represented by the average of the villages in Borsod-Abaúj-Zemplén County. After the weighing of the indicators, they set up three categories (outer, middle, and inner zone) that simultaneously indicated gravity intensity.

Being an industrial centre, Miskolc concentrated a great number of productive forces, which was a fundamental prerequisite for the further development of the agglomeration. In the 1980s, there were not only future visions of the Miskolc agglomeration but also of the Miskolc-Sajó Valley agglomeration as well as of the Borsod heavy industrial agglomeration. The rapid development of Miskolc caused a significant extensive agglomerating process in the Sajó Valley, and close relationships were built among Miskolc and neighbouring settlements, including mining villages. As a result of this process, the occurrence of a polycentric settlement structure along the Ózd-Kazincbarcika-Miskolc-Leninváros heavy industrial axis was predicted. However, the significance of the heavy industrial companies was not an adequate condition for further development (e.g. heavy industrial companies employed approx. three-quarters of heavy industrial workers of Miskolc at the beginning of the 1980s; there were more than one hundred industrial sites in Miskolc in 1980, which made up for one third of all industrial sites in Borsod-Abaúj-Zemplén County). The extensive industrial growth of Miskolc was coupled with a geographical expansion as well (*Map 1*), many settlements being attached to the city between 1950 and 1981 (e.g. Lyukó, Bükkszentlászló, Garadna, Lillafüred, Pereces, Ó- and Újmassa, etc.);

thus, Miskolc had become one of the largest (area: 224 km²) industrial cities of Hungary.

One of the most important tools for turning Miskolc into a socialist heavy industrial centre, which culminated at the middle of the 1980s, was the Lenin Steelworks, having more than 18,000 workers and more than 1 million tonnes of annual output. The population of the city reached its maximum at that time with more than 211,000 inhabitants. Miskolc's significant population growth, besides the natural increase, was due to the positive net migration rate and to the administratively enlarged urban area. The population of Miskolc was 181,398 in 1970 and 208,103 in 1980 (*Table 3*).

In the 1970s, the restructuring of the Hungarian settlement network also became more marked; different settlement structures evolved, and their development accelerated. According to Koleszár I. (1980), the gravity functions of Miskolc were wide-ranging, with one of the most significant gravity factors being undoubtedly the demand for labour. This is hardly disputable in the case of an industrial city like Miskolc, especially during the era of the 1960s and 1970s characterized by extensive industrialization and investments. The heaviest out-migration was characteristic of the villages in Abaúj-Torna and Zemplén, which had few arable lands, as well as of the settlements in the Borsod Plain, whose agricultural density used to be quite high previously.

Zs. Szántó (1979) showed that according to the investigation of the concentration of the productive forces by 45 factors, besides the Budapest agglomeration, the agglomerations of Pécs, Miskolc, and Lake Balaton as well as the agglomerating region of Komárom – moreover, potential agglomerations (e.g. Veszprém) and settlement groups (e.g. Nyíregyháza) – could be identified.

With regard to the above mentioned topic, it is important to mention that a significant dispute arose among Hungarian geographers on the developmental stages of settlement groups and agglomerations in the 1980s. In his 1985 paper, Professor József Tóth described this process in three stages: 'In our understanding, settlement groups, unified settlement groups, and agglomerations are elements of a developmental process caused by geographical concentration which is realized during urbanization. Further distinctions between different settlement structures can only be made on the basis of formal factors.'

Out of the 32 settlement formations in Hungary, György Kőszegfalvi (1979) classified 3 as agglomerations, 5 as agglomerating regions, 3 as urbanizing regions, 8 as small and 8 as large settlement groups surrounding cities, and 5 as twin or triad cities. The Hungarian Central Statistical Office (HCSO) officially identified settlement groups (for the first time, at the beginning of the 1980s) on the basis of Kőszegfalvi's work (Pálné Kovács–Rechnitzer 1982). In 1985, the HCSO started to introduce settlement formations in Hungary and document their changes and development on the basis of approx. 40 selected data and indicators.

