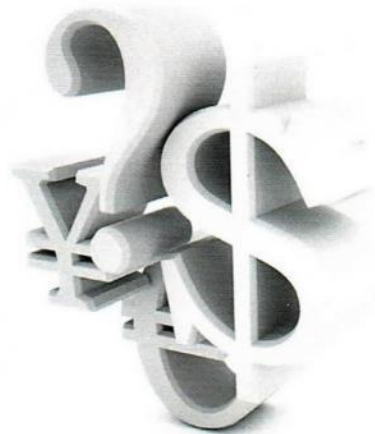


Olivia Wilson-Flores  
Editor

# Economic Crises

*Risk Factors, Management  
Practices and Social Impacts*



**ECONOMIC ISSUES,  
PROBLEMS AND  
PERSPECTIVES**



NOVA

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*Chapter 2*

**W-CRISIS IN HUNGARIAN INDUSTRIES:  
EFFECTS AND STRATEGIES FROM  
THE VIEWPOINT OF ENTERPRISES**

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**INTRODUCTION**

Following the change of political regime, former socialist states experienced radical economic and social changes, while also integrated into the increasingly globalized world economy to varying degrees. The expansion of international economic relations and becoming connected to the flow of capital brought with itself higher dependence and vulnerability (Gorzalak-Goh, 2010). Consequently, perhaps it is no surprise that the largest crisis of the 21<sup>st</sup> century yet, which began several years ago in the US and swept over the entire globe, affected post-socialist states on the periphery and semi-periphery of the global economy in a particularly dire way (Losoncz, 2008, Marer, 2009). Among these nations, countries that followed the Anglo-Saxon model

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of economic development (including Hungary) suffered the most (Smith-Swain, 2010). Essentially, the economic crisis was a giant (external) shock to East Central European countries. The reason, among the others, was that it “arrived” unexpectedly, and that their respective economies had seen dynamic development in previous years (Burgerné Gimes, 2011). In comparison with other European countries, the crisis affected Hungary more seriously because the country’s economic downturn had already begun well before the crisis, and thus reached a stagnating and weaker economy compared to previous years (Tömöri, 2013).

The economic crisis also induced changes in the Hungarian industry, revealing them is the main aim of the present chapter. On one hand, the focus of this paper is to determine how the crisis had an effect on the structure, demography and activity of industrial enterprises, and on the other hand it looks at how enterprises addressed the crisis and what kind of crisis management strategies they employed. Lastly, the study examines how all these affected the industrial space. Through the temporal progression of various factors, I set out to confirm the hypothesis that a second wave can also be designated regarding the course of the crisis.

Official statistics were used as the basis of the chapter, completed with data from other sources, such as economic dailies and internet sources. Other data was included to offer a more comprehensive insight into the effects of the crisis on enterprises constituting the micro level of the economy and due to the fact that detailed information about them was not available in statistical publications. Additionally, the wide range of special literature was also used as a secondary source. Although, countless studies have been published in recent years with regard to the economic crisis, there are still scarcely any papers that examine the effects of the crisis on the industry or industrial enterprises in some respect.

In Hungary the first signs of the economic crisis began to surface in October 2008. Consequently, the base year for this work is 2007, the final “peaceful year.” However, the changes that occurred in the industry after 2008 will be analyzed until 2014. This is partly because statistical data was only available until that year and partly because a second wave can also be assumed and its temporal identification requires the examination of a longer period. It also has to be noted in advance that in comparative studies with a breadth of several years we face the risk of not being able to compare data from different years due to inconsistent data collection methods. On occasions this difficulty also had to be taken into account in this paper.

The following section focuses on the scientific background of the chapter, particularly on some of the most important characteristics of the crisis. The second sub-chapter briefly summarizes the changes that took place in Hungarian industry after 1989 and its characteristics before the crisis. Then, I evaluate the effects of the crisis had not only on the number and size of industrial enterprises but also on the divisions within the branches on the basis of statistical data and subsequently some of their demographical characteristics (foundation, closure, relocation) relying on data and information collected from other sources. Before the conclusions I also demonstrate the responses the enterprises gave and the strategies they applied from the points of view of production, sales, investment and employment.

