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THESIS STATEMENTS OF THE DISSERTATION

THE EFFECTS OF DEINDUSTRIALIZATION ON THE LABOUR MARKET

IN THE REGIONS OF THE VISEGRÁD COUNTRIES AND THROUGH THE EXAMPLE OF MISKOLC BETWEEN 1999-2012

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1. Reasons for topic selection, basic research problems

The Visegrad Countries, including Hungary, became part of an economic experiment when in a unique way they switched from planned economy to market economy. Obviously this transition induced severe changes in the society and economy. Although the problems arising form this transition appeared on all levels of national economy, the economy had to face the most urgent and profound need for transformation. The changes in the economy had an indirect effect on the economy as a whole, and continue to influence the economic and social development of certain regions and territories. Despite the similarities, the industrial transition has a different impact on each geographic unit. I believe that several of the severe economic and social problems present in Miskolc and the North Hungarian regions are the same as the processes observed in other regions of the Visegrad Countries, on a regional level we can observe different categories.

My basic research questions in my work are the following: Are there any similarities between the deindustrialization process in North Hungary and those in other Visegrád countries? I also seek the answer to what social, physical and labour market consequences did the receding industry have on my home town, Miskolc; furthermore, I intend to find out how and to what extent do these influence the age and quantitative ratio of the population.

Due to the derived nature of the labour market, its processes mimic the transformation of the industry, thus deindustrialization, too. The trends in employment numbers are crucial factors for the economic growth and social prosperity. There are numerous indicators to describe deindustrialization, including the number of enterprises, industrial contribution to GDP, etc. In this paper my goal is to analyse deindustrialization from the aspect of the labour market. In my work I synthesize the experiences of the developed countries regarding deindustrialization. Accepting the definition found in literature I quantify deindustrialization with the lapse in the number of people employed in the economy and the decrease in the ratio of the industrially employed labour force. As I define the deindustrialization processes I put the regional and local levels into the focus of my research, also looking into it on a regional and nationwide level. I also examine the effects of the decrease in employment on a regional and local level, thus enhancing the deeper understanding on the topic and helping to find both unique and common directions for development. In case of Miskolc I draw attention to the necessity of revitalizing urban brownfields, which is the main cause of migration from the city.

To answer my basic research problem I formulate several questions which establish my hypothesis. The current researches in the Institute of World and Regional Economics on the Department of Labour and Socioeconomics drew my attention to the importance of researching what effects deindustrialization has on socioeconomy and the labour market. On a regional level I chose the time interval between 1999 and 2012 to answer my research questions. Regarding this period there is a standardized database for all four Visegrád Countries. The period has a 13-year scope which allows for well-grounded conclusions and statements. In the years following the regime change the suppression of industry took place in the Visegrád Contries. The period between 1999 and 2012 provides new information to define the different types of deindustrialization and to observe the labour market changes brought forth by deindustrialization. Since 1999 the regional processes were heavily influenced by the preparations to join the European Union. The unified employment database formed after 1999 provides an excellent opportunity to study and define the different types of deindustrialization and to come to the right conclusions. Aside from the labour market relevance of the brownfields arising in the wake of deindustrialization, I also consider the options for revitalization. I study the deindustrialization processes in Miskolc, which clarifies what

connection there is between the deterioration of the man-made surroundings and the individuals' attitude towards the social order in that area. Accepting this hypothesis I can concentrate on how the brownfields created by deindustrialization influence the workers' attitude towards the labour market, the roles of the labour market in reallocation and the migration of the younger generations.

2. Goals and methods

To answer my basic research problem I form several questions and I base my hypotheses on them:

- How can the different economic schools explain the process, causes and consequences of receding industry?
- Is deindustrialization present in the Visegrád Countries between 1999 and 2012? Which types can be identified?
- Does the process of deindustrialization have any effect on the spatial patterns of the country? Is there a connection between the concentration and specialization of deindustrialization in the Visegrád Countries?
- Do the brownfields arising in the wake of deindustrialization have labour market relevance? What kinds of labour market problems can be identified?
- What kinds of attitudes and mentalities can be defined in the labour market defined by deindustrialization? What attitudes do the young labourers have in the labour market of Miskolc?

The following figure displays the train of thought and the formation of hypotheses in this dissertation.

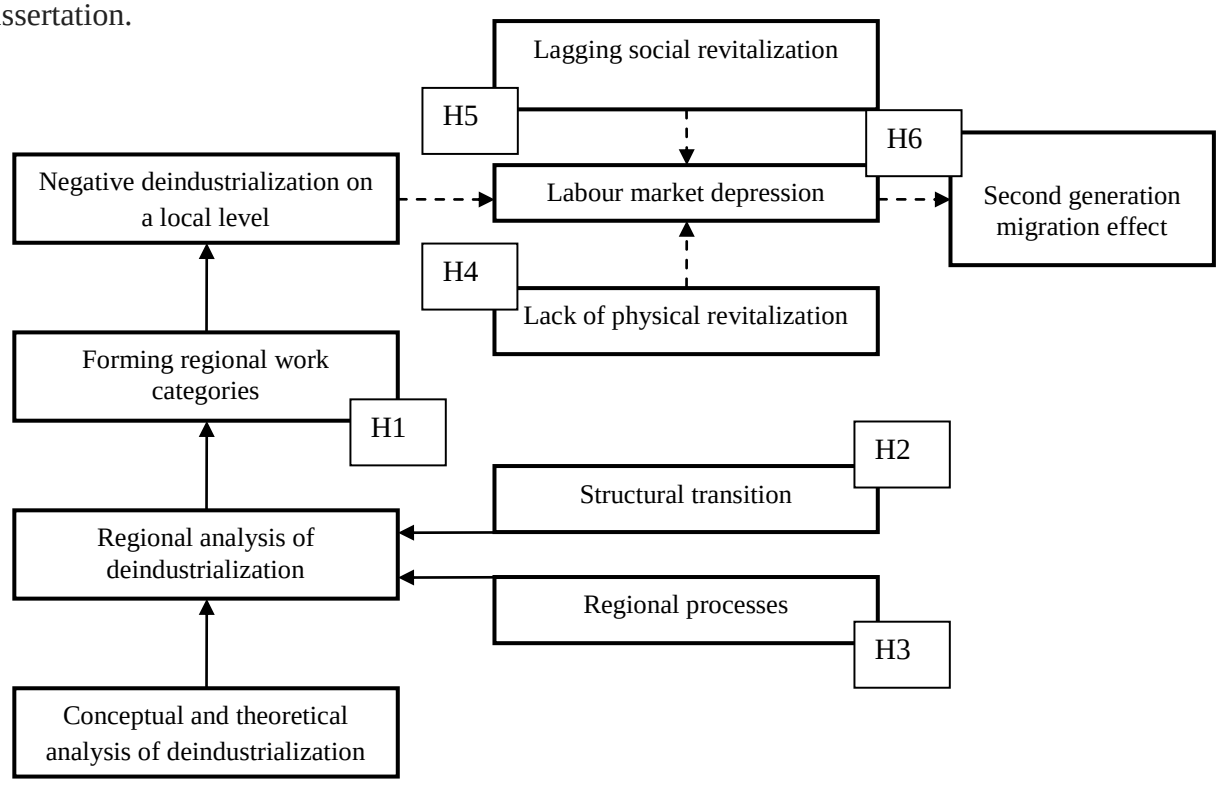

Figure 1: Logical structure of the research
Source: own compilation

Relying on the levels of analysis provided by Williamson (2000) I aim to study resource reallocation, which indicate the relationship between structure change and regional processes. In answering my research question I strive to form such categories which allow for me to

study the pattern of deindustrialization, unveil the similarities, understand the regional deindustrialization process and categorize the regions. This facilitates the in depth analysis of similarities and differences in the regions of the Visegrád Countries. Relying on the work of Rowthorn - Wells (1987) I define the negative, positive and external deindustrialization processes on a regional level. I examine the changes that took place in the deindustrialization types, and investigate what kind of specialization; concentration and structural changes took place in the areas with positive or external deindustrialization. I also strive to understand what common characteristics they have. Based on the work of Rowthorn - Wells (1987) I study not only the amplitude of structural change, but also the connection between the primary sector, the changes in the number of people employed in the industry and the different types of deindustrialization. In conclusion, I set my goals to study the following hypotheses.

Hypothesis 1

In the Visegrád Countries the deindustrialization process is present on a regional level between 1999 and 2012, and several types can be observed.

Hypothesis 2

The structural changes, the primary sector's employment potential, the changes of the industrial structure and its lag all have a great influence on the deindustrialization process.

Hypothesis 3

The industrial concentration and specialization are connected to the different types of deindustrialization in the Visegrád Countries.

In the second chapter I study the endogenous factors in two negative deindustrialization areas. In my own classification the regions of North Hungary and South Dunántúl belong to the negative deindustrialization areas. I find it important to research the connection between employment in the industry and the inner factors of deindustrialization in those negative deindustrialization areas defined by local processes. Based on these I formulate the following hypothesis.

Hypothesis 4

There is a spatial correlation between the presence of brownfields and the weakening labour market.

During literature analysis my attention is drawn to the local migration, labour market depression and second generation migration push due to the migration characteristic to regions with negative deindustrialization and age group analysis of employment. Additionally, I strive to find their correlation to brownfields and the lack of revitalization. I analyse the applied revitalizing techniques and their relevance to the labour force in Miskolc. In the next chapter I examine the following hypotheses.

Hypothesis 5

Migration and labour market changes took place in the city of Miskolc due to deindustrialization and the lack of social and physical revitalisation.

Hypothesis 6

Brownfield development plans in Miskolc lack the complex approach, which would mean taking socioeconomic aspects into consideration and the revival of labour markets in neighbouring areas.

