A Study of the Process and Types of Deindustrialization in the Visegrád Countries

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SUMMARY

My goal in this article is to analyze the process of deindustrialization from the aspect of the labor market. Accepting the definition of the relevant literature, I define deindustrialization as a decline in the number of workers employed in industry and a drop in their ratio on the labor market. My experimental question is whether deindustrialization was present in the Visegrád countries between 1993 and 2015, and if so, what kinds can be identified. In this work I merge the observations of developed countries regarding deindustrialization and also expand upon the methodology for defining the types of deindustrialization.
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INTRODUCTION

The Visegrád countries – the Czech Republic, Hungary, Poland, and Slovakia – became part of an economic experiment when in a unique way they switched from planned economy to market economy. Obviously this transition induced major changes in the society and economy. Although the problems arising from this transition appeared on all levels of the national economy, the economy had to face the most urgent and profound need for transformation. My basic research questions in my work are the following: Are there any similarities between the deindustrialization process in Visegrád countries? Was deindustrialization present in the Visegrád countries between 1993 and 2015? Which types can be identified? In answering my research question I strive to form categories that allow me to study the patterns of deindustrialization, unveil the similarities, understand the deindustrialization process and categorize the countries. Shift-share analysis is the most appropriate method for investigating deindustrialization, as one can interpret industrial processes on a country level.

THEORETICAL AND CONCEPTUAL OVERVIEW OF DEINDUSTRIALIZATION

The concept of deindustrialization (désindustrialisation in French) first emerged in the United Kingdom. It came into focus with the slowing industrial growth in the 1970s (Tregenna 2011). Singh (1977) was one of the first to describe the connection between deindustrialization and the structural imbalance. In his interpretation, deindustrialization means the processing industry is unable to satisfy domestic demand or conduct a level of export that could increase the level of employment. In his opinion, we should define deindustrialization as a consequence of structural imbalance instead of its cause. A key process in the spatial economic restructuring that is sweeping through the advanced capitalist countries during the 1980s is the deindustrialization of manufacturing (Cheshire, 1991). Tertiarization happens parallel to deindustrialization, in other words, the service sector becomes stronger (Barta et al. 2008). However, structural change is often identified with deindustrialisation. Deindustrialisation is a narrower term and often decreases in the number of

people employed in the industry (Kiss 2010; Cheshire 1991) or decline in industrial production are meant. Based on Hagget (1983), Cséfalvay (1994) puts the time the secondary sector became the dominant employer of workforce over the primary sector to the beginning of the 1900s; by 1950 the secondary sector has been overshadowed. Barta et al. (2008) define deindustrialization as a typical process of postindustrial change, when the importance and proportion of industry starts to decrease. Clark (1940) connects the significant changes in restructuring to the intersection of the different sectors. According to the reorganization model, economic development is accompanied by tertiarization as well as an increase in the services' value added ratio. In the interpretation of Takács (2004) deindustrialization is an expression for the decline, atrophy or degradation of the industry (see Table 1). Gregory et al. define deindustrialization as a "chronic decline in industrial (especially processing) activity and capacity" (Gregory et al. 2009, pp. 380). Within this we have to discern the relative and the absolute decline of the industry.

Table 1
Defining deindustrialization

International authors	Definition of deindustrialization	Hungarian authors	Definition of deindustrialization
Singh (1977)	*The processing industry is unable to satisfy domestic demand or conduct such a level of export which could increase the level of employment.*	**Takács (2004)**	*The decline, atrophy or degradation of industry.*
Saeger (1997)	*The number of workers in the processing industry decreases compared to the full employment.*	**Vidéki (2008)**	*Measuring industrial significance is closely linked to the number of people employed in the industry (per area, per thousand people, per thousand actively employed).*
Kollmeyer (2009)	*The decline in the employment rate of the processing industry.*	**Barta et al. (2008)**	*It is a typical process of postindustrial change when the importance and proportion of industry starts to decrease.*
Gregory et al. (2009)	*Steady decline of the industrial activity and capacity (especially in the processing industry).*	**Kiss (2010)**	*The proper Hungarian term is elipartalanodás (less and less industrial activity).*
Alderson (2011)	*Relative decrease in the number of workers in the processing industry.*	**Lux (2010)**	*Decline in production and employment in the industry, parallel to the tertiarization of the economic structure.*[1]
Tregenna (2011)	*Decreasing ratio of people employed in the processing industry compared to the employment ratio (traditional definition).*		