The complex examination of the settlements of the Miskolc agglomeration was realized by cluster analysis at the beginning of the 1980s. Aggregate indicators were created for settlements surrounding Miskolc on the basis of demographics, the concentration of industrial productive forces and factors describing urbanization and infrastructure. Éva Valér (2010) explored the peculiarities and geographical changes of the process of agglomerating in Hungary between 1970 and 1990 through factor analysis of 30 socio-economic indicators. She showed that in the case of an agglomeration or an agglomerating region at least 5 out of the 30 indicators should be above the national average in at least 5 neighbouring settlements. In her opinion, the intensive migration towards cities and the preference for developing cities in the 1970s did not support agglomerating; thus, by 1980, the area and the functional spectrum of agglomerations had decreased in a number of regions. On the other hand, the 1980s were characterized by strengthening agglomerating tendencies. There was not only an increase in the number of settlements representing spatial concentration but also a spatial concentration within each settlement: moreover, the proportion of settlements representing high levels of spatial concentration also grew within each region. According to her, this process affected the Miskolc agglomeration as well since the number of settlements in this area was 33 in 1970 and 1980, while in 1990 there were already 55 settlements.

Signs of crisis, which destabilized the position and development of the socialist Hungarian economy, first appeared in the region of Miskolc at the beginning of the 1980s. These caused fundamental changes in the position and conditions for the development (or rather stagnation) of Miskolc and its agglomeration. The development path of planned co-centres (Kazincbarcika, Tiszaújváros) of the agglomeration deviated from Miskolc and the settlements around it. The number of settlements in the Miskolc agglomeration was first reduced to 17 and later to 13 (*Table 3*).

Table 3. *The population of settlements in the Miskolc agglomeration (1949–2015)*

Settlements	1949*	1960*	1970**	1980**	1990**	2001**	2011**	2015**
Miskolc	109,841	144,741	181,398	208,103	196,442	184,125	167,754	159,554
Alsózsolca	3,093	3,819	5,116	5,590	5,723	6,044	5,766	5,683
Felsőzsolca	2,932	3,647	5,026	6,125	6,939	7,027	6,613	6,521
Onga	2,515	3,070	3,456	3,616	4,042	4,761	4,858	4,746
Arnót	894	962	1,143	1,560	2,082	2,557	2,597	2,420
Kistokaj	839	1,044	1,157	1,245	1,489	1,868	2,078	2,084
Mályi	1,138	1,690	2,080	2,500	3,353	4,152	4,124	4,016
Sajóbáony	867	2697	3,117	3,416	3,291	3,137	2,887	2,786
Sajóecseg	689	943	1,148	1,201	1,062	1,065	1,051	1,040
Sajókeresztúr	818	1,285	1,462	1,520	1,506	1,513	1,549	1,483
Sajópálfala	605	626	646	725	732	786	744	728

Settlements	1949*	1960*	1970**	1980**	1990**	2001**	2011**	2015**
Sajóvamos	1,856	1,944	2,084	2,201	2,171	2,227	2,185	2,122
Szirmabesenyő	2,589	3,210	4,347	4,769	4,836	4,729	4,438	4,181
Total	18,835	24,937	30,782	34,468	37,226	39,866	38,890	37,810
Miskolc district	164,785	209,373	252,613	283,878	274,953	268,437	250,530	240,279

* present population

** resident population

During the examination of expected labour conditions in the region of Miskolc, István Süli-Zakar showed that the economy of the Miskolc agglomeration was not without its problems (e.g. the 80–90% share of the heavy industry, the one-sided sectoral structure of industrial workers, the negative net migration rate partly due to the previous fact, etc.). The economic difficulties of the basic sectors of the industry were already reflected in the demographics of the Miskolc agglomeration. Süli-Zakar identified an agglomeration of 14–15 settlements in the inner zone of the agglomerating region around Miskolc as the strongest economic centre. He anticipated that it would be especially hard to achieve a balance between the economy and the settlement network due to the sluggish economic restructuring and to population decline. He envisioned that the so-called ‘unemployment inside the factory gate’ would not be sustainable over the long term. According to Süli-Zakar, the development of services in the region were hampered by the lack of capital (while other sectors would not be able to employ the workforce that was not needed in the industry any more), which might result in the rapid population decline of the Borsod industrial region and the Miskolc agglomeration as well as in the slowdown of the agglomerating process (Süli-Zakar 1989).