To prove these hypotheses I use several different methods of analysis. To prove my first hypothesis, I make a statistic analysis and a shift-share analysis. Based on the work of Rowthorn - Wells (1987) I define negative, positive and external deindustrialization. I use shift-share analysis to isolate structural changes from employment changes due to local factors. In the international literature similar researches were conducted by Batóg - Batóg (2001) and Jonuschat - Knoll (2008) regarding the Czech regions, and Bielik - Rajčániová (2008), Lang (2011) and Havlik (2013) analysed the Visegrád Fours in different time intervals.

Shift-share analysis is the most appropriate method of investigating deindustrialization, as one can interpret industrial processes on a regional level based on the ratio of full employment. As I calculate, my first step is to perform a sift-share analysis to all of the Visegrád Fours separately. The results have shown where the employment growth was above or below average (Si). The results were divided into local (Sr) and structural (Sa) factors. All three Si, Sr and Sa can have a positive or negative value. The researched countries can be categorized based on these results, which shows whether local or structural factors dominated in the employment growth.

To disclose the connection between deindustrialization and structural change I examine different indexes. On Stamer's (1999) recommendation, I use the extent of structural changes between two periods as an indicator. The most often used indicator to prove specialisation is the LQ index (Patik, 2005; Patik-Deák, 2005; Szakálné Kanó, 2011) or location quotient (Pearce, 1993). Once the indicator is filled with statistic data, it is capable of detecting concentration reflected in employment. There are several instances of this method used in literature (Miller-Patassini, 2005; Gecse-Nikodémus, 2003, Patik-Deák, 2005; Szakálné Kanó, 2011; Kuttor - Hegyi-Kéri, 2012).

The Herfindahl-Hirschman index is one of the most well-known statistic indices to numerate concentration and specialization. It is also called absolute concentration and specialisation index. Jeney - Szabó (2001) observe that it is remarkably similar to the Gini-Hirschman concentration ratio formula. The value of the index falls between 0 and 1 based on what extent of absolute concentration and specialisation can be observed. I use the Herfindahl-Hirschman location index and cluster analysis to support my hypothesis.

I explore the attitude towards deindustrialization with a primary study. I mostly use interval and ratio questions in my questionnaire. I chose the following methodologies to prove my hypothesis: cross chart analysis, factor analysis, cluster analysis and variation analysis. I made the calculations with the help of the SPSS programme. My goal is to present the labour market depression and second generational migration effect in Miskolc came into being due to the brownfield within the city limits. As for my sixth hypothesis I analyse the Integrated City Development Strategy by the city of Miskolc (in Hungarian IVS, in English ICDS), the Integrated Settlement Development Strategy (in Hungarian ITS, in English ICSD) and the Local Equal Opportunities Programme between 2013 and 2018. I evaluate the financial support for brownfields as individual projects.

Table 1: Methodology assigned to the hypothesis

Goals	Established hypothesis	Methodology
Identifying the types of deindustrialisation.	**Hypothesis 1**	**Descriptive statistical analysis of the employment structure.**
Discovering the local and structural reasons of deindustrialisation, identifying its types.		**Shift-share analysis, differentiation of local and structural factors.**
Studying the relationship of structural change and deindustrialization.	**Hypothesis 2**	**Indicators of structural change (Moore's structural change value, Moore's structural change value with spatial vectors, Euclidean norm- EuN, sum of ranking differences - SRD, growth rate parameters - GRP, modified Lilien index - MLI).**
Analysing the development of regional processes in regards to deindustrialization.	**Hypothesis 3**	**Specialization and concentration indices (location index, Herfindahl-Hirschman specialization).**
Detecting the spatial correlation between the size and extension of brownfields and the regional labour market.	**Hypothesis 4**	**Moran's I.**
Demonstrating labour market depression and second generation migration pressure.	**Hypothesis 5**	**Cross chart analysis, factor analysis and analysis of variance.**
Analysis of complex brownfield revitalization developments.	**Hypothesis 6**	**Analysing documents and data.**

Source: own compilation

3. Evoluation of the concept of deindustrialization

According to Kiss (1998), the industry and manufacturing industry stimulated the development of the economy in Hungary, especially in major provincial towns in the 1990s. The industry is the fore bringer of technological advancement; it stimulates innovation and increases employment. The most complex description of the changes taking place in the industry and economy of the developed countries is structural change (Kiss, 2010).

Experts first started to investigate the concept of deindustrialization (dezindusztrializáció in Hungarian, désindustrialisation in French, Deindustrialisierung in German) in the United Kingdom regarding the slowing economic growth of the '70s (Tregenna, 2011). Singh (1977) was among the first to describe the connection between deindustrialization and structural imbalance. According to Takács (2004), deindustrialization refers to the decline and degeneration of industry. Kiss (2010) is of the opinion that the most accurate Hungarian expression for the phenomenon is "*elipartalanodás*".

In the 2009 edition of The Dictionary of Human Geography Gregory (2009) clarified that deindustrialization takes place *'A sustained decline in industrial (especially manufacturing) activity and capacity'*[1]. Deindustrialization means the decline in the number

[1] These changes are inherent to the economic cycle, which means industrial production is coupled with weakening competitiveness and decreasing national and international demand, thus deindustrialization represents

of people employed in the manufacturing industry in the interpretation of Kollmeyer (2009). After studying the relevant literature I agree with Saeger (1997) when he states that the most widely accepted definition of deindustrialization is the decline of the employment ratio in the manufacturing industry within the total number of people employed. Based on Saeger (1997) I summarize why experts use the change in the employment numbers in the industry to quantify deindustrialization:

- the ratio of the people employed in the manufacturing industry is a widely accepted indicator of determining the level of industrialisation and quantifying economic maturity,
- the most outstanding indicator of the size of the manufacturing industry is the employment level of the sector, which the public is also interested in,
- it focuses on the cost coefficients between the sectors, especially the input factors (due to its derived nature),
- decrease in the investment ratio affects the employment in the manufacturing industry, as the latter has a relatively large need for investment.

We have to differentiate between a relative or absolute change in the industry. In case of a relative decrease the other sectors show a bigger growth rate than the industrial sector, which means that the industrial ratio decreases within the full number of people employed. Concerning deindustrialization Alderson (2011) talks about the relative decline in number of employment in the manufacturing industry compared to the whole labour market. As Rowthorn - Wells (1987) interpret the process, they differentiate between external, negative and positive deindustrialization. In their interpretation positive deindustrialization is such a process, in which the drop in the industrial employment is not accompanied by a surge in unemployment, as enough new positions arise parallel to the process in the tertiary sector. In this case deindustrialization is the sign of a successful developing economy. To describe negative deindustrialisation, Lux (2011) uses the expressive term destructive deindustrialization. In my interpretation deindustrialization possesses a negative effect when the tertiary sector cannot make up for the terminated workplaces, so it induces growth in unemployment and inactivity rate.[2] Rowthorn - Wells (1987) are on the opinion that the third type of deindustrialization is one caused by commerce: „*the exports from the manufacture industry of the country drop and the output shifts towards the dominance of the service sector, which entails the reallocation of resources to other sectors.”*

We can gain new aspects to understand the phenomenon by investigating the experiences the Visegrád Countries had. Gaining a deeper understanding of the deindustrialization process aids the creation of sustainable development and economic growth, thus creating a higher employment rate.

4. Theoretical overview of deindustrialization

In the following theoretical overview I examine what take the different schools of economy have on deindustrialization and what scope of analysis they provide for understanding it. I also strive to understand how economic logistics interprets the economic and labour market changes following the regression of the economy. In Hungary the 8 to 10 years following the regime change were mostly spent with catching up to the rest of the European Union, but at the same time there were several economic and social fields where the necessary changes did not take place (Nagy, 2009). Due to the novelty of the phenomenon, the study of the industrial recession and its theoretic relevance to social economy is a difficult

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underdevelopment beside the decrease in the employment ratio and the imbalance of payments (Gregory et al., 2009, 150 o.)

[2] In the following chapter of the analysis I investigate if the process is discernible in Hungary and the other Visegrád Countries, and if yes, which types are characteristic on a regional level.

task, as the phenomenon is relatively new. The theoretical framework provides a guideline to the currently still ongoing processes. Deindustrialization is a process without equilibrium related to the structural transition. The orthodox methodology of the economy lacks its complex analysis (Knottenbauer, 2000). Thus it is essential to enlarge the scope of investigation to understand the process. Deindustrialization requires a complex approach in a dynamic time horizon, its explanation provided by the theoretical framework of the new institutional and (co)evolutionary social economy.

The new institutional social economy strives to know the consequences of path dependence, formal and informal institutions and the connection between the institutions and rationality. Hodgson (1998) identified the following five characteristics of the institutions:

- Each institution contains individual interactions with essential informational feedback.
- Each institution has a set of characteristics, complete with common ideologies and practices.
- The institutions sustain the common ideologies and expectations, and those in turn keep the institution afloat.
- Although the institutions are not permanent or everlasting, they are, in fact, relatively durable, self-strengthening and stable in their quality.
- The institutions embody values, normative judgements and expectations.

Williamson believes that institutional analysis is possible on four levels. On the uppermost level one can find social embeddedness, norms, traditions and conventions. In North's definition this level holds the informal institutions. The individuals' norms do not change immediately as politics does. In the process of deindustrialisation, mostly the transition from planned economy or large, former socialist businesses shaped the individuals' orientation and labour market attitude. The labourers carry the same norms in the institutions and in the labour market as well, which affects their role in production. Change comes extremely slow to this level (Máté, 2012). The institutional surroundings appear on the third level, affecting change through their formal rules in jurisdiction and legislation. This is the level of the game rules. Legislation provided the base for the formation of the market economy, the emergence of private property and the formation of different economic organizations during the change of the regime.