Source: own construction

In the case of relative decrease the other sectors show a faster growth rate than that of the industrial sector, meaning that the number of those employed in the industry becomes proportionately smaller compared to the whole employment rate. In the context of deindustrialization, Alderson (2011) describes a relative decrease in the employment rate of the processing industry in the labor market. Absolute decrease takes place when the number of people employed in industry decreases year by year. Kollmeyer (2009) considers deindustrialization to be a decline in the employment rate of the processing industry (see Table 1). After examining the relevant literature I agree with Saeger (1997) on defining deindustrialization as the decrease in the proportion of workers in the processing industry compared to the full workforce. Among the Hungarian experts, Vidéki (2008) has an useful concept: despite the industry being the means of technical and technological progress, measuring its significance is closely linked to the number of people employed in the industry (per area, per thousand people, per thousand active employed). Abonyiné (2002) highlights that these indicators refer to industrialization, its recession or the lack of it rather than the development of the industry. 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), the following is a summary of the reasons specialists gave for using the change in employment numbers as an indicator to quantify deindustrialization:

- employment ratio in the processing industry is a widely used indicator of assessing the level of industrialization and quantifying the state of economic development,
- the employment rate is the most striking indicator for the size of the industry and one attracting much interest from the public,
- it focuses on the changes in the cost factors between the sectors, especially on the changes in the input factors (due to the derived nature of the labor market),
- the decline in investment rate affects employment in the processing industry due to its relatively large need for investment.

Using the change in employment numbers as an indicator is very important because there is no other way to compare the deindustrialization processes in different territories.

DEFINING THE TYPES OF DEINDUSTRIALIZATION

Based on the aforementioned definitions I separate absolute and relative deindustrialization processes, including the changes in the number of the full workforce. The definition of the different types is summarized in Table 2. I put the countries where the number and ratio of people employed in the industry declined parallel to the decline in the full workforce in the absolute deindustrialization category. The process is harmful for the country's economy, as with the declining industry the other sectors do not grow at a rate that would allow for a growing employment rate in the full workforce. Relative deindustrialization is ascertained if one of the three factors increases. The industrial sector displays growth on its own or compared to the other sectors. The scope of this growth, however, is not large enough to induce growth in the full workforce. The second option is that parallel to the decrease in the industry the potential of the other sectors increases. This way the labor market can grow and provide employment for those who were forced to leave the industry, which may be beneficial for the economy. Apart from the aforementioned two categories it is necessary to introduce pseudo-industrialization as well. In this case industrialization seems to take place, but the industrial sector declines compared to the other sectors despite the growth in employment numbers (see Table 2).

Table 2
Definition of the types of deindustrialization and industrialization

Type	Number of people employed in the industry	Ratio of the people employed in the industry	Number of full workforce
Absolute deindustrialization	decreases	decreases	decreases
Relative deindustrialization	decreases	decreases	increases
	increases	decreases	decreases
	decreases	increases	decreases
Pseudo-industrialization	increases	decreases	increases
	increases	increases	decreases
(Re)industrialization	increases	increases	increases