IV. Suburbanization in the Miskolc Agglomeration (1990–2015)

Suburbanization was detectable in all Hungarian urban regions from the beginning of the 1990s, and the changes occurring due to this process (e.g. population decline in the core cities, population increase in the suburban zone, boom in the housing market, appearance of gated communities, etc.) were fundamentally different from the former characteristics of agglomerating (e.g. Barta–Beluszky 1999, Dövényi–Kovács 1999, Tímár–Váradi 2000, etc.). Out of the Hungarian urban regions, in my previous studies (Kristóf 2013, 2014, 2015), I examined and explored in detail the suburbanization and its consequences as well as its special determining factors in the Miskolc agglomeration. Based on statistics, in this paper, I outline the most important socio-economic characteristics of the past 25 years (1990–2015) of suburbanization in the Miskolc agglomeration. In this framework, I have examined the changes in the demographics and some

social factors of the agglomeration as well as migration trends determining suburbanization. Examination of the Miskolc suburbia from this point of view is important because both statistics and empirical studies show that the new socio-economic processes have reached the Miskolc agglomeration too and are characterized by special features (*Table 4*).

IV.1. Changes in Population

The Miskolc agglomeration is the largest population concentration in Borsod-Abaúj-Zemplén County. It accounts for 13.8% of the area and 36.7% of the population of the county, which means that 251,901 people lived in the core city of the agglomeration and in the 35 settlements belonging to it as of 1 January 2015. The city and its agglomeration have been characterized so far by different demographical tendencies. The population of Miskolc has been continuously declining for three and a half decades, while the population of the suburbs grew dynamically until 2005; however, since then, a differential decline has been observable (*Table 4*). The general demographic state of the settlements is well represented by the fact that in the past ten years there has been an increase in the population of only three suburban settlements (Kistokaj, Kisgyőr, and Bükkaranyos). The reasons for the increase are unique and special in all three cases: Kistokaj profits from the proximity of the southern industrial park of Miskolc, while Kisgyőr and Bükkaranyos have become increasingly popular suburbs due to their favourable potentials of nature and landscape.

Table 4. *The population of the settlements of the Miskolc agglomeration and suburbia (1990–2015)*

Settlements	1990	2001	2005	2011	2015
Miskolc	196,442	184,125	175,059	167,754	159,554
Miskolc aggl.	92,719	97,451	96,471	94,212	92,347
of which the settlements of the Miskolc suburbia:					
Alsózsolca	5,723	6,044	6,191	5,766	5,606
Arnót	2,082	2,557	2,650	2,597	2,387
Bükkaranyos	1,122	1,393	1,490	1,448	1,499
Bükkszentkereszt	1,374	1,274	1,215	1,206	1,179
Felsőzsolca	6,939	7,027	7,220	6,613	6,486
Kisgyőr	1,572	1,609	1,665	1,642	1,677
Kistokaj	1,489	1,868	1,916	2,078	2,083
Mályi	3,353	4,152	4,205	4,124	3,929
Nyékkládháza	4,432	4,906	5,008	5,023	4,865
Onga	4,042	4,761	4,915	4,858	4,764
Szirmabesenyő	4,836	4,729	4,581	4,438	4,111
Total	36,964	40,320	41,056	39,793	38,586

Source: edited by the author based on TeIR and HCSO-TSTAR data

The population of Miskolc decreased by approx. 37 thousand people between 1990 and 2015, which was to a lesser extent due to the aging of the population and to a greater extent to out-migration. The population decline of Miskolc accelerated especially in the 1990s, when the decrease was virtually 12 thousand. The massive out-migration of the 1990s was the cumulative result of a number of urban development processes. Meanwhile, the population of the agglomeration zone around Miskolc only grew by five thousand people between 1990 and 2005. There were only few settlements in the Miskolc agglomeration where significant population growth occurred (*Table 4*). Suburbs accounted for 90% of the population increase; however, the increase was different in the settlements of the agglomeration according to geographical position and environmental conditions as well as to the socio-economic status of settlements.

IV.2. Migratory Trends

In the course of analysing suburban migratory trends, it is worth mentioning that there is a strong tendency for Hungarian people to own their houses or at least flats, which is a ‘natural’ drive for migration. On the other hand, there exists another tendency, which decreases migration, namely that owning a house means more ties and less mobility.

In the case of the Miskolc agglomeration, the sole financial source of building or buying homes in the suburbs has been provided by the selling of apartments in blocks of flats, i.e. the Western-European type of residential suburbanization has not been typical.