Table 2: The institutional characteristics of deindustrialization

	Levels		Rate of change (years))
Level 4	**Social embeddedness**	Attitudes, orientation, industrial work morale, expectations towards the companies and the government aids in connection with receding economy.	Over 100 years
Level 3	**Guidance structures**	Method and size of state aids, e.g. revitalization of brownfields.	10-100 years
Level 2	**Institutional surroundings**	Legislation aiding industrial change, law of privatization.	1-10 years
Level 1	**Resource allocation and employment**	Reallocation process of the industrially employed.	continuous

Source: own compilation based on Williamson (2000)

It promoted industrial change through privatization. It also had a role in the reincorporation of the workers leaving the industry into the labour market through the labour policy. Thus the second level became the playground of the market, the companies and other economic agents.

Guiding structures such as the government are also included, as it can influence the transition through government grants and subsidies. On the first level we can see the dispersion of the physical and human resources. An important field of study for the new institutional economy is the study of the post regime change countries from Eastern Central Europe. In my opinion the aforementioned four levels provide a sufficient base for the analysis of deindustrialization.

Already in 1899 Weblen's pioneer ideas were centred on the synchronization of the evolutionary conception with the economic rationality. He put the framework of economic decisions and rationality into socio-cultural and institutional frame. Evolutionary economics differs on several levels from mainstream trends: the investigation of the population, the meso level and dynamic viewpoint play a more important role in it. Evolutionary economy places not only the effect of institutional changes on the economic output into the centre of its attention, but also studies what effect change has on the other elements of the economy. Investigating from the viewpoint of learning, competition and cumulative processes is also regarded important. Evolutionary economy draws attention to the problems within the static framework of the investigation, which is the evaluation of the economic rules' time dimension and its treatment from a Darwinian approach. That is why we cannot investigate economic actions only from a mechanical approach, separately from space and time. Marshall views the neoclassical analysis with scepticism, which only concludes research along states of equilibrium (Hausmann, 2007). Deindustrialization as a whole is not a balanced state but rather a process towards equilibrium[3]. It analyses the actions of the economic participants, who are educable and moderately rational in time and space. Dosi - Nelson (1994) believe evolutionary economics puts a great emphasis on explaining change. This viewpoint is a huge aid in understanding deindustrialization and its socio-economic effects. The unchanging system of institutions and homogenized spatial view often inhibits the economic structural change and its dynamics, especially in Eastern Central Europe (Elekes, 2013).

Deindustrialization is such a dynamic process in which it is worth to investigate how the amassed tacit knowledge, work ethic, motivation, routine and hereditary units lived on afterwards. The evolutionary economy compares the learning ability of the companies to the previously accumulated, pre-existing knowledge they had, thus defining path dependence, which limits further growth possibilities. The routine processes used by the evolutionists are also interpreted as customs by Hodgson (1993). Lux (2009) concludes that in Central Eastern Europe in a big percentage of the industrial companies such routine processes came into being due to forced industrialization, decrees protecting the economy and the mostly centrally governed economy, which were largely due to special decisions, work rules and customs. For example, such 'customs' were unemployment within the gates and the mingling of private and company property. Dosi et.al. (2000) separated routine as an organisational attribute, and professionalism, which is an individual attribute.

Of the two branches of evolutionary economy I highlight the trend which studies the structure and proceedings of complex systems and how they change together. This is the co-evolutionary process, according to which the industrial and market changes are in strong correlation with each other. According to the co-evolutionary process the changes in one subsystem affect other subsystems in their proceedings, which result in a system wide change of characteristics (Elekes, 2013). The social, economic and environmental factors are in co-evolutionary correlation with each other in any given area. In old industrial areas the labour market attitude, the work ethic and the customs of the population were largely shaped by the factories in the area. (Polluted) Brownfields arose parallel with the decreasing industrial production and employment. The transition of the economic activity in the area erodes the knowledge base and human resources of the area.

[3] Pasinetti (1981, 1993) defined the equilibrium not as a static state, but as a process for equilibrium path.

Another branch of co-evolution concentrates on the changes related to the 'population'. The changes in a defined population will influence processes in another population (Lengyel-Bajmóczy, 2013). The life story and post-industrial changed labour market experience of the parents' influences the advice given to their children, thus the labour market behaviour of the next generation, and so migration and mobility becomes a family decision.

5. New findings and novel statements of the research

I present the findings of the research centred on two main points:

- analysis of the regional processes related to the receding economy in the Visegrád Countries between 1999 and 2012;
- description of labour market processes in Miskolc.

5.1. Analysing deindustrialization in the Visegrád Countries

In the second chapter of the dissertation I establish a working category to explore the regional similarities and relevance of employment policy based on the literature review. Rowthorn - Wells (1987) differentiate between external, positive and negative deindustrialization in their interpretation. I define the types of deindustrialization with shift-share analysis to separate the structural change from employment changes due to local factors.

Table 3: Determining the types of deindustrialization

Type		Changes in industrial employment numbers	Changes in the employment numbers of the tertiary sector	Changes in the employment number on the whole	Factors having negative influence on employment
External		decrease	increase	decrease	structural
Internal	Negative	decrease	decrease	decrease	local
	Positive	decrease	increase	increase	local

Source: own compilation

- In case of external deindustrialization, the changes in the industrial structure have a negative impact on employment, with a decreasing industrial potential the growing tertiary sector cannot compensate for the differences.
- In my interpretation of negative deindustrialization, the growth of the tertiary sector cannot compensate for the receding economy. On the whole, the number of people employed in the region decreases, which is more likely due to inner factors rather than structural changes.
- Positive deindustrialization is such a process, where the receding economy changes the economic structure in such a way that the tertiary sector can enhance its employment potential and thus full employment increases in the area. This change is largely due to local factors.

Based on the industrial employment numbers we can observe deindustrialization processes between 1999 and 2012 in half of the regions of all Visegrád Countries. Out of the twenty regions in seven negative, in four external and in nine positive deindustrialisation regions took place. External deindustrialization is characteristic to three regions of Hungary (Central Dunántúl, Southern Dunántúl, South Alföld) and one Czech region. Negative deindustrialization is observable in five Polish regions and in South Dunántúl and North

Hungary. Positive deindustrialization took place in four Czech, two Slovakian, one Polish region as well as in Central Hungary and the North Alföld.

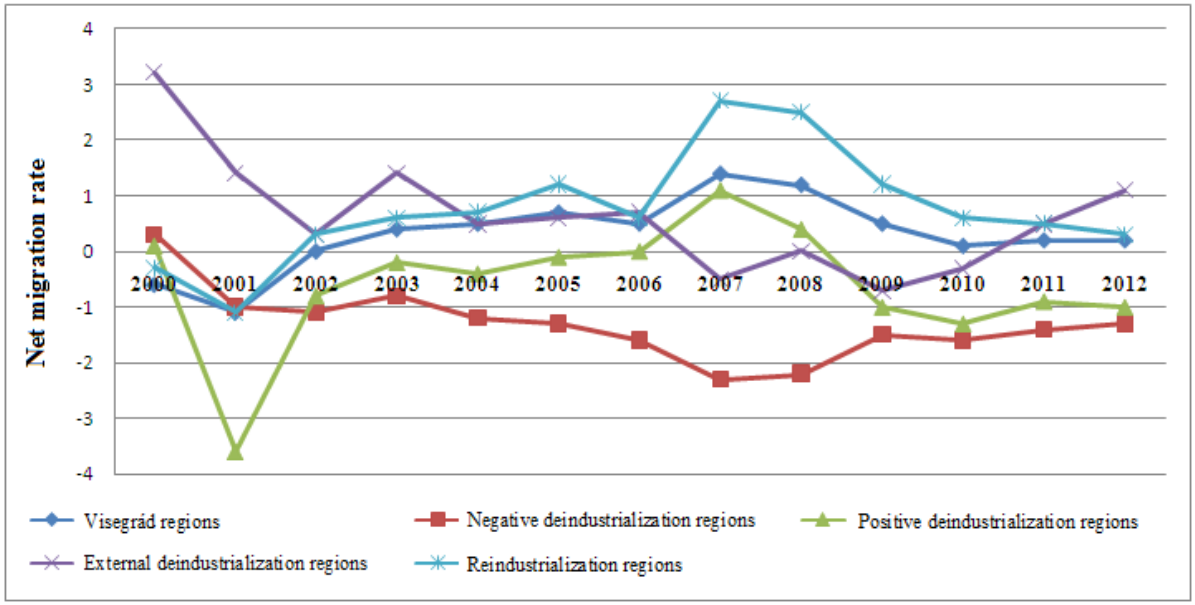

Figure 2: Development of average net migration rate in the Visegrád Countries on a regional level
Source: own compilation

To enhance the efficiency of employment politics on a regional level I formulate the following theses.

Thesis 1a:

All three types of deindustrialization (positive, negative and external) are present in the Visegrád Countries on a regional level between 1999 and 20212. Furthermore, relative and absolute deindustrialization is discernible on a regional level.

Thesis 1b:

The employment rate of the age group 35 to 44 decreased on a higher degree than in groups with external deindustrialization. Migration is characteristic to regions with negative deindustrialization since 2001, which means their net migration rate is negative.

Farber (1999) believes the turbulence expresses a relation of instability between the employees, thus the number of people flooding the labour market increases. Demands change on the labour market, and an increasing demand arises for higher skilled workers. Skills related to 'old' industrial production suffer devaluation (Kocziszky, 2008), enhancing structural unemployment and the segmentation of the labour market. According to Layard, et. al. (2005), the turbulence refers to the growing 'imperfection' of the labour market. The connection between the change in industrial employment and the dynamics of the structure change is displayed in the table four. Taking the distance of congeniality from zeros, the pro rata symmetry, the triangle inequality and dispersion factors (MLI) into consideration, the increase in the industrial employment is less characteristic to the more intense structure change in the Visegrád Countries between 1999 and 2012. I found that at four indicators (Moore's restructuring value, EuN, SRD, GRP) structure change is faster in negative deindustrialization regions and slower in positive or external deindustrialization regions.