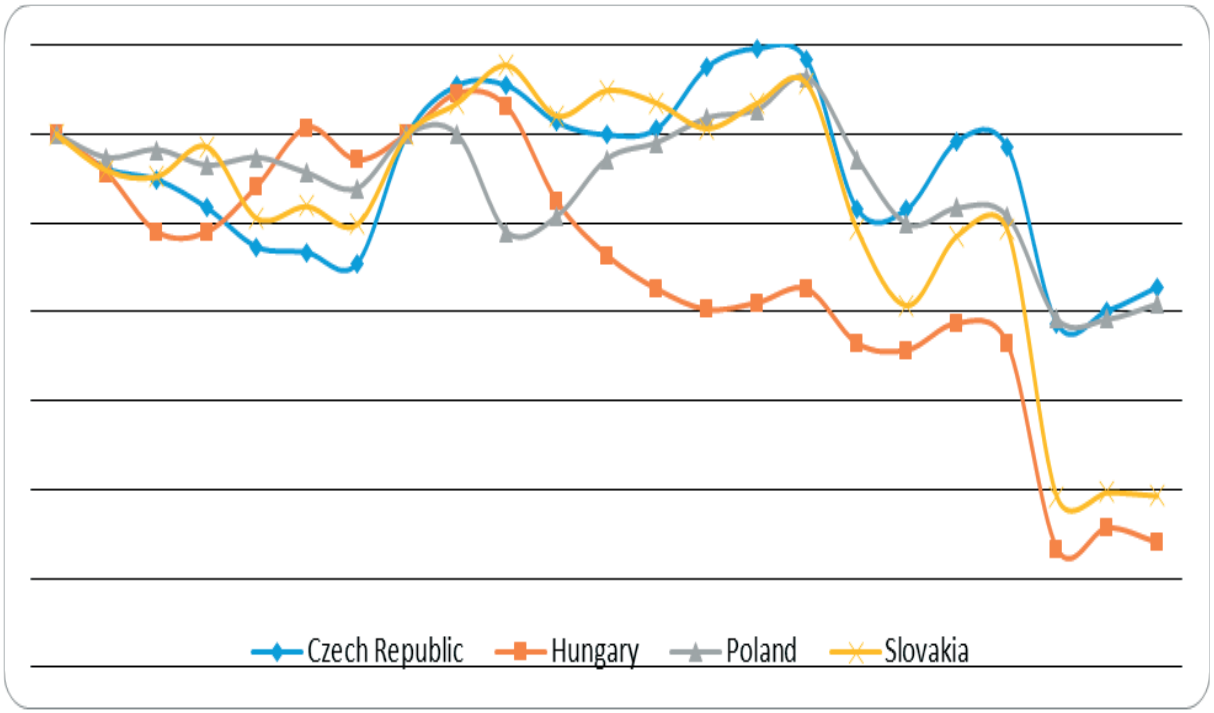
Source: own construction

The growth in the number of people employed by the industry seemingly points at industrialization, however, that is only due to the drop in the ratio of the secondary sector. The industrial growth is also illusory if parallel to the growth in the number of people employed in the industry the overall employment numbers drop in the region. The growth in the secondary sector cannot raise full employment numbers, thus the expanding industry does not generate a ripple effect (see Table 2). The region does not enter into the course of development.

Pseudo-industrialization takes place in a labor market when the increase in the number of people employed in the industry does not entail growth of the full employment or the share of the industrial sector. The absolute growth of the industrial employment numbers obscures a quasi-development. The other two sectors are unaffected by the growth of the industry or they can increase their employment potential even faster. (Re)industrialization takes place in those regions where all three factors start to grow, meaning that the industry influences the growth of full employment.

DEINDUSTRIALIZATION IN THE VISEGRÁD COUNTRIES

I analyze the processes summarized in Table 2 taking place in the Visegrád countries between 1993 and 2015. (The Visegrád Four came into being after the division of Czechoslovakia in 1993.) In Hungary there were 1,150,000 employed in the secondary sector in 1993, which represented 27.2% of the fully employed. Of all the Visegrád countries only in Hungary did the sectors' employment ratio reach the 1993 level in 1998 and came close to it again in 2001. Sadly, after this achievement the ratio of the secondary sector steadily declined: it reached only 77% of the 1993 levels in 2015 (See Figure 1). The ratio of employment in the industry was 20.9%, the lowest in these four countries. In 2015 the number of people employed in the industry dropped to only 90% in the Czech Republic and Poland and to 80% in Slovakia compared to the data in 1993.



Source: own construction based on OECD data

Figure 1. Changes in the ratio of people employed in the industry in the Visegrád countries compared to data from 1993