Table 5. *Net migration rates of settlements in the Miskolc agglomeration and suburbia (1990–2011)*

Settlements	1980–1990		1990	1990–2001		2001	2001–2011		2011
	n. i.*	migr.**	pop.***	n. i.*	migr.**	pop.***	n. i.*	migr.**	pop.***
Miskolc	1,487	-13,148	196,442	-6, 785	-5,532	184,125	-8, 425	-7,946	167,754
Miskolci aggl.	2,927	-1,253	92,719	1, 058	3,674	97,451	-1, 764	-1,475	94,212
of which the settlements of the suburbia:									
Alsózsolca	308	-175	5,723	355	-34	6,044	161	-439	5,766
Arnót	170	352	2,082	107	368	2,557	34	6	2,597
Bükkaranyos	-39	-10	1,122	16	255	1,393	30	25	1,448
Bükkszentkereszt	21	-22	1,374	-96	-4	1,274	-85	17	1,206
Felsőzsolca	368	446	6,939	193	-105	7,027	58	-472	6,613
Kisgyőr	7	-67	1,572	-18	55	1,609	-39	72	1,642
Kistokaj	39	205	1,489	9	370	1,868	-27	237	2,078
Mályi	168	685	3,353	4	795	4,152	-72	44	4,124
Nyékládháza	57	185	4,432	-67	541	4,906	-204	321	5,023
Onga	213	213	4,042	278	441	4,761	58	39	4,858

Settlements	1980–1990		1990	1990–2001		2001	2001–2011		2011
	n. i.*	migr.**	pop.***	n. i.*	migr.**	pop.***	n. i.*	migr.**	pop.***
Szirmabesenyő	144	-77	4,836	-123	16	4,729	-238	-53	4,438
Total	1,456	1,735	36,964	658	2,698	40,320	-324	-203	39,793

* natural increase, ** net migration rate, *** population

Source: edited by the author based on TeIR and HCSO-TSTAR data

Regarding migratory processes, the most important two decades of suburbanization were between 1990 and 2011, when three-quarters of the out-migration took place. Between 1990 and 2005, out-migration from Miskolc grew faster than in any other periods in the past; however, only one-third of this migratory process headed towards the Miskolc agglomeration (*Table 5*). The change in the tendencies of the decade between 1980 and 1990 is shown by the fact that besides the negative net migration rate natural population decline also became characteristic – as a result, the population decline of Miskolc accelerated. One of the results of migratory processes, one of the most important cornerstones of suburbanization is that during the examined two decades all suburbs except for Alsó- and Felsőzsolca had positive net migration rates. The role of six settlements (Arnót, Mályi, Kistokaj, Nyékládháza, Onga, and Bükkaranyos) was outstanding since they accounted for 90% of the migratory gain of the agglomeration. From 2005, the positive net migration rate decreased drastically, which was due to the fact that the suburbanization process ground to a halt. Temporary out-migration from Miskolc declined, while temporary in-migration significantly increased.

Deindustrialization and long-lasting depression of the industry coupled with the loss of hundreds of jobs contributed to the former population decline of Miskolc as well as to the social restructuring of the surrounding areas. Lower-status layers of society were gradually forced to relocate in less favourable parts of the city or to low-status surrounding settlements. Due to the cumulative results of the above factors, the population of Miskolc decreased by almost 30 thousand people during the two decades between 1990 and 2011. The net migration rate of the city was negative both with respect to the agglomeration and to the suburbia. Between 1995 and 2005, approx. 36 thousand people moved out of Miskolc permanently, while approx. 25 thousand moved into the city. 80% of those who moved out of Miskolc remained in Borsod-Abaúj-Zemplén County (KSH 2006). However, due to the prolonged socio-economic crisis, out-migration from Miskolc has been continuous ever since.