Table 4: Correlation between structure change and the ratio of industrial employment

Between 1999 and 2012 on a regional level	**Correlation value of the industrial employment ratio**
Moore's restructuring value	r=-0,159
Moore's restructuring value with spatial vectors	r= 0,031
Euclides' norm (EuN)	r= 0,056
Relative difference of the absolute value (SRD)	r= 0,247
Growth rate parameters (GRP)	r=-0,079
Modified Lilien index (MLI)	r=-0,345

Source: own compilation based on EUROSTAT data

According to Rowthorn - Wells (1987), the growth in the tertiary sector results in the temporary decrease of the primer sector. When the economy reaches a point of prosperity, tertiarisation continues at the expense of the secondary sector. The literature calls this explanation of deindustrialization the 'maturity theory'. According to this theory, there is a point in economic development where the economy is at a point of maturity, after which the growth of the service sector is accompanied by the regression of the industry. I investigate on a regional level if there is a connection between the primary sector employment rate and the industrial employment ratio. During the regional analysis of the Visegrád Countries (in case of 35 regions) the most accurate expression of the connection between the changes in the industrial employment ratio and the agrarian employment is logarhythmic regressive coherence. The explanatory power of the model is (R^2=0,465), which is moderately strong[4].

Equation 1

$$y= \ln (0{,}057x) + 1{,}098,$$

where y is the change in ratio of industrially employment between 1990 and 2012, x is the ratio of people employed in the primer sector in 1999 in the Visegrád Countries on a regional level. Based on my findings I formulated the following theses.

Thesis 2a:

It is proven that the ratio of agrarian employment affects the deindustrialization process. In regions where the employment numbers are lower in the agrarian sector, the decline in the industrial employment is more likely.

Thesis 2b:

There is a moderately strong correlation between the rates of deindustrialization and structure change in the Visegrád countries ridden with labour market turbulence. In those regions where the structural change is more intense, manufacturing employment rate's decline is more characteristic. In regions with negative deindustrialization there is a continuous structure change, which is different in its dynamics from those found in regions with external or positive deindustrialization.

It is unavoidable to analyze the industrial specializations of the regions once we are talking about deindustrialization. Regional analyses highlight that beyond the industrial macro processes there are significant regional differences (Kuttor, 2011). During my research I focus on determining what kind of connection can be found between the industrial specialization of the regions and deindustrialization. I examine six branches of economy (agriculture, manufacturing; construction; financial intermediation and real estate; administrative and community services and household activities; wholesale and retail; hotels and restaurants) in

[4] You can find the tables containing the research data complied with the help of the SPSS programme in the appendix.

the regions of the Visegrád Countries between 1999 and 2012. I answer my hypothesis based on the results of two indexes: locational (LQ) and Herfindahl-Hirschman (HH).

In 2012 the concentration of the people employed in the industry rises in the regions with deindustrialization, especially in the areas with negative deindustrialization. The LQ indicator takes not only the change in the industrial employment numbers, but also the national and full employment numbers into consideration. The data regarding the areas with negative deindustrialization have results above the average LQ=1 index. On average, the industrial LQ values increased by 4 percent between 1999 and 2012 in this group save for one region (Zachodniopomorskie). The average LQ index values of regions in negative depression was 1,098 in 2012, which exceeds the average of the Visegrád Countries (LQ=1,016). In the same year the regions with external deindustrialization had an LQ index with a 1,074 value on average. In the regions with positive deindustrialization the values were closer to the average of the whole research (1,026). In these regions the concentration of people employed in the industry has been decreased by 2 percent altogether in the researched period.

Table 5: Values of the LQ quotient based on the types of deindustrialization in 1999, 2008 and 2012

	Average LQ value in 1999	Average LQ value in 2008	Average LQ value in 2012
Regions with negative deindustrialization	1,051	1,064	1,098
Regions with positive deindustrialization	1,045	1,045	1,026
Regions with external deindustrialization	1,077	1,090	1,074
Regions with (re)industrialization	0,941	0,941	0,941
Full data	1,0035	1,0101	1,0163

Source: own compilation based on EUROSTAT data

Saeger (1997) described the changes in the ratio of the industrial employment numbers with a U-shaped curve in terms of the GDP per capita. Analyzing the regions of the Visegrád Countries between 2000 and 2011, there is a strong connection between the location index and the logarithmic GDP, which can be described by an upside down U-shaped curve. I determine that Saeger's statement is true on a regional level in the Visegrád Countries between 1999 and 2012. The strongest correlation between the two variables can be observed in the year of 2008.

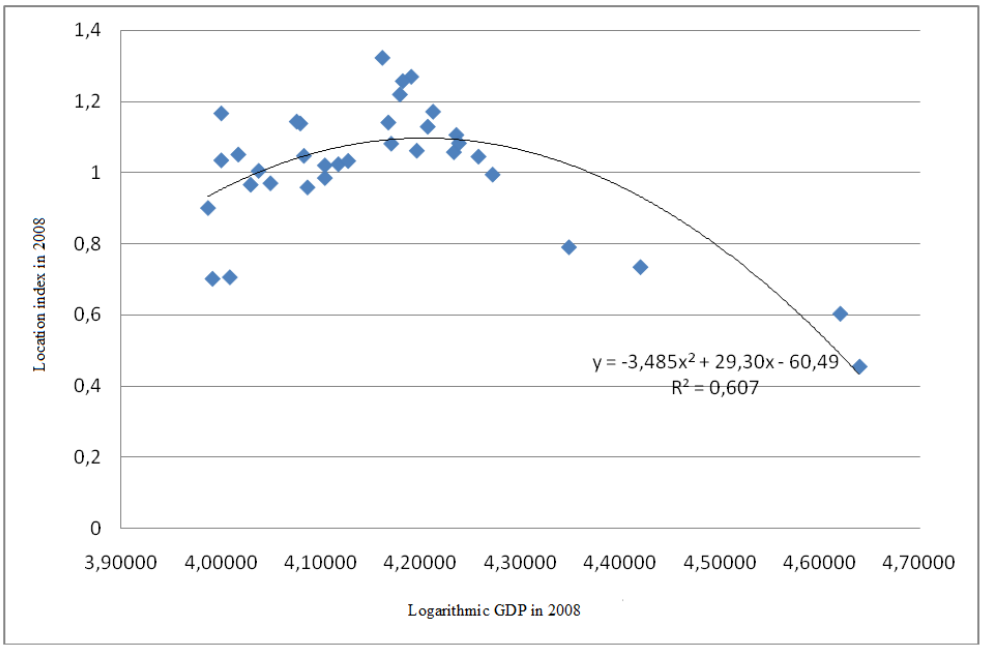

Figure 3: The correlation between the location quotient and logarithmic GDP per capita on a regional level

Source: own compilation based on EUROSTAT data

In the following section I thoroughly analyze the connection between regional specialization and deindustrialization. The absolute specialization of the regions show how diversified the sector structure in that region is. In a country where one sector is overly dominant, the other regions usually have a significant absolute specialization index, too. Those regions of the Visegrád Countries can be considered specialized, which have a different sector structure than the national average. I examine what relationship the industrial specialization of each region has to the type of deindustrialization found in it, furthermore, I seek to know what relationship there is between the industrial specialization of the regions and their logarithmic GDP per capita.

The specialization of the Hungarian regions is largely influenced by the industrial and public administration sector, and also by the trade ratio. While industrial specialization decreased in each region between 1999 and 2012, the capital city experienced a strong specialization in administration. In each case the specialization index decreased in every region, and based on the partial results, regional industrialization specialization also dropped. While specialization in the administrative sector is prominent in Central Hungary, the manufacturing industry has an outstanding ratio in Central and West Dunántúl. Regional specialization was at its lowest in Central Hungary and South Alföld in 2012.

The specialization index decreased to a small extent in the two Hungarian regions characterized by negative deindustrialization process. The labour market status of the South Dunántúl region is compensated by the higher specialization ratio of the agrarian sector. The specialization of the agrarian sector is very low in the North Hungarian region.

Low specialization index is characteristic to the areas with negative deindustrialization. The other two deindustrialization types have a specialization index exceeding the average of the Visegrád Countries. This high specialization index is partially defined by the number of people employed in the financial sector, and it is dated back to the ratio of people employed in construction and the industry.

Parallel to the relapse of the industry there was no increase in the other industrial sectors in case of negative deindustrialization. The average of the specialization value shows a

decreasing tendency between 2004 and 2011. The regression of the industry take place parallel to decreasing specialization in these regions, which affects the regional competitiveness as well.

Table 6: Absolute HH specialization index of the regions

Region	1999	2008	2012
Central Hungary	0,232	0,205	0,209
Central Dunántúl	0,242	0,235	0,234
West Dunántúl	0,247	0,238	0,228
South Dunántúl	0,225	0,216	0,216
North Hungary	0,237	0,225	0,232
North Alföld	0,232	0,217	0,217
South Alföld	0,217	0,209	0,209

Source: own compilation based on EUROSTAT data

The findings of my research allow for the formation of the following statements regarding the Visegrád Fours.

Thesis 3a:

Areas with negative deindustrialization can be described by high industrial concentration and low industrial specialization index. Regional concentration of the industrially employed took place in regions with negative deindustrialization during the researched period.

Thesis 3b:

While industrial specialization contributes to the increase of GDP per capita, the regional concentration of the industrially employed hinders the net output of the regions.