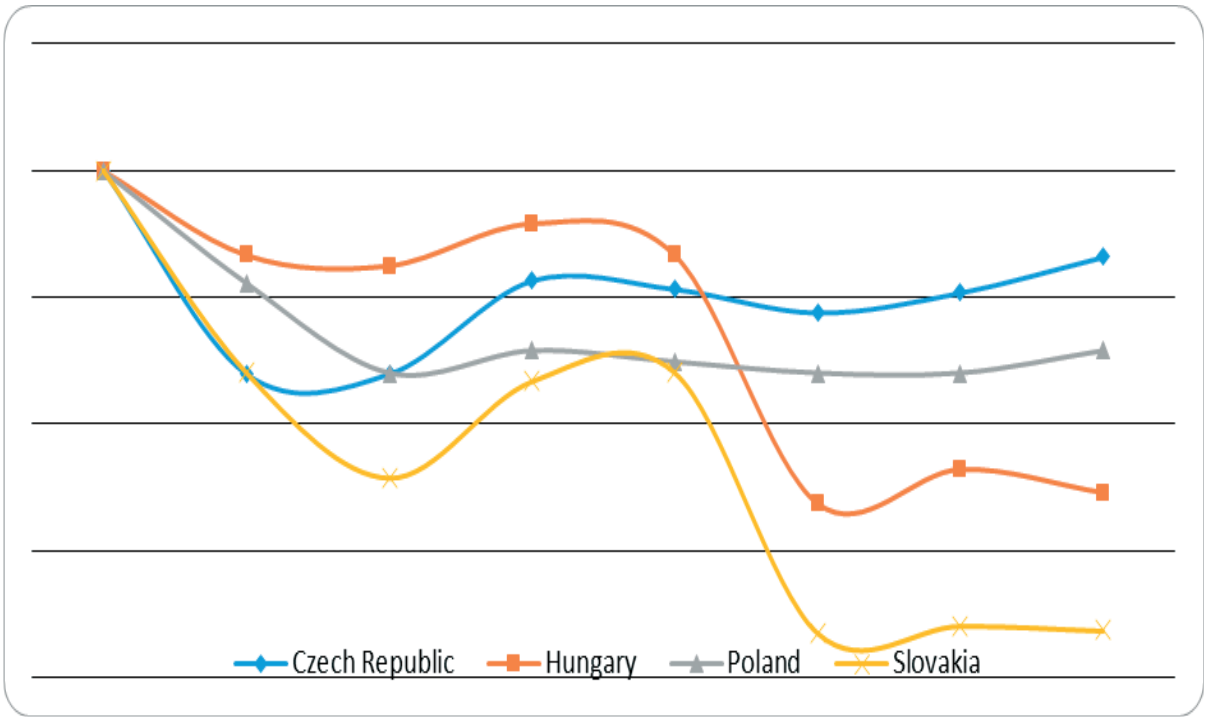
I analyze the time period in two parts and as a whole. Between 1993 and 2015 relative deindustrialization took place in the Visegrád countries. Apart from the decline in the industry (the number of people employed and its ratio) there was a rise in employment on the labor market as a whole. Due to the economic crisis of 2008 it is necessary to divide the period into two parts: 1993-2008 and 2008-2015. From all the Visegrád countries only Hungary displayed absolute deindustrialization in the first stage. Within the full workforce the employment ratio of the industry dropped by 3.2% and the fully employed workforce decreased by 120,000 as well. However, the employment rate increased in the other three countries in this period. In the Czech Republic and Slovakia employment in industry was slightly reduced (by 11,000 and 35,000 respectively), but full employment increased in both countries: by 189,000 in the Czech Republic and 137,000 in Slovakia. Pseudo-industrialization took place in Poland in the same time period, with an increase in full employment numbers and the number of people employed in the industry. Compared to the other sectors, the secondary sector experienced a slight decrease (by 0.6%) in its full employment ratio.

Table 3
Types of industrialization and deindustrialization in the Visegrád countries

name of country	1993-2008	2008-2015
Czech Republic	Relative deindustrialization	Absolute deindustrialization
Hungary	Absolute deindustrialization	Relative deindustrialization
Poland	Pseudo-industrialization	Relative deindustrialization
Slovakia	Relative deindustrialization	Relative deindustrialization

Source: own construction based on OECD data

Between 2008 and 2015 the number of people employed in the industry decreased in all four countries. In Slovakia the ratio of the secondary sector within the full labor force decreased by 5.24%, 3.06% in Hungary, 1.6% in Poland, and 1.02% in the Czech Republic. At the same time the full employment numbers had risen by the end of the period in all surveyed countries except for the Czech Republic. In Hungary an extra 239,000 and in Poland 284,000 people entered the labor market. We have to take into consideration the fact that between 2013 and 2015 the employment numbers in Hungary expanded by 308,000 people (see Figure 2).



Source: own construction based on OECD data

Figure 2. Change of employment ratio in industry in the Visegrád countries compared to the 2008 data

POSITIVE AND NEGATIVE DEINDUSTRIALIZATION IN THE VISEGRÁD COUNTRIES

In the following section I investigate the causes of the changes and differences in employment in the Visegrád countries. With the help of response rate analysis, we can separate local and structural factors of the restructured employment system. I compare the data on employment in the Visegrád countries to demonstrate the positive and negative shifts that took place in them. I consider such structural changes positive where the growth in employment was above the average of the Visegrád countries, which is due to beneficial changes in the industry structure (Sa). If there is a positive local factor (Sr), the whole country can feel the "beneficial" effects of infrastructure, education, migration and certain demographic processes, and this also stimulates growth in employment. In this case the progress of these factors is greater than the average of the Visegrád countries.