However, migration towards the Miskolc agglomeration and the suburbia was less dynamic than what could have been expected from demographics. This is partly due to the fact that part of this suburban-type migration remained within the city, i.e. people moving did not cross the administrative borders of Miskolc. There were approx. 5–6 thousand cases of pure residential suburbanization between 1990 and 2001, i.e. when someone moved from the city centre to the

Settlements	unit	1990			2011		
		0-14	15-59	60-x	0-14	15-59	60-x
Miskolc	people	40,853	122,925	32,664	2,2831	104,101	40,822
	%	20.8	62.6	16.6	13.6	62.1	24.3
Miskolc agglomeration	people	21,811	56,941	13,967	15,688	59,030	19,494
	%	23.5	61.4	15.1	16.6	62.7	20.7
of which the settlements of the Miskolc suburbia:							

Settlements	unit	1990			2011		
		0–14	15–59	60–x	0–14	15–59	60–x
Alsózsolca	%	25.1	61.6	13.3	20.9	60.5	18.6
Arnót	%	28.5	61.0	10.5	17.1	65.2	17.8
Bükkaranyos	%	21.8	59.0	19.2	18.4	63.6	18.0
Bükkszentkereszt	%	21.8	62.4	15.8	11.6	63.3	25.1
Felsőzsolca	%	24.1	62.9	13.0	17.0	61.4	21.6
Kisgyőr	%	22.3	57.6	20.1	18.1	62.0	19.9
Kistokaj	%	25.4	61.5	13.1	17.9	66.7	15.3
Mályi	%	26.7	62.5	10.8	12.9	67.4	19.7
Nyékkládháza	%	22.4	62.5	15.1	13.6	60.8	25.6
Onga	%	25.1	60.9	14.0	19.6	63.7	16.8
Szirmabesenyő	%	21.0	64.0	15.0	11.9	64.2	23.9
Miskolc	people	8,899	22,923	5,142	6,545	25,106	8,142
suburbia	%	24.0	62.0	14.0	16.4	63.1	20.5

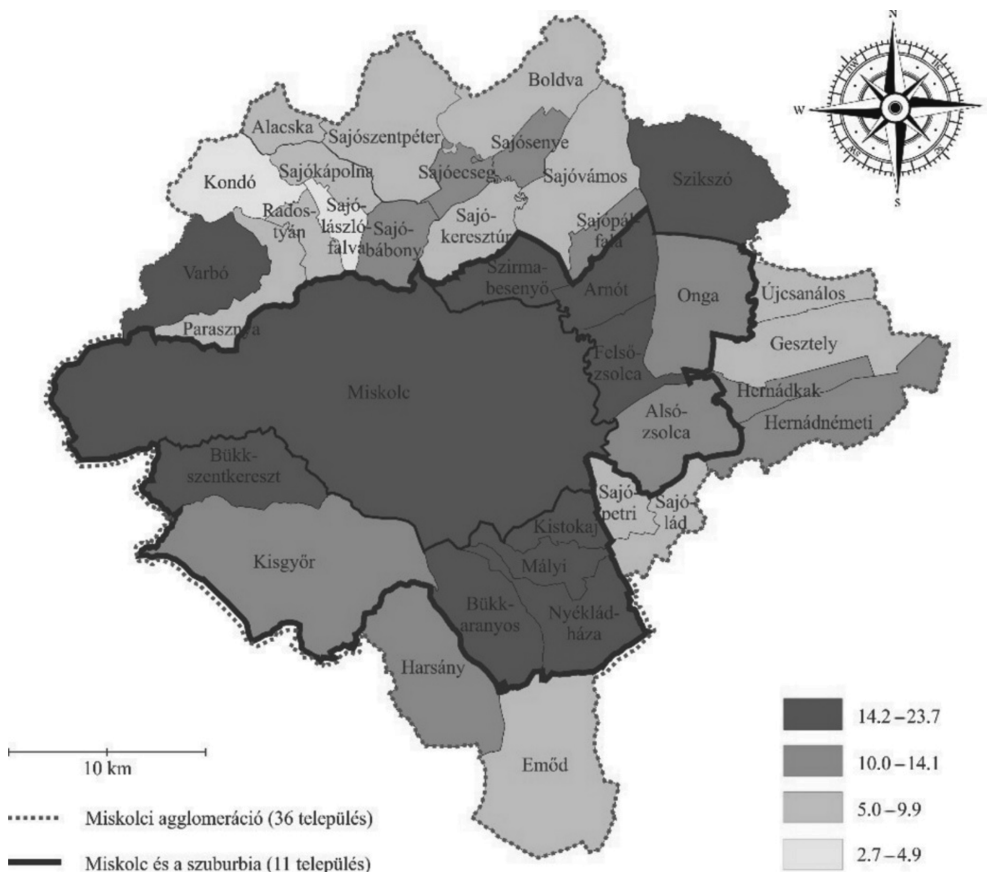
Source: HCSO Statistical Yearbooks of Borsod-Abaúj-Zemplén County