Thesis 3c:

There is a middle strong tie between the location index and the logarithmized GDP on a regional level in the regions of the Visegrád Countries between 2000 and 2011, and it can be described by an upside down U curve.

Two of the negative deindustrializational regions are located in Hungary, these are North Hungary and South Dunántúl. The changes of the local factors have a greater influence on the changes in employment in these regions. Such a local, inner factor is the presence of brownfields in the area. In the aforementioned two areas I thoroughly examine the effect the brownfields that arose after the recession of the industry have on the labour market. I use the Moran's I spatial autocorrelation indicator to analyze the subregions in the two regions. Moran's I is the suitable method, as it is capable of analyzing social and economic phenomena and processes, also it can discover their system of spatial correlations. It provides a substantial amount of help, as it not only numerates the correlation value, but also portrays it in space. When doing such an analysis it is always a cordial question how employment rate and the unemployment rate are around brownfields. The index is capable of proving that labour market indicators clustered in the presence of brownfields. Based on labour market findings and social economy logics we know that the value of indicators is either low or high in

clusters. I used in case of the Moran's I index not only the neighborhood matrix (taking the nearest neighborhood) but also the extent of brownfields instead of spatial weights, as they effect areas further away from the brownfields due to commuting. The extension of subregional brownfields did not allow for the research to spread to district level. I use data from 2004 and 2008, as the effects of depression are not yet visible in them. I performed my calculations on twenty-eight regions from North Hungary and twenty-four from South Dunántúl. According to Moran's I we can conclude that there is a positive spatial autocorrelation between the size of the brownfields and labour market in the subregion both in 2004 and in 2008. The autocorrelation between the unemployment rate and also the employment rate grew in the two research periods, whereas the activity rate decreased in the North Hungarian subregions. In the regions of South Dunántúl the values of Moran's I are lower in both time frame, and the extent of the change is also of smaller proportion. Relying on the results of the calculations I studied the industrially depressed subregion categorization in the case of two Hungarian subregions with negative deindustrialization. Upon defining an industrially depressed region I take the size and layout of brownfields into consideration. Based on the indicators I define the industrially depressed regions in the two researched area as the following:

- ratio of industrial employment in 2011,
- inactivity rate instead of unemployment rate (2011),
- inland migration difference, used by Ballabás between 2000 and 2011,
- ratio of the brownfields.

I include those regions into the category, where there is at least two cases of above average value and the ratio of the brownfields is more than 1 percent of the regional amount. With each indicator I compare the results to the regional level, and above average values are characteristic to the region. I include those subregions into the industrially depressed regions' group, where the extent of the brownfields exceeds one third of the regional average, and in at least one case I find an indicator differing from the average values, which I display in table 7.

Table 7: Industrially depressed subregions in negative deindustrialised areas in Hungary

Extent of brownfields in North Hungary and South Dunántúl regions		Census 2001 (subregions)	Ballabás-Volter 2006, (subregions)	Hegyi-Kéri 2015 (subregions)
Miskolc	**1169,25 ha**		Miskolc	Miskolc
Kazincbarcika	**216,32 ha**	Kazincbarcika	Kazincbarcika	Kazincbarcika
Bátonyterenye	**211,72 ha**	Bátonyterenye	Bátonyterenye	Bátonyterenye
Ózd	**165,44 ha**	Ózd	Ózd	Ózd
Salgótarján	**96,68 ha**	Salgótarján	Salgótarján	Salgótarján
Szerencs	**27,28 ha**			Szerencs
Tiszaújváros	**0 ha**		Tiszaújváros	
Bonyhád	**1 814,00 ha**			Bonyhád
Komló	**307,89 ha**	Komló	Komló	Komló
Tamási	**58,37 ha**			Tamási

Source: own compilation

I expand the circle of industrially depressed areas compared to the census in 2001 and to the definition of Ballabás-Volter. It now includes besides Komló, Bonyhád and Komló from South Dunántúl. From North Hungary I excluded Tiszaújváros from the list of industrially depressed regions, the subregions of Szerencs and Miskolc were included instead. After analyzing the results I make the following theses.

Thesis 4a:

Spacial autocorrelation can be detected between the site of brownfields and the labour market in two Hungarian negative deindustrialization areas. In the region of Northern Hungary subregions stronger spatial relationship can be observed. The presence of brownfields must be taken into consideration during the definition of industrially depressed subregions.

5.2. Measuring labour market depression and migration effect arising from deindustrialization in Miskolc

The consequences of the regime change, or specifically the emergence of brownfields is not a homogenous process (Tóthné, 2013). Certain regions bear the marks of deindustrialization up to this day, while others have managed to get over the transition caused by the regime change. After the migration tendencies of the last decade and the mass immigration after the regime change, the migration balance of the county and Miskolc are both heavily in the negative. This diminishes the desirability of the city for aspiring transnational companies. These companies represent new challenges with their location and labour force development (Nagy, 2007). Based on a research concluded previously I diverge to study the physical and social effects of deindustrialization on a local level. I analyze the effect brownfields have on the labour market and the society. Prior to displaying the results of the questionnaire I present the labour market connections based on the data of the 2011 census. I report the labour market processes in Miskolc and the opinion and attitudes of inhabitants living near brownfields towards the labour market and migration based on my previous study.

In the past twenty years Miskolc has lost about one percent of its population annually. Between 2001 and 2011 the change in population was also largely influenced by the migrational difference, in other words, migration has intensified in the past decade. Mass migration after the regime change and the consequential negative migrational balance are characteristic to the county capital (see table 8).

Table 8: Changes in the number of inhabitants in Miskolc

Miskolc	Population	Time interval	National increase (+) or decrease (-)	Migration difference
2001	184 125	1990-2001	-6 785	-5 532
2011	167 754	2001-2011	-8 425	-7 946

Source: own compilation based on KSH census data

In case of Miskolc I deduce the age pattern of the migration based on census data. I analyze the data of the KSH calculated census by age group in Miskolc city. The data are conducted on each generation separately, and if I take the changes with a 5-year shift, the following is the result. By shifting the 20 to 25 age group with 5 years I see that the generation steadily decreases. The data between 2012 and 2014 are outstanding as the decrease in the 25 to 29 age group totaled to 15-20 percent. This relapse includes natural decline amongst the population, which is very low in this young age group. Migration has also intensified in the 30 to 34 age group from 2012, their value is 13-17 percent. As you can see in diagram 5, there is a continuous migration from the 30 to 34 age group since 2006. The surge in 2001 is due to the fact that only during the census in that year did it become clear how many people moved into the city, so that information represents an accumulation in the

data. Concerning the data from the last 5 years, there has been a decrease in the migration of the 35 to 39 age group, but there has been a significant growth in the migration rate of the 30 to 34 and 25 to 29 age group.

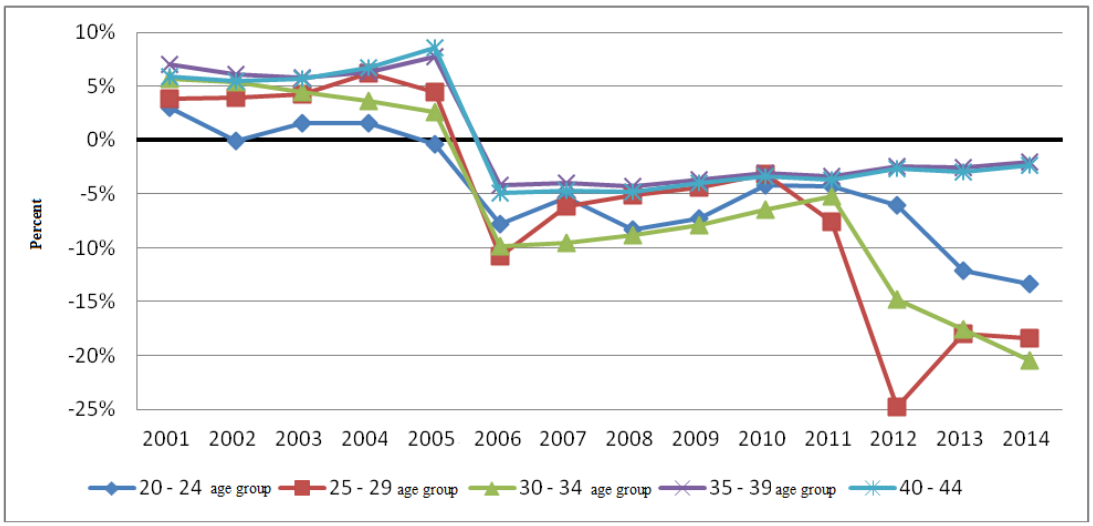

Figure 4: The changes in the population of Miskolc broken down into age groups, based on census data

Source: own compilation based on KSH census data

Based on these data there have been no migrations to such an extent in the age group of 30 to 34 since 1995. This age group altogether leaves the labour market of the county borough. According got the census data there was a 7 percent unemployment rate in 2011. The dispersion of unemployment is not significantly different from that of other cities. The ratio of unemployed people from the 30 to 39 age group is lower than in Budapest, Győr or Kecskemét. Despite the presence of unemployment, it does not smite the youth more than in other Hungarian big cities. This fact does not justify the migration of this age group, at least not to such an outstanding extent.