## SCIENTIFIC BACKGROUND

Defining the concept of crisis is not an easy task, as it may have a number of definitions. What is more, the definition depends on what type of crisis we have at hand and when it took place. To this day, numerous definitions have been given, which despite their differences in wording, encapsulate the same concept, as the essence of crisis has not changed. In general, crisis means a grave situation, a defining turn, most of the time with a negative – but sometimes positive – outcome. In the Chinese language, not only is crisis a chance but also an opportunity (Nyárády-Szeles, 2005). Although there have been many different types of crises in our history, as crisis itself is not a new phenomenon, most of the definitions are connected to the crises of capitalism (Surányi-Unger, 1921). Crises are not the ‘factory accidents’ of capitalism but the phenomena accompanying its normal operation (Hall-Preston, 1988). Crisis is nothing but a complete failure in the reproduction of system connections (Gregory et al., 2009). In short, it is “creative destruction” (Schumpeter, 1955).

Between World War II and 1973, significantly fewer crises were registered than since 1973 until nowadays (Harvey, 2010). In the latter period, the most recent crisis was considered the most severe, which Krugman described as: “... the crisis is like nothing we’ve ever seen before but it might be more accurate to say that it’s like everything we have seen before, all at once” (Krugman, 2009. p. 9). The 2008 crisis was compared by many to the crisis in 1929-1933, and although it differs in several respects (such as having different international political, social and economic conditions), its origin, way of occurrence and effects show numerous similarities (Szántó, 2009). The

current crisis can be considered highly serious because it is not merely a “momentary” lapse of capitalism but much more, as it is affecting the entire system. It became clear that the neoliberal economic policy could not be maintained any further, requiring radical changes, which could result in substantial restructuring in the global economy (Csáky, 2009, Magas, 2009).

It is rather simple to specify the beginning of the crisis. In the US it is dated to the year 2007, although its roots go back much further than that (Krugman, 2009, Losoncz, 2008). In contrast to that, the end is much more difficult to specify, as it depends on a numerous different factors. Several concepts were formulated with regard to the course of the crisis, which changed as time advanced, and that intended to illustrate it with various forms of latters (Szöke, 2013). Following the outbreak of the crisis, many believed that it would soon hit rock bottom, which was to be followed by rapid recovery, thus comparing it to a V-shape. Later, as the crisis deepened, it was believed that it would reach its low point slowly and that the recovery to follow would also be slow, describing a U-shaped recession. It was also considered that a quick recovery would be followed by a prolonged stagnation, best illustrated with an L-shape. The highest probability was attributed to the W-shaped recession, as it seemed that a quick growth would be followed by another recession, before ending in lasting recovery (Karsai, 2009).

The cause of crises can be described as the complex interaction of various factors. The 2007-2009 crisis, dubbed by Harvey (2010) as the “Financial Katrina,” began in the US and originated from the synergy of three different (financial, liquidity and real economic) crises, which soon became a crunch affecting the entire world (Krugman, 2009, Simai, 2009). The crisis had a differential effect not only on the whole of the economy and society but every walk of life by affecting businesses and individuals alike, surfacing in different regions to various extents. Its effects were felt on a global, national and local level as well. In other words, not only did it extend to an increasing portion of the world in geographical space, i.e., horizontally, but it also had an increasing impact vertically, its effects extending far beyond finances and economy (Szentes, 2009). Although this crisis began at the centre, in the US the periphery will be hit the most (Stiglitz, 2008). In Europe, the nations that suffered the most were predominantly countries in the southern (e.g., Greece) and eastern periphery (e.g., Baltic states) – those, mostly smaller countries (e.g., Ireland, Iceland) that had highly globalized and export-oriented economies (Becker-Jäger, 2010, Benediktsson-Karlsdóttir, 2011, Panagiotu, 2010). Nations in East Central Europe were affected severely via the crisis in

Western Europe, and the effects could be felt the most in smaller countries (Kozenkow, 2009, Furceri-Zdzienicka, 2011, Orłowski, 2010).

This was the first substantial crisis in East Central European countries since the transition to market economy, the causes of which can be grouped into two main categories (external-foreign, internal-domestic) (Gorzalak, 2010). These played a role to various degree in each country. The most important external causes include the strong dependence on export and foreign capital. Since the change of regime, these former socialist states once again joined in the international flow of capital (Kiss, 2007a, Pickles-Smith, 2005). Foreign investors carried out significant investments, as a result of which certain sectors of the economy were dominated by enterprises with foreign interest. Of internal causes we must emphasize the high level of specialization in the industry, which for the most part concerned automotive production. This sector plays a relevant role in the economy of each East Central European country (Lux, 2013, Molnár, 2012, Somai, 2009). It is also connected with the fact that following the change of regime many large automotive firms established subsidiaries in the region, which as a result began playing a much more significant role in the global auto industry. The crisis of the highly-globalized automotive industry, which meant that between 2008 and 2009 the output of automotive production fell by 20 percent on average in OECD countries (Haugh et al., 2010), is highly disadvantageous, as it also has a negative effect on other industrial branches (e.g., metal processing, rubber and plastic manufacturing, electronics). Not only do the problems in the car industry extend to sectors that are closely related to it but they also indirectly affect other branches (Antalóczy-Sass, 2010, Somai, 2009). Furthermore, its adverse effects can be felt on a large area in space, as automotive suppliers are often located in different settlements or not rarely in different countries. Consequently, multi- or transnational corporations played an important role in the horizontal and vertical expansion of the crisis (Kiss, 2012).