During the two decades between 1990 and 2011, the values of the aging index fundamentally changed in Miskolc and in the agglomeration. The proportion of the 0–14 age-group in 2011 was only 13.6%, which is 7.2% less than in 1990, and the decrease was just slightly smaller in the 35 settlements of the agglomeration. However, there are great differences among suburban settlements. Besides the halving of the 0–14 age-group (e.g. Szirmabesenyő, Mályi, Bükkszentkereszt, etc.), five settlements preserved a youngish age structure (*Table 6*). In the case of four out of these five settlements (Alsózsolca, Arnót, Bükkaranyos, and Onga), besides suburban processes, the higher percentage of the Romani also contributed to the relatively favourable age structure. In the case of Kistokaj, however, this is not the case since it is a typical suburban settlement whose population increased by 25% between 1990 and 2005. Young generations (between 30 and 40 years) moved to the settlement, and the majority of them are still active; so, the aging of the population is not or hardly detectable.

IV.3.2. Percentage of the Population with Tertiary Education

Regarding the level of education, the percentage of the population with tertiary education in the 25–X age-group indicates the differences of suburbanization at the level of settlements. The percentage of the population with tertiary education in Miskolc was 23.7% in 2011, while in 9 settlements of the agglomeration this figure was between the rate of Miskolc and the county average (14.2%). However, examination of the percentage of the population with tertiary education shows significant geographical differences at the level of settlements (*Map 2*). In 2011, the percentage of the population with tertiary education was higher than the average of the suburbia (18.2%) in several settlements (e.g. Kistokaj (23.1%), Mályi

(22.5%), Felsőzsolca (19.7%), Arnót (19.5%), and Nyékládháza (18.9%), etc.). The significant geographical differences in the percentage of the population with tertiary education are partly due to differences in the social status and residential preferences of people moving out of Miskolc, i.e. these figures indirectly show the group of settlements which has been more strongly affected by suburbanization.



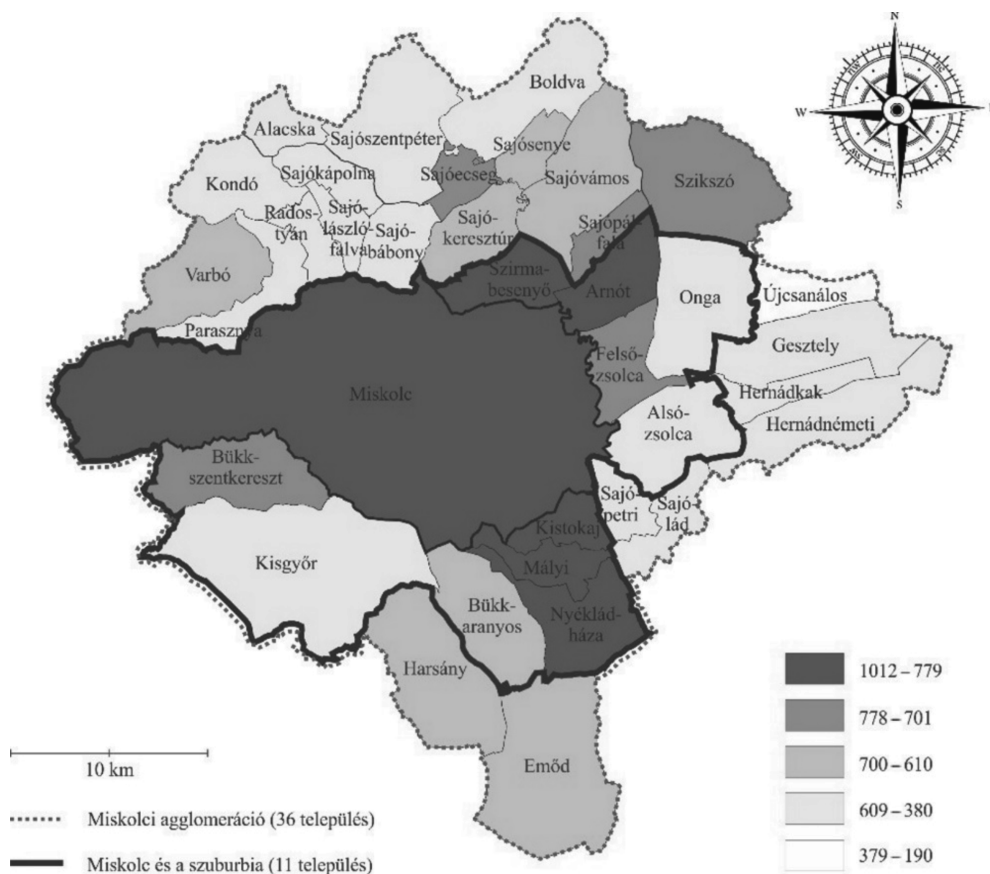
Source: Edited by the author based on HCSO data