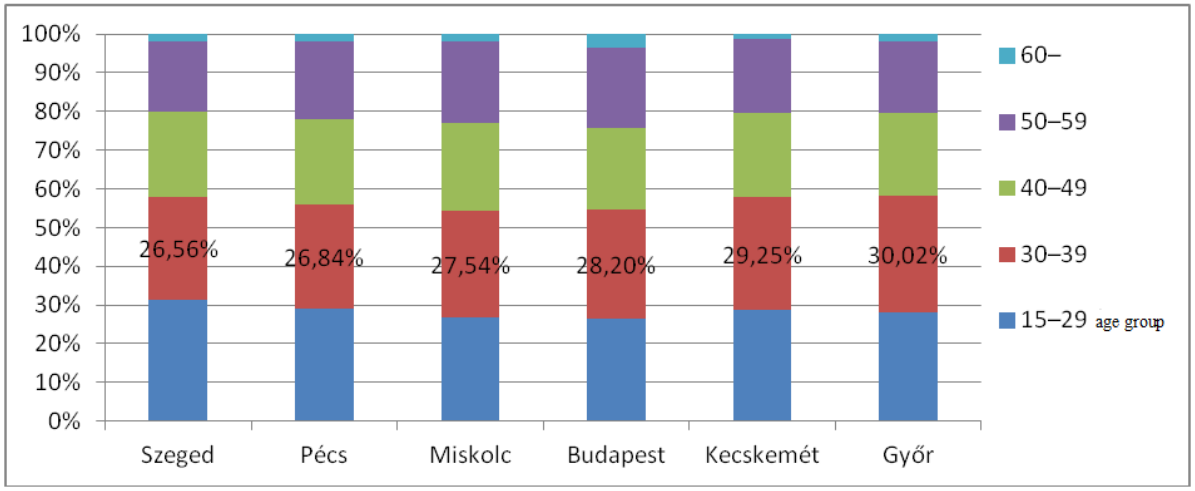

Figure 5: Age composition of unemployment rate

Source: based on KSH census data

The participation and economic activity of the 30 to 39 age group lags behind other cities, it is just 30.64 percent. Due to migration, this age group is missing from the labour market of the city. In Pécs, where the heavy industry was also prominent prior the regime change, the activity ate of the 30 to 39 age group is similarly low: 30.70 percent from the economically activity persons. In Győr, the economic activity from all of this age group is higher: 33.10 percent. The participation of the 20-29 age group is also lower than the other investigated cities, in Miskolc this indicator is 16.82 percent, 17.24 percent in Pécs and 19.27 percent in Szeged.

Table 9: Economic activity structure according to age groups

County borough	Age 20 to 29	Age 30–39	Age 40–49	Age 50–59
Miskolc	16,82%	30,64%	27,01%	23,75%
Szeged	19,27%	31,87%	26,05%	20,57%
Debrecen	18,60%	31,73%	26,21%	21,60%
Győr	18,66%	33,10%	25,21%	21,30%
Pécs	17,24%	30,70%	26,81%	23,09%
Kecskemét	17,90%	31,97%	25,79%	22,28%

Source: own calculations based on the 2011 KSH census data

The tendency turns around at the 40 to 49 age group, in Miskolc the economic activity is 27.10 percent from the all, in Győr the indicator id 25.21 percent. The 50 to 59 age group has similarly high results on the labour market from the all: 23.75 percent in Miskolc, and in Szeged the participation of this age group in the economic activities is 20.57 percent. The city of Miskolc includes former industrial sites of significant dimensions, currently these are brownfields. According to the data provided by the North Hungarian Operative Programme (2006) this amounts to 526 ha of brownfields located on four distinguished sites, three out of which are located in the same vicinity (DAM, DIGÉP, Lyukóbánya). Originally the industrial district was on the outskirts of the city between Miskolc and Diósgyőr, but as time went by, the settlement slowly engulfed it. So today the 200-ha metallurgy and the 45-ha DIGÉP site is located in the middle of the city. It makes the function change of the area more difficult that it is a polluted, densely built-in, virtually unmapped city within a city, which is largely unused. Despite the emphasis international literature put on the revitalization of brownfields, the city invested 920 million HUF into providing a green field (62 ha) with necessary industrial infrastructure. The city does not reckon with the revitalization and rehabilitation of the more than 245 ha brownfields.

Table 10: Brownfields in Miskolc in 2012

	Name	Type	Size(ha)
List of brownfields Észak-Magyarországi Operatív Program	DAM	Metallurgy	160
	DIGÉP	Machine manufatue	45
	Northeast industrial site	Mixed industrial	300
	Lyukóbánya	Mine	21
VÁTI	DAM	Metallurgy	190
	DIGÉP	Machine	45

Source: list of brownfields -own compilation based on the North Hungarian Operative Programme '

The city did not have plans for (social) revitalization for the current brownfields in the past few years. The 'Integrated City Development Strategy' *(ICDS)* concluded in 2003 recognizes the necessity of revitalizing brownfields, but referring to the complexity of the problem it does not reckon with significant progress. In the 2014 material of the 'Integrated Settlement Development Strategy' the authors did not word any plans, they only set rehabilitation as a goal. They do recognize the problem, but they do not mention its integration into the labour market and the development of its human resources. The ever-deteriorating socioeconomic infrastructure of the area makes advancement difficult, investments fall away and it only increases the size of the slumming areas. The concentration of social problems to one part of the city is in direct connection with the unrevitalized brownfields of the area. According to my research hypothesis, labour market depression is observable in all parts of Miskolc city. Its extent, however, differs greatly between its parts. The inhabitants of the Diósgyőr area, directly located on a brownfield, are more depressed than the inhabitants of a former greenfield.[5] The depressed mentality of the labour market contributes to the migration mobility growth. The attitude towards the area also influences labour market behavior, they are considering immigration, but their encouragement of the next generation to migrate is even bigger.

To prove my hypothesis I first define two concepts: labour market depression and second generation migration push. The works of Dabasi Halász (2013) greatly influenced my definition.

- In my definition labour market depression means the following: the depression arising from deindustrialization urges the inhabitants to have presuppositions about the scarcity of the demand for labour, thus giving up hope of finding employment. In connection with the labour market depression I assume the following about the inhabitants of the area:
  a) their trust in the government's help and employment politics has been shaken,
  b) they consider the number of unemployment and people unfit for work high in their area,
  c) they believe they would not be able to find a new job in the foreseeable future, thus workplace fluctuation is low.
- I define second generation migration push as the following: in case of the families living near brownfields and the parents, having experienced mostly low labour market mobility and their age group often becoming inactive in their status, advise migration, immigration or inland mobility to their children.

I used the opinions of inhabitants from the Avas area as a control group to check the hypotheses. In a layered sampling process (based on gender, age and place of residence) 263 people were interviewed, 124 from the Avas region, 139 from the Diósgyőr-Vasgyár area.

[5] In the study entitled Social Map of Miskolc made by the University of Miskolc, publicated in 2011, the reserarchers also found an overrepresented majority of the inhabitants living in and around brownfields moody or depressed. The study was concluded on a layered sample of 800 participants. The definition of the district resulted in a bigger area in our case.

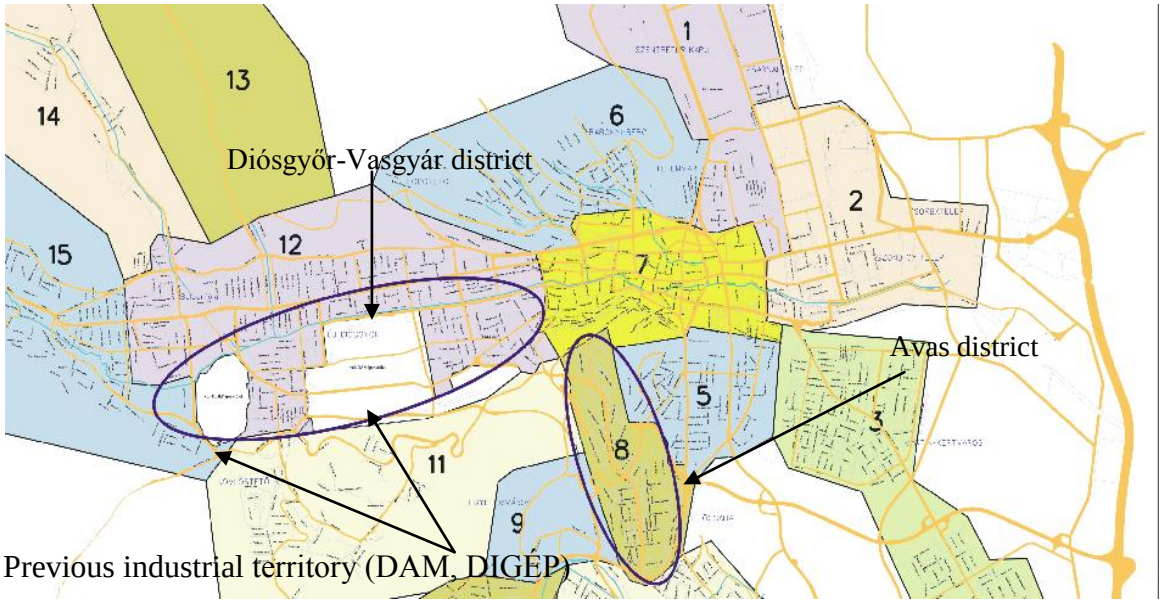

Figure 6: Locations of the preceding data collection in Miskolc

Source: own compilation based on MJV's map

Labour market depression

All the interviewed had to react to nine statements. I analyze the variants indicating optimism and depression separately in order to find the significant differences in opinion in the different parts of the city.

In the two parts of the city I average values of the six variants to measure the differences in the judgment of the labour market:

- The youth has no job opportunities in the area (10.1).
- People with low schooling live in the area (10.2).
- Mostly unemployed people live in the neighborhood (10.3).
- People in poor health live nearby (10.4).
- Unemployment rate is high in the area (10.5).
- The site of the old factory deters potential investors and companies (10.9).

Approximately 20 percent of the interviewed considers the labour market hopeless in the Diósgyőr-Vasgyár area. In the Avas area the number of people believing the same was roughly the half of it, 10 percent (see Figure 7).