Compared to the other Visegrád countries, an above-average rise in employment numbers took place in Hungary. An increase in employment numbers due to positive structural (Sa) and local (Sr) factors marks this era in the country. The inner (Sr) factors had a greater influence on the growth in employment – the number of people employed in agriculture, the service sector or in public works programs increased as well. In Slovakia the change in employment numbers is slightly smaller than the average of the four countries. The positive change in structural factors had a positive impact on the changes in employment numbers in Slovakia and the Czech Republic. In both countries the inner factors had a negative impact on the changes in employment numbers. During the time scope of the research the opposite process took place in Poland:

the endogenous factors had a positive effect, while the structural factors had a negative influence on the growth in employment numbers (see Table 4).

Table 4
Results of shift-share analysis of the Visegrád countries between 2008 and 2015

Type	Structural > Local	Local > Structural
Positive structural and positive local factor, above-average growth in employment numbers		Hungary
Positive structural and negative local factor, above-average growth in employment numbers		X
Negative structural and positive local factor, above-average growth in employment numbers	X	
Positive structural and negative local factor, less than average growth in employment numbers	X	the Czech Republic, Slovakia
Negative structural and positive local factor, less than average growth in employment numbers	Poland	X
Negative structural and negative local factor, less than average growth in employment numbers		

Source: own construction based on OECD data

The studies that take the reasons for deindustrialization into account set up three different types: positive, negative and external. I used the results of the response rate analysis to define the positive, negative and external types. We have to take into consideration that the reasons for changes in regional employment numbers can stem from local or structural factors. By adapting such an approach we can get a better understanding of deindustrialization.

Based on the relevant literature (Rowthorn & Wells 1987; Lux 2010), my interpretation of negative deindustrialization is the following: neither the service sector nor the primary sector can compensate for the decline of industry. The overall number of people employed in the region decreases, which is mainly due to internal factors rather than structural change. My hypothesis is that local and structural factors influence the labor market processes in the case of negative deindustrialization, with local factors taking on the major roles. Negative deindustrialization can be destructive to a region, since the decrease in the number of people employed in the industry influences both the full workforce and local factors as well. Local factors can intensify the process, which in turn may have a long-term effect on migration and demographic changes. The relevant literature explains derives external deindustrialization by shifts in commercial structure and external shocks. The export-oriented companies in the Visegrád countries experienced a large-scale decline during the period studied. Structural changes have a greater impact on employment in the case of external deindustrialization. The service sector can expand its employment numbers, but not to such an extent that could induce growth in full employment in the region.

I categorized those processes as deindustrialization with a positive effect, where with the decline in industry the economic structure changes in such a way that the service sector can increase its employment potential and thus employment on the whole increases in the region (see Table 5). In this case the declining industry can be compensated by the tertiary sector, so its negative effects are less significant. This growth primarily stems from the emergence of a healthier economic structure.

Table 5
Defining the types of deindustrialization

Type		Changes in the employment numbers in industry	Changes in the employment numbers in the service sector	Changes in the employment numbers on the whole	Factors having major/negative influence on the changes in the employment numbers
External		decrease	increase	decrease	structural
Internal	**Negative**	decrease	decrease	decrease	local
	Positive	decrease	increase	increase	local

Source: own construction

Based on these calculations we can conclude that positive deindustrialization took place in the Czech Republic, Poland, Slovakia and Hungary between 2008 and 2015. If we compare this data to that of 1993 we can see that by 2008 the number of people employed in the industry had dropped in three of the countries, with the exception of Poland. During this period the positive version of deindustrialization took place in the Czech Republic and Slovakia, while in Hungary negative deindustrialization took place between 1993 and 2008.

CONCLUSIONS

I chose the time period between 1993 and 2015 for the macro-analysis of my experimental questions. The period spans 22 years, which allows for the evaluation of long-term processes as well as drawing conclusions, adding extra detail to the study of the industrial processes and the economic crisis after the change of the regime. I also concluded an analysis of the time span after dividing it into two periods, using 2008 as a midpoint. A negative, and from the industry's point abnormal, sector transformation took place in Hungary between 1993 and 2008. Full employment decreased parallel to the recession of the industry. The depression of 2008 had a serious impact on employment in the industry in all four countries. From Hungary's point of view, a positive deindustrialization process took place at the same time, unlike the previous period. I hope the time and energy invested in my research will be utilized by economic researchers who can take into account my findings on the definition of deindustrialization, the literature overview and the trends of deindustrialization. Deindustrialization is a very complex process. Researchers can evaluate it only in connection with the analyses of the labour market process and consequences.

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