Map 2. *Percentage of the population with tertiary education in the 25–X age-group (2011)*

In 15 settlements of the Miskolc agglomeration, the percentage of the population with tertiary education is between 5 and 10%. The percentage of the population with tertiary education is especially small in settlements characterized by peripheral location, poor accessibility, aging population structure, high unemployment rate, and high percentage of the Romani.

IV.3.3. Differences in the per Capita Tax Base of Personal Income Tax

The annual value of the per capita tax base of personal income tax reflects the socio-economic level of the development of settlements as well as the geographical disparities among the settlements of the Miskolc agglomeration. In addition, this figure also shows the heterogeneity of the social groups that are involved in residential suburbanization. Due to residential suburbanization, the value of the per capita tax base of personal income tax in the settlements of the Miskolc suburbia is above the county average (*Map 3*).



Source: edited by the author based on HCSO data

Map 3. *Per capita tax base of personal income tax (2011)*

The most popular suburban settlements have the highest values, while the lowest figures are characteristic of the eastern suburban settlements where lower educated and lower income groups are concentrated. The value of tax base of

personal income tax per tax payers and per capita was the highest in Kistokaj (1,012,000 forints) and the lowest in Köröm (190,000 forints). The values of only six settlements were higher than that of Miskolc (779,000 forints per capita), and only five more settlements reached 90% of the value of the core city. Those settlements (9 pieces) where the value of the tax base of personal income tax was between 75 and 90% of the value of Miskolc were grouped into a third category, while in the remaining 21 settlements the value of tax base of personal income tax was below 75% of that of Miskolc (*Map 3*).

So far the characteristics of suburban processes taking place in the Miskolc agglomeration have been analysed through statistics. On the basis of this analysis, it can be concluded that settlements showing suburban characteristics within the Miskolc agglomeration are not homogenous: different zones of the agglomeration are characterized by different structures. The maps shown above represent well that the status of the people who moved to the southern and western sectors of the Miskolc suburbia has been higher than that of the local residents. On the other hand, lower-status people have moved to the eastern and north-eastern parts of the Miskolc suburbia. By now, the villages and towns (e.g. Onga, Alsó- and Felsőzsolca, etc.) of the eastern parts of the suburbia around Miskolc, where low status in-migrants settled down, are struggling with serious socio-economic problems (e.g. increasing out-migration, disappointment of the suburban generation, etc.) the roots of which should be explored by questionnaire surveys.

V. Summary

The historical development of the socio-economic, infrastructural, and environmental effects of the agglomerating process in the region of Miskolc has remained an unexplored area even today. No thorough investigation of the specific factors of the agglomerating process around Miskolc as well as the exact identification of the horizontal extension of these factors have been carried out. The economic crisis, the general economic difficulties of Hungary, and the signs of crisis present in the Miskolc agglomeration too have changed the attitudes of settlements towards agglomerating and suburbanizing processes. As a result, former policies supporting extensive development are being replaced by more intensive settlement development ideas that aim for a more efficient stabilization of the population and exploitation of the local resources. These changes also affect the suburbanizing processes in the Miskolc agglomeration, i.e. the intensity of suburbanization is decreasing. The suburbs of Miskolc have become more and more fragmented and polarized in terms of the society and economy. The geographical separation of high- and low-status suburbs proves the ever-increasing segregation within the metropolitan area.

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