The cross chart analysis shows a significant difference between the two parts of the city. In the Diósgyőr-Vasgyár area a significantly greater number of people believe that the prospects for the labour market are unsatisfactory, on both the level of supply and demand.

I average the evaluation of the following statements, too, which I consider hopeful:

- New investments are to be expected in the area, which will create new jobs (10.6).
- The state and the city provide a lot of help to the people in the neighborhood in their search for a new job (10.7).
- In its current state the area is attractive to investors and new companies (10.8).

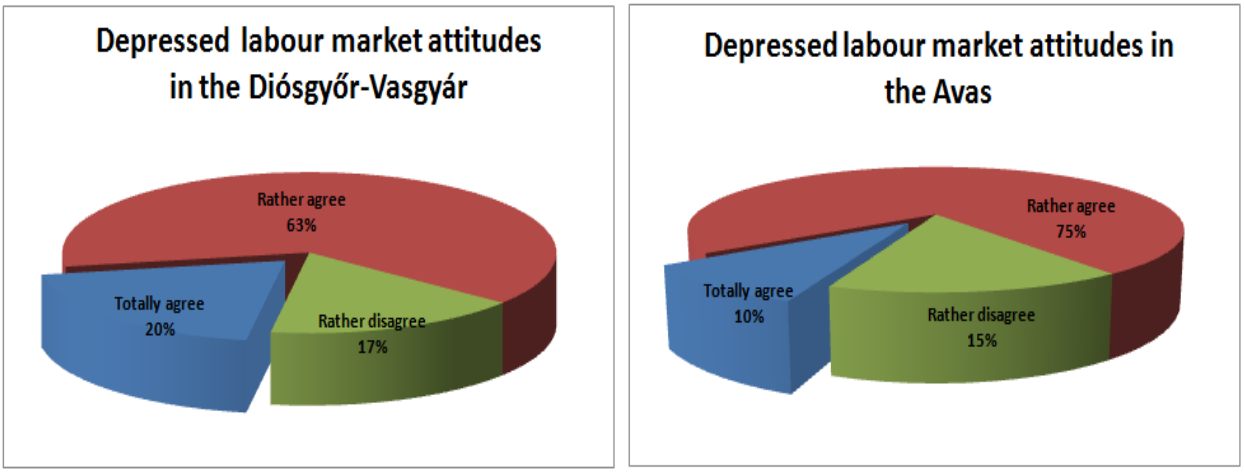

Figure 7: Depressed labour market attitudes in the Diósgyőr-Vasgyár and Avas areas
Source: own compilation

The cross chart analysis indicates a significant difference between the two parts of the city. The people in the Avas area are more hopeful regarding the future and the labour market. I summarize my findings on the topic in Table 11. Those living near the brownfield believe that mostly unemployed people live in their surroundings. The people living near to the underutilized industrial areas feel that the inhabitants' state of health is unsatisfactory, this may be due to prolonged absence from the labour market.

The inhabitants of the Diósgyőr-Vasgyár area are more hopeful regarding the industrial past: they believe investors find Miskolc and its area attractive in its present form. Regarding the methods of employment politics, or, in other words, the governmental and municipal aids in finding new employment, the people living in the Avas region are more satisfied. The residential area influences how the interviewed perceived the unemployment rate in their surroundings.

In agreement with my presupposition, the people in the Diósgyőr-Vasgyár region think less positively of the labour market potential than the people in their neighborhood do. Social slumming has already started in their area, so in their experience the neighbors have lower levels of education and most of them are unemployed. In case of the latter, there is a significant connection to the residential area. I chose the method of factor analysis to categorize and interpret the variables. With this I wish to determine if it is possible to separate factor groups with different mentalities [6],[7]. I also strive to reduce the number of variants[8].

[6] During the data validation process we determined that the variables are valid for factor analysis based on both the correlational value and the anti-image matrix.

[7] I came to the same conclusion based on the Bartlett test and the Kaiser-Meyer-Olkin criteria, too. Based on the Kaiser criteria and the variance fractions I deemed using three factors is the most expedient way to determine the number of factors, which was proven right by the Scree test, too. I chose the main component analysis from the factor extraction methods.

[8] After performing ortogonal rotation we received the following factor weights in the results, based on which we can set up three different factor groups among the full data. We consider the factor weights significant, as they exceed the preassumed 0,35 value in a 250-strong sample.

Table 11: Variants showing significant differences between parts of town

	Statement	Conclusion	Presence of significant difference between parts of town
10.3	Mostly unemployed people live in the neighborhood.	People in the Diósgyőr-Vasgyár area find the labour market prospects of their neighbors worse than the people in the Avas area.	Yes
10.4	People in poor health live nearby.	People in the Diósgyőr-Vasgyár area find the health of their neighbors worse than the people in the Avas area.	Yes
10.6	The state and the city provide a lot of help to the people in the neighborhood in their search for a new job.	People in the Diósgyőr-Vasgyár area find the governmental aid in the job hunt less satisfying than the people in the Avas area.	Yes
10.7	In its current state the area is attractive to investors and new companies.	People in the Diósgyőr-Vasgyár area have a higher appreciation of the city's investment potential.	Yes

Source: own compilation

I perform factor analysis (Kaiser normalization, varimax rotation) on the whole group and the two areas separately, then based on factor variants I generated the different segments with cluster analysis (k central method, Euclidean distance function). I put the statements about the depressed labour market (mostly unemployed live in the neighborhood, unemployment numbers are high in the area, uneducated people live in the neighborhood, people in poor health live nearby) into the first group for both the whole group and for the Diósgyőr-Vasgyár area. I put the optimistic statements (new investments and jobs are to be expected in the area, the government aids job seekers in the neighborhood, the area is attractive to investors in its current state) in the second group.

The third factor entails the deterring effect of the former factory area, and this carries less weight than the previous two. Factor analysis performed on the two parts of the city brought different results for the factor structure.

The difference is that in the Diósgyőr area the labour market's more negative, depressive appreciation belongs to a stronger factor, in which the strongest variables are the unemployed living in the area and their high numbers. In case of the Avas area the negative beliefs regarding the labour market were reduced to a less serious group of factors. The judgment on health landed in an even lower category, in the third factor group.

According to my hypothesis a more negative and depressed understanding of the labour market is characteristic to the Diósgyőr area, whereas a more optimistic approach is characteristic to the Avas area.

Regarding the variables on the labour market depression it was proven that the people from the Diósgyőr-Vasgyár area have a worse impression of the current state of the labour market than those in another part of the town, like in the Avas area.

Based on the aforementioned factors I performed cluster analysis (k-center method, Euclidean distance function).

I characterize each group with the help of the cluster centers. Based on these results, we can categorize the data into two cluster groups. In one there are 174 individuals, whose depressional variables were high, their realistic attitude is low, and the optimistic tendencies are mediocre.

Table 12: Factor analysis of labour market attitude variables based on rotated factor weight matrix

		Components		
		1	2	3
1.	Unemployment rate is high in the area.	0.739	-0.165	-0.033
2.	People with low schooling live in the area.	0.730	0.077	0.024
3.	Mostly unemployed people live in the neighborhood.	0.705	0.102	0.412
4.	The youth has no job opportunities in the area.	0.611	-0.289	0.041
5.	New investments are to be expected in the area, which will create new jobs.	-0.013	0.800	0.082
6.	The state and the city provide a lot of help to the people in the neighborhood in their search for a new job.	-0.042	0.788	0.002
7.	In its current state the area is attractive to investors and new companies.	-0.122	0.753	-0.172
8.	The area of the old factory deters possible investors and companies.	-0.089	-0.107	0.857
9.	People in poor health live nearby.	0.440	0.046	0.618

Source: own compilation

There are 89 people in the cluster group with lower numbers, which can be described by low depressed and realistic variables and high factor group of optimistic variables.

Second generation migration push

9.5 percent of the interviewed have already had jobs abroad. I study their division by residence with a cross chart. 13 people, which is 52 percent of those who work abroad live on the Avas, while 12 people, 48 percent of the group lives in Diósgyőr. Upon analyzing the migration potential 38 percent were dismissive about finding employment abroad, whereas 62 percent would approve of it with some stipulations. 21.7 percent would take any job, a further 25.5 percent would join them abroad if they received better payment, and 12.9 percent would insist on finding employment abroad within their fields of expertise. The migration potential shows a higher willingness to work than what actually is realised. For those living in the Diósgyőr area it is important to find a job abroad that pays more than the one they currently have.

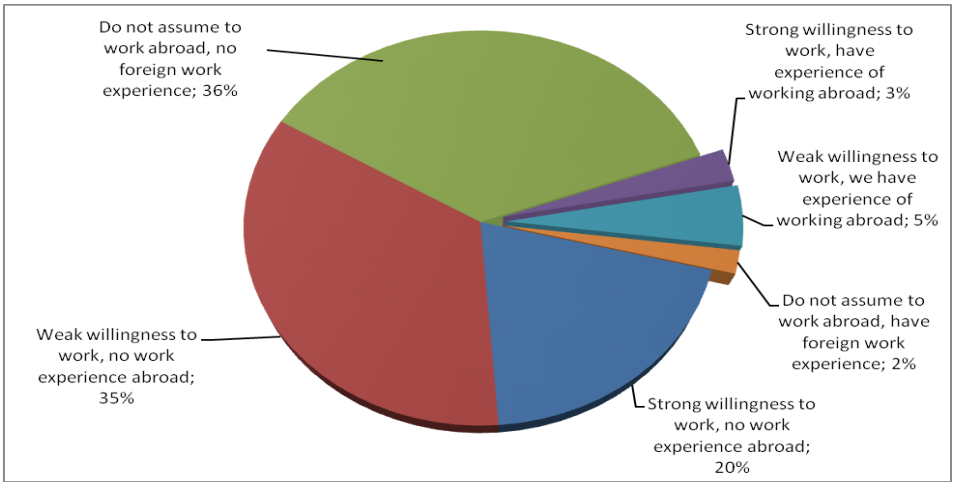

Figure 8: Working abroad – experiences and willingness
Source: own compilation

Contrary to the inhabitants of the Avas area, the people in the Diósgyőr area consider their trade less marketable. 27.3 percent of the 139 people from Diósgyőr would enter employment for a higher salary, and 11.5 percent would enter employment in their profession. To the question whether they know recruitment office 10.7 percent of all interviewed answered affirmatively. 42.9 percent of those who are in possession of this information are between 25 and 34 years of age, 64.3% of them are male. 202 people of all the interviewed have acquaintances working abroad. In case of both genders it is over 70 percent the ratio of those, who have foreign migration safety net. I have to determine the tightness of this net by the degree of acquaintance. In this study 26.6 percent have a relative abroad, 30,2 percent have friends, 37.6 percent have acquaintances, and a further 3.4 percent has neighbors working abroad. 85.3 percent of the 25 to 34 age group knows a person who works abroad, and for 42.6 percent that is a friend.