The consequences of crises are usually highly diverse. They can be quantifiable or less quantifiable, objective and subjective, and which are mostly very similar regardless of the country, sector and business at hand. On micro level the most common effects are the following:

- shutting down or temporary closing of enterprises;
- surviving firms adapting to new challenges;
- internal organizational changes, shifts in strategy;
- postponing or lack of investments and development;



- decrease in production volume, production shutdown, relocation of production;
- breaking up and shrinkage of supplier and sales networks;
- shrinking export opportunities, market switch;
- increasing layoffs, part-time employment, compulsory leave;
- decreasing or stagnating wages;
- indebtedness, shrinking credit facilities, insolvency.

All these mentioned before, on one hand, can also surface in a differential manner in its temporal progression. Generally, the decrease in demand and the recession of investments are typical of the early stages of the crisis, as a result of which production volumes decrease and businesses can go bankrupt. In the next stage, the number of layoffs increases, thus giving a rise to unemployment (Szőke, 2013). On the other hand, they can be observed more or less in Hungarian industry as well, but to a different degree depending on the branch and traits of enterprises (size, ownership, activity, etc.). This was also confirmed by the findings of other studies (e.g., Laki-Voszka, 2010, Mező-Kovács, 2010).

## **THE DYNAMICS OF INDUSTRY FROM 1989 TO 2007**

One of the most important and intense periods in the history of Hungarian industry is the era after the change of regime in 1989, a period which brought about quasi-revolutionary changes in the organization, operation and spatial pattern of industry (Kiss, 2010). By the end of the 1990s the vast majority of these changes were finished and thus after the turn of the millennium no radical shifts resulting from the combination of foreign and domestic political, economic and social processes were observed in the Hungarian industry. (Industry consists of three main parts, of which the manufacturing is considered the most significant one because the best portion of industrial enterprises (98 percent in 2007), industrial employees (93 percent), industrial production (92 percent) and industrial export (99 percent) originate from this segment. In addition to this sub-sector, industry also includes mining and quarrying, electrical energy, gas, steam and water supply, but their significance is dwarfed by the manufacturing).

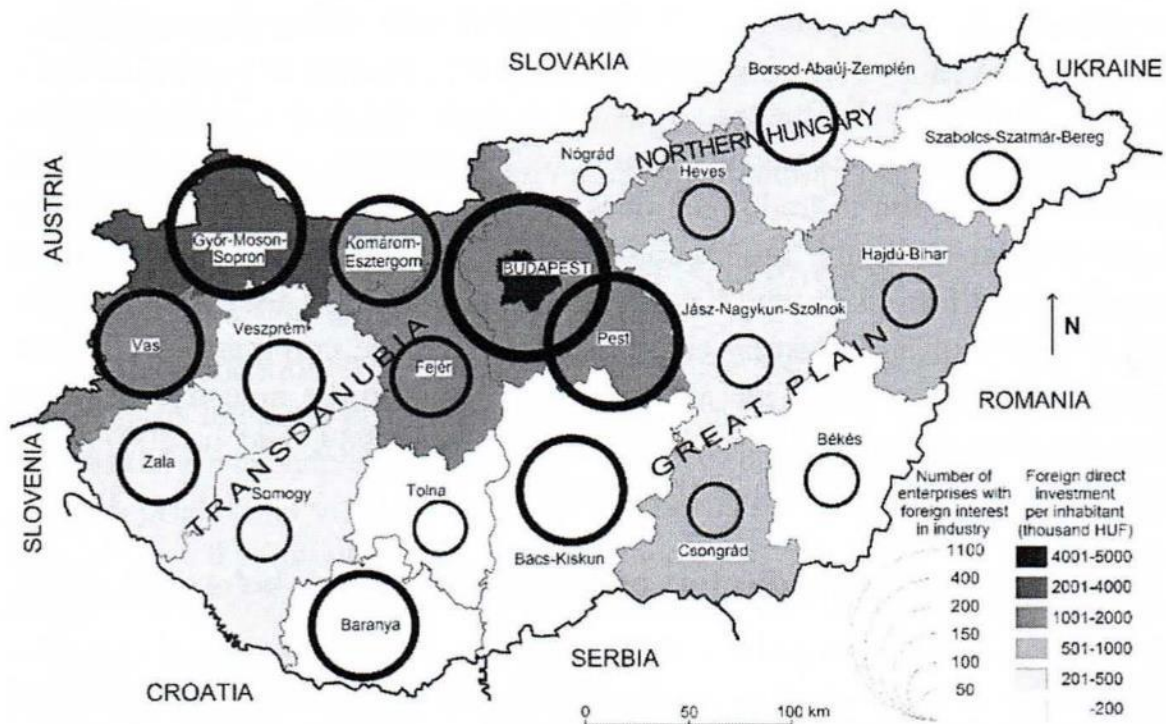
During the socialist period only a few thousand companies were recorded in industry, but after 1989 the number of industrial actors greatly increased.

Many new industrial enterprises were established – partly as spinoffs, partly as completely new companies – while several old industrial corporations disappeared. Organizational renewal was a process that ran in parallel with the growing number of businesses. This meant that new forms of organization (e.g., limited liability company, joint stock company, limited partnership) appeared in addition to traditional ones (cooperative, company). By now, the organizational diversity has become clear, and today the most popular organizational form is limited liability companies. In 2007, they accounted for 59% (52,000) of all industrial enterprises. Besides the corporations with and without legal entity, there are also sole proprietors in the industry, however, their numbers have seen a steady decrease since 1989, and in 2007 these enterprises only amounted to 28,000 (Table 1).

**Table 1. Some major indicators of Hungarian industry before the crisis**

Indicators	1995	2000	2005	2007
Number of corporation with and without legal entity	33,999	50,105	52,676	52,102
of which limited liability company	18,921	25,522	29,568	30,713
of which limited partnership	13,421	19,010	19,991	18,668
Number of sole proprietor	86,366	47,617	34,011	27,942
Number of all enterprises in manufacturing	119,529	83,887	85,127	78,291
Number of enterprises with more than 250 employees	2,882	2,724	2,643	2,435
Number of enterprises with foreign interest	4,286	4,053	3,387	3,472
Number of employees (in thousand)	980.8	832.4	750.6	803.2
Share of industrial investment of all (%)	39.3	46.9	35.3	33.7
Volume indices of total industrial production (previous year = 100.0)	137.1	118.7	107.1	107.9
Volume indices of export sales of total industrial sales (previous year = 100.0)	170.1	127.4	111.0	115.5
Share of export sales of total industrial sales (%)	32.6	53.5	56.4	53.8

Source: Statistical Yearbooks of Hungary.



Source: Regional Statistical Yearbooks.  
 HUF 1,000 thousand = USD 5,000.

Figure 1. Industrial enterprises with foreign interest and foreign capital invested by counties in Hungary, 2007.

The last decade of the 20<sup>th</sup> century also saw the transformation of the size structure of industrial enterprises. A shift favoring small-sized businesses was observed, and in 2007, on the “eve” of the crisis, businesses with a headcount of fewer than 50 people accounted for the vast majority (96 percent) of enterprises. In spite of this, it is the industry where the number of medium-sized (50-250 employees) and large (more than 250 employees) enterprises is the highest within the whole Hungarian economy.

In 1990, ownership relations were also transformed. Numerous old socialist industrial companies were privatized, in which not only Hungarian but also foreign investors played a substantial role. Of all post-socialist states, Hungary was an important investment destination, especially in the 1990s (Kiss, 2007a). During last decades about one third of the annual investments of \$3 to 4 billion targeted the industry, a fact that greatly contributed to its transformation, modernization and integration into the global economy. Based on its globalization index in 2007, Hungary was in 17<sup>th</sup> position out of the 80 countries analyzed in the study, and in 14<sup>th</sup> position based on its economic globalization index, meaning that it was one of the countries achieving the

highest level of global economic integration. This, however, also presents risks not only advantages.

The number of industrial enterprises with foreign interest reached its peak (4,488) in 1997 before beginning to decline. In 2007, only 3,472 such enterprise operated in Hungarian industry. They were predominantly concentrated in the capital and Pest County (40 percent) and the northern part of Transdanubia (29 percent). This spatial pattern was in line with the regional distribution of foreign capital investments, which was also reflected in the index of foreign capital per capita. In the eastern part of the country, generally the number of enterprises with foreign interest was below one hundred per each county, a number of that significantly fell short of those in the Western Transdanubian region (Figure 1).

Foreign industrial investors arrived primarily from Germany, Austria, the US, the Netherlands, France, Sweden, Finland, Japan and South Korea, and such well-known companies have established subsidiaries in the country such as Audi, Opel, Elcoteq, Suzuki, Philips, Grundfos, Electrolux, IBM, Bosch, General Electric and Nokia. As the considerable part of foreign capital investments (27 percent in 2007) originate from Germany, it is often said that the “well-being” of the Hungarian industry essentially depends on the “health” of the German industry (Csath, 2009). German investors predominantly established industrial businesses with lower capital but higher in number, and mostly in the northern part of Transdanubia, as opposed to American investors, who established fewer, but financially more solid industrial enterprises spread across the country (Kiss 2010).

Since the change of regime, the structure of industry has also transformed. Traditional branches of heavy industry (e.g., mining, metallurgy) were relegated to the background, while the position of the machinery industry gained strength. One of the key factors in this process was the automotive industry, established as a new branch in the country, as well as the fact that other branches (such as the electronics industry) also experienced dynamic growth owing to foreign investments. In the last decades, the structure of the Hungarian industry has become more disproportionate and single-faceted due to the fast development of the automotive industry and related branches. The machinery industry boasted the highest number of employees in nearly all counties, and it also accounted for the largest portion of industrial production and export, particularly in the counties of Northern Transdanubia. Of the other industrial branches, the production of the metallurgical, chemical and textile industries concentrated more significantly in some counties, which were usually combined with a high proportion of employees. Although the regional distribution of the production and employment rate of the food industry can be

characterized as more even, they reached higher density in the Great Plain thanks to agriculture (Table 2).

One of the most substantial changes that can be observed in previous decades is the significant decrease in the number of industrial workers: it has dropped from 1.3 million to 806,000 between 1990 and 2007. Following international trends, the setback has predominantly affected the mining, machinery and light industries. Although as the country's largest industrial employer, the capital city has been affected by deindustrialization to the largest extent, it has managed to retain its leading position. Even in 2007, one fifth of all industrial employees were concentrated in Budapest. Despite this, it was here where the proportion of industrial laborers to all employees was the lowest in the country, which resulted from the larger weight of tertiary sector. However, due to the higher significance of the industry in the region, the proportion of industrial workers to all employees was the highest in Northern Transdanubian counties (Table 3).

In 1990, the spatial pattern of industry has also changed. The epicenter of production shifted from the northeastern-southwestern industrial zone, which followed the geographic distribution of raw materials and fossil energy sources in Hungary's central mountains, to the northern part of Transdanubia, establishing a new industrial district along the northwestern-southeastern axis (Kiss 2010). Foreign capital investments played a definitive role in its formation thanks to the region's several favorable characteristics (e.g., favorable geographical location, vicinity of the western border, skilled labor force, developed infrastructure, etc.). This spatial restructuring can be also described in the words of Castells (1993) – the “space of places” was replaced by the “space of flows.” This new, semi post-Fordist industrial district can be considered the center or the hub of the Hungarian industry, an area that includes the Central Hungarian, Central Transdanubian and Western Transdanubian regions. Although it takes up hardly one third of the country's total territory, the vast majority (69 percent in 2007) of industrial enterprises with foreign interest are concentrated in this region. The largest part (64 percent in 2007) of industrial investments has also targeted this area. Moreover, the considerable portion of industrial production and industrial export also originates from this part of the country, where industrial employment also excels.

**Table 2. Industrial production and export sales by counties in Hungary, 2007**

Capital city, county	Share of the production of some more important branches of all industrial production (%)						Production per employee (thousand HUF)	Share of export sales of all industrial sales (%)
	Electricity, gas, steam and water supply	Manufacture of basic metals and fabricated metal products, except machinery and equipment	Machinery industry	Chemical industry	Manufacture of food products, beverages and tobacco products	Manufacture of textiles, apparel, leather and related products		
Budapest	9	3	30	40	10	1	38,177	40
Pest	8	5	55	4	13	-	28,674	61
Fejér	3	27	61	3	4	0.3	48,102	78
Komárom-Esztergom	1	1	88	3	2	-	67,191	86
Veszprém	3	19	45	15	8	0.6	22,213	69
Győr-Moson-Sopron	5	2	77	4	5	1	55,304	83
Vas	..	7	54	10	8	10	20,171	79
Zala	7	5	27	3	22	4	11,512	34
Baranya	33	2	26	3	21	2	16,676	32
Somogy	3	5	71	1	19	1	17,322	78
Tolna	64	6	9	1	11	6	19,846	19
Borsod-Abaúj-Zemplén	8	28	8	49	5	0.5	40,342	54
Heves	13	8	70	1	7	0.3	29,562	68
Nógrád	3	15	51	10	3	1	15,219	76
Hajdú-Bihar	18	3	22	25	26	1	18,219	28
Jász-Nagykun-Szolnok	..	3	69	3	10	7	21,349	64
Szabolcs-Szatmár-Bereg	2	6	12	26	26	21	17,626	64
Bács-Kiskun	2	5	34	7	39	2	14,973	57
Békés	..	4	27	10	28	3	12,962	45
Csongrád	19	4	8	17	41	2	17,200	23

Source: Regional Statistical Yearbooks. HUF 1,000 thousand = USD 5,000.

**Table 3. Number of industrial employees by branches and counties in Hungary, 2007**

Capital city, county	Number of employees	Of which: the share of employees (%) in										Share of industrial employees of all employees (%)
		electricity, gas, steam and water supply	manufacture of basic metals and fabricated metal products, except machinery and equipment	machinery industry	chemical industry	manufacture of food products, beverages and tobacco products	manufacture of wood and paper products, and printing	manufacture of textiles, apparel, leather and related products	other branches			
Budapest	163,004	4	8	31	17	10	14	9	7	13		
Pest	77,393	4	12	40	7	15	10	3	9	27		
Fejér	50,871	4	26	45	6	7	4	2	6	38		
Komárom-Esztergom	51,075	7	5	57	9	6	7	2	7	44		
Veszprém	29,727	3	18	29	12	11	5	5	17	32		
Győr-Moson-Sopron	50,118	5	9	39	11	10	7	8	11	32		
Vas	32,252	2	8	38	5	10	8	20	9	39		
Zala	19,505	4	9	28	4	16	12	8	19	31		
Baranya	25,897	14	9	26	6	14	8	12	11	23		
Somogy	23,924	10	9	51	2	14	5	6	3	23		
Tolna	15,641	20	18	17	2	12	5	20	6	28		
Borsod-Abaúj-Zemplén	44,217	8	19	30	17	11	4	7	4	27		
Heves	25,706	12	15	41	2	13	7	6	4	33		
Nógrád	11,589	5	19	22	7	9	7	8	23	29		
Hajdú-Bihar	34,025	12	7	22	12	22	12	10	3	22		
Jász-Nagykunszolnok	30,895	4	10	47	5	10	7	13	4	31		
Szabolcs-Szatmár-Bereg	28,457	5	8	17	14	29	6	15	6	25		
Bács-Kiskun	40,725	3	8	26	12	28	9	8	6	29		
Békés	23,231	4	9	25	4	20	9	17	12	24		
Csongrád	27,992	11	9	14	11	28	4	11	12	22		

Source: Regional Statistical Yearbooks.

The driving force of the industry in the new industrial district is the machinery industry (just like in the whole country), more specifically vehicle manufacturing and electronics, connected to a number of second- and third-tier suppliers spread across the entire country. This region is the 'winner' of industrial transformation, adapting to new challenges flexibly and rapidly, a trait that could be observed even during the economic crisis.

This spatial realignment has also contributed to the intensifying of regional differences and regional disparities. Duality also prevailed not only in size structure and ownerships but also in space. Following the turn of the millennium, hardly any changes were observed in the new spatial structure of industry as a result of the interaction between industry and global economic processes. The crisis, however, raised the possibility of another substantial restructuring.

## **INDUSTRIAL ENTERPRISES AFTER 2008**

In the last decades, the number of enterprises in Hungary has seen a steady increase, and although their number is relatively high, it does not mean a developed and competitive entrepreneurial world in the Western European sense (Török, 2011). In 2008, nearly 1.56 million enterprises were registered in Hungary, of which industrial enterprises accounted for 5.2 percent, while in 2009 this number was only 4.7 percent. The fact that the number of enterprises increased in the whole country and still decreased in the industry indicates the crisis-induced vulnerability of industry and that other sectors had seen a more dynamic development, thus suffering less severely from the crisis. In 2014, industrial enterprises only accounted for 4.6 percent of all enterprises.

Generally speaking, corporations account for approximately two-thirds of industrial enterprises, while sole proprietors make up one-third. (Corporations can be those with legal entity, such as limited liability companies and without legal entity, such as limited partnerships. We talk about sole proprietorship when a non-foreign private individual establishes an enterprise to conduct an economic activity in his own name and for his own liability). Of the two groups, it is corporations that play a decisive role in the industry.

As a result of the crisis, the growth of industrial enterprises came to a halt, and by 2009 their numbers had decreased by 4,800, the larger portion of which comprised corporations. The growth observed from 2010 turned into a decrease by 2013, and this trend became a lasting one in the case of corporations. The shrinking number of enterprises, otherwise, can also be



considered a “cleansing” process, given that only those enterprises can survive that are viable and able to adapt to new challenges and changing socioeconomic conditions. With regard to that it must also be mentioned, then, that the decrease in the number of enterprises does not necessarily have to be considered a negative aspect.

For the most part, it was small enterprises that fell prey to the crisis, the majority of which being enterprises with less than 10 people (Szőke, 2013). These businesses are the most sensitive to unfavorable social and economic changes, stricter regulations and bureaucracy, and are less capable of defending themselves (Török, 2011). They do not have any reserves, adequate professional experience for the management of crisis situations. However, these do not apply as much to enterprises with more than 50, and perhaps that is the reason why their number did not yet start to decrease in 2008, only in 2009. The delay can be explained by their efforts to maintain themselves and trying to adapt and fend off the negative effects of the crisis (Table 4).

The decrease in the number of industrial enterprises can stem from the fact that in Hungary 28-30 percent of enterprises are “tactical” (i.e., established for a short-term goal) or so-called “cost of living-making” enterprises (Pitti, 2010). Decay in financial solvency and willingness to pay also affected the operation of businesses in a negative way. Consequently, several companies faced liquidation, dissolution or bankruptcy proceedings and not only in industry (Szőke, 2013).

**Table 4. Number of all enterprises by size categories in Hungarian industry**

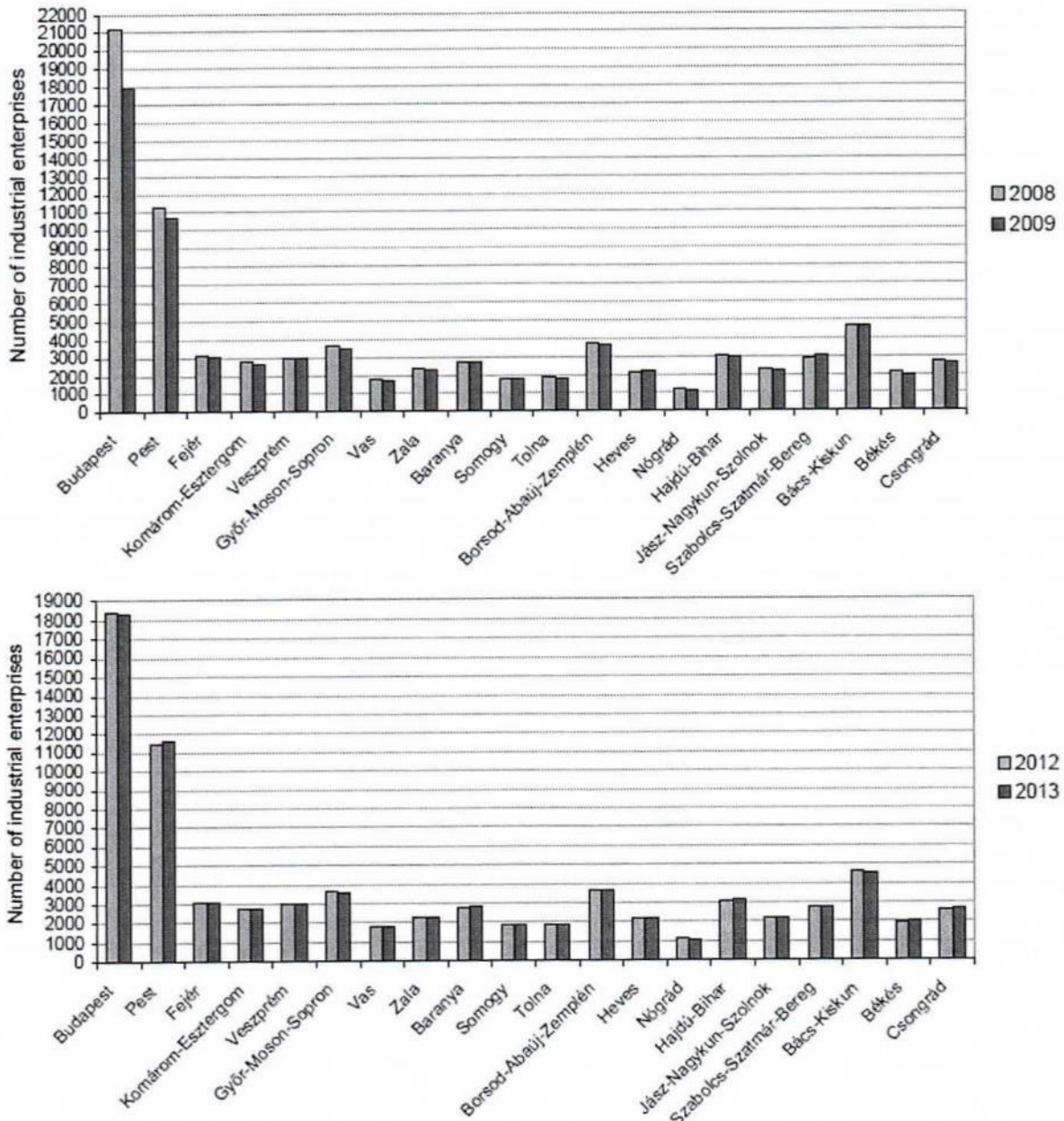
Year	0 person employed and unknown	1-9	10-19	20-49	50-249	250 and more	Total
		persons employed					
2007	13,837	28,373	4,257	3,186	1,900	518	52,071
2008	14,060	29,288	4,260	3,171	1,951	530	53,260
2009	13,564	27,009	3,877	3,127	1,996	514	50,087
2010	14,078	27,802	3,947	3,008	1,878	436	51,149
2011	14,850	29,000	3,726	2,813	1,772	428	52,589
2012	14,651	29,152	3,750	2,664	1,805	438	52,460
2013	19,747	36,950	3,931	2,512	1,724	423	65,287
2014	17,901	51,174	6,225		1,765	448	77,813

Source: Hungarian Statistical Yearbooks.

A differential change could be observed in the number of industrial enterprises. Among other factors, it was influenced by how the given branch was connected to the global economy, its size, ownership, the market it was producing for, management structure, etc. The number of enterprises in the food industry grew in spite of the crisis. The main reasons for that are that it is a less-globalized sector, primarily producing for local and regional markets, the food supply of the population was still a requirement during the crisis and consumption has also increased in recent years. Within light industry enterprises in the wood, paper and printing industries declined more significantly (by several thousand), while the number of enterprises in the textile, leather and footwear industries decreased by nearly 500. The latter is no surprise, given that the setback and agony of these branches had begun much earlier. They are considered declining ones on global level as well. Hungarian textile, leather and footwear enterprises are becoming less and less capable of keeping up with dumped products from the Far East and the increasingly fierce market competition (Szabó, 2010). Between 2008 and 2009, the number of metallurgical enterprises also dropped (by 650), because of the decrease of enterprises with less than 20 employees. The same can be observed in the case of the machinery industry and its major sub-branches, although our ability to define the extent of reduction and drawing comparisons is hindered by the fact that in 2008 branch categories were changed by the Hungarian Central Statistical Office. However, it is without doubt that the number of enterprises decreased only by approximately 100-200 in the automotive and electronics industries and related branches (e.g. rubber and plastics manufacturing).

In geographical terms, the decrease of industrial enterprises between 2008 and 2009 was strictly limited to the capital city and its wider vicinity, because their considerable part is concentrated there. In 2008, their proportion was 40 percent, decreasing to 38 percent in 2009. Additionally to the crisis, the decline can also be blamed on deindustrialization, which has been on-going for decades, particularly in Budapest (Kiss, 2010). In addition to Central Hungary, where the proportion of industrial corporations dropped from 47 percent to 40 percent a significant decline of corporations could be observed in the eastern half of the country (Great Plain and Northern Hungary). It is presumed that the firms in these areas were not as financially solid and for the most part not subsidiaries of multinational enterprises such as those in Northern Transdanubia, thus proving to be significantly more vulnerable during the time of the crisis. At the same time the number of sole proprietors dropped the most in developed industrial areas, as it was there where the effects of the crisis

were felt the strongest, and generally speaking these enterprises are very sensitive to the changes in business environment. Although the number of enterprises started decreasing in most counties from 2012, it has done so only to a modest extent, as for the most part the growth of sole proprietors offset the decline in the number of corporations (Figure 2).



Source: Regional Statistical Yearbooks.