Second generation migration push is when the parents urge their offspring to migrate away. The values of the corrected standardized residuum prove that the younger generations take part more readily in migration than the elders. This statement is true to the 25 to 34 age group as well. In their case the values of the corrected standardized residuum is 2.1 for the answer 'yes, anything'. In case of the answer 'yes, in my profession', the value is 2.3, whereas for the answer 'no', the value drops to -4.6. I perform variant analysis to reveal as to what extent the labour market attitudes influence the advice given by parents. The clean division excluding the childless proves my hypothesis in a way, as a larger percentage of the inhabitants of the Diósgyőr area believe that their children should continue their studies abroad or in another Hungarian town. The inhabitants of the Avas are of the opinion that the best place for their children to finish their studies is Miskolc or Budapest.[9] Upon analyzing the cluster groups I received an appraisable result. 31.2 percent of the first (depressed) cluster group would send their children abroad to study. 76.5 percent of those parents who advise their children to study abroad belong to the first (depressed) cluster group. The second group has an optimistic viewpoint, its members preferring Budapest or another major Hungarian city as a suggested premise for higher education. The results show significant differences, in other words, the cluster groups define what advice parents give to their children regarding higher education and further studies.

Table 13: Secondary studies based on labour market attitude

Suggestion from parents to study	Depressed cluster	Optimistic cluster
Abroad	76.5 %	23.5%

Source: own compilation

According to the polled people the job opportunities in the Diósgyőr area are not very desirable for the youth due to the presence of the brownfields. I used variance analysis to evaluate the opinions of the different genders. Based on the distribution between the averages I can conclude that the women have a worse opinion about the employment opportunities for the youth in the vicinity of a brownfield. Their opinion increases their children's participation in migration. The two genders having a different judgment on the job opportunities around brownfields is met on a 4 percent significance level. Based on the results I formulate the following thesis.

[9] Sadly based on values of the Khí square the nullhypothesis cannot be discarded, so we cannot point out a connection between the variants.

Thesis 5:

Labour market depression is detectable in the city of Miskolc, especially in the Diósgyőr-Vasgyár area. Second generation migration push can be detected in the city of Miskolc, which is amplified by the proximity of the brownfields and the labour market depression.

The three factors (environmental – economic – social) used in the revitalization of the brownfields guarantee that beside the cleansing of the area from pollutants it will also be enriched by new economic functions (renovation of real estates, establishing premises for new economic purposes), and the social and labour market integration of its inhabitants will come into focus.

Both the interviewed living around the brownfields and the inhabitants of the Avas provided their opinion on the development of the brownfields in question 38 based on this theory. 38 percent believe the most important issue is the removal of harmful substances from the area, 34 percent say getting new job opportunities and the rehabilitation of the area are more important. Most interviewed believe the restoration of the area is the third most important. Most people put the renovation of living quarters into the third place and believe the inclusion of new companies is the least important. Based on their place of residence, twice as many inhabitants of the Diósgyőr-Vasgyár area believe the detoxification of the brownfields than those in the Avas. In this case the value of the corrected residuum is 1.2. The currently jobless and those in student status also find it important, their corrected residuum value is 2.1 and 1.9. In case of the 25 to 34 age group they do not find cleansing the area important, their corrected residual value is 2.9. They support settling new companies in, the corrected residuum is 2.0. I summarize the findings by percentage in the following table 14.

Based on the project indicators I analyze the five revitalization projects that are either in progress or are already finished (see table 14). From the comparison it becomes clear that only one out of five projects counted on the appearance of new workplaces, which is contradictory to international examples.[10]

Table 14: Evaluating the different dimensions of revitalisation

	Removal of left over harmful substances from the area.	Restoring the surroundings of the area.	Introducing new companies to the area.	Renovation of living quarters in the vicinity of the area.	Providing aid and workplace for the citizens of the neighborhood.
Most important	12.2 %	14.6 %	32.1 %	30.9 %	9.9 %
Important	13.0 %	21.8 %	19.5 %	29.0 %	16.8 %
Relevant	14.9 %	21.1 %	20.2 %	23.7 %	20.6 %
Less important	21.8 %	27.2 %	19.5 %	13.0 %	18.3 %
Not too important	38.2 %	15.3 %	8.8 %	3.4 %	34.4 %

Source: own compilation

During revitalization it is necessary to increase labour demand around the brownfields in to put the area back on a sustainable development course. Three project plans included purchasing equipment into its application, which goes beyond rehabilitation, indicating that

[10] The development agency in the United Kingdom counted the emergence of 6200 new workplaces in connection with the revitalisation of 752 brownfields (8-10 jobs per brownfield).

they wish to renew their fleet to make their economic activities more competitive. Finding new economic functions is not among the priorities of the projects. It hinders the socioeconomic cost-benefit analysis that based on the indicators of the project one cannot quantify the social benefits, as there are no new jobs or public places created by it. According to the literature, successful revitalization projects include the revival of public spaces, building new habitations and they account for the fluctuation in real estate prices. The monetized benefits and costs can be compared, analyzed and interpreted with social economic methods. Based on their analysis I can conclude whether they really contribute to the economic and social sphere in the area. I concluded calculations (Hegyi-Kéri 2013) on the social and economic merit created abroad, specifically in Canada and the United States of America, where they came to the conclusion that the revitalization of the brownfields raises the price of real estates in a 2.5 km radius with 10 percent on average, and also increases tax on them. As an output of the sum spent on revitalization they document the appearance of new workplaces, habitations and trade areas.

Table 15: Subsidized brownfield projects in Miskolc between 2007 and 2013

	Location	***Total expenses (Ft)***	***Equity (Ft)***	***Time span of the project***	***Indicators***		
1.	Miskolc	661 849 381	410 346 616	3	21 new workplaces	5100 m^2	Purchasing equipment
2.	Miskolc	1 039 711 836	644 621 338	2	-	No data	Purchasing equipment
3.	Miskolc	831 856 323	515 750 920	2	-	5250 m^2	-
4.	Miskolc	1 585 342 683	808 524 768	3	-	5760 m^2	-
5.	Miskolc	369 803 160	229 277 959	2	-	No data	Purchasing equipment

Source: own compilation based on NFÜ data

The study entitled Local Equal Opportunities Programme in Miskolc 2013-2018 deals with improving the labour market possibilities for women, special needs individuals, romas and senior citizens, but it did not mention extending labour market possibilities to those citizens who witnessed the industrial changes. Not a word is written about the correction of the consequences deindustrialization had on the labour market. On the first 25 pages of the study the word ipar (industry) appears 13 times in connection with the past of the city. The rehabilitation of 'abandoned industrial sites and military buildings' is finally mentioned as the development of manmade environment. One of the reasons for the unsuccessful development plans for the brownfields in Miskolc so far has been the incorrectly interpreted revitalization. The subsidized development projects did not extend to finding new economic functions, developing the society and creating new workplaces. I came to the following conclusion after analyzing documents on this topic.

Thesis 6:

Between 2007 and 2013 the brownfield revitalization efforts in Miskolc did not include the development of the labour market.

6. Practical results of the research

I hope the time and energy invested in my research will be utilized by economic decision makers as they take my findings on the definition of deindustrialization and its types into consideration during the formation of the regional employment policy, revitalization of brownfields and the reduction of migration.

At the end of the research I can give the following answers to the questions I drew up:

- To prove the relevance of employment policy I created a new work category in the second chapter. By differentiating external, positive and negative regional deindustrialization we gain an opportunity for a deeper investigation of the labour market, and the elaboration of regional methods for employment policy. They also enable the further identification of endogenous factors related to the deindustrialization process.
- With the help of the categories the processes taking place in the negative deindustrialization regions become easier to understand through the indicators of specialization, concentration, and the labour market.
- The definition of labour market depression can form the basis of a local migration strategy.
- A further expected result was a practical model by the usage of which the complex revitalization of a regional unit can take place, taking the problem of the brownfields into consideration.

These conclusions could prove beneficial in political decisions concerning the revitalization of the industrially depressed regions and brownfields. I hope that my research and dissertation can contribute to the development of my home city in a way that they will keep my findings in mind during the formation of development concepts.

7. Future plans for analysis

During the production of this dissertation I came across several directions and topics which I intend to investigate at a later juncture. These are the following:

1. Analyzing the institutional environment in connection with deindustrialization, as suggested by the research levels of Williamson.
2. The definition of the kind of industrial policy formulation, which integrates regional and employment policy objectives.
3. Revisiting the analysis of the processes that took place in the Visegrád Countries after the economic crisis in 2008 from a different time perspective.
4. Analyzing deindustrialization along the lines of other endogenous factors.
5. Detecting labour market depression and second generation migration push in other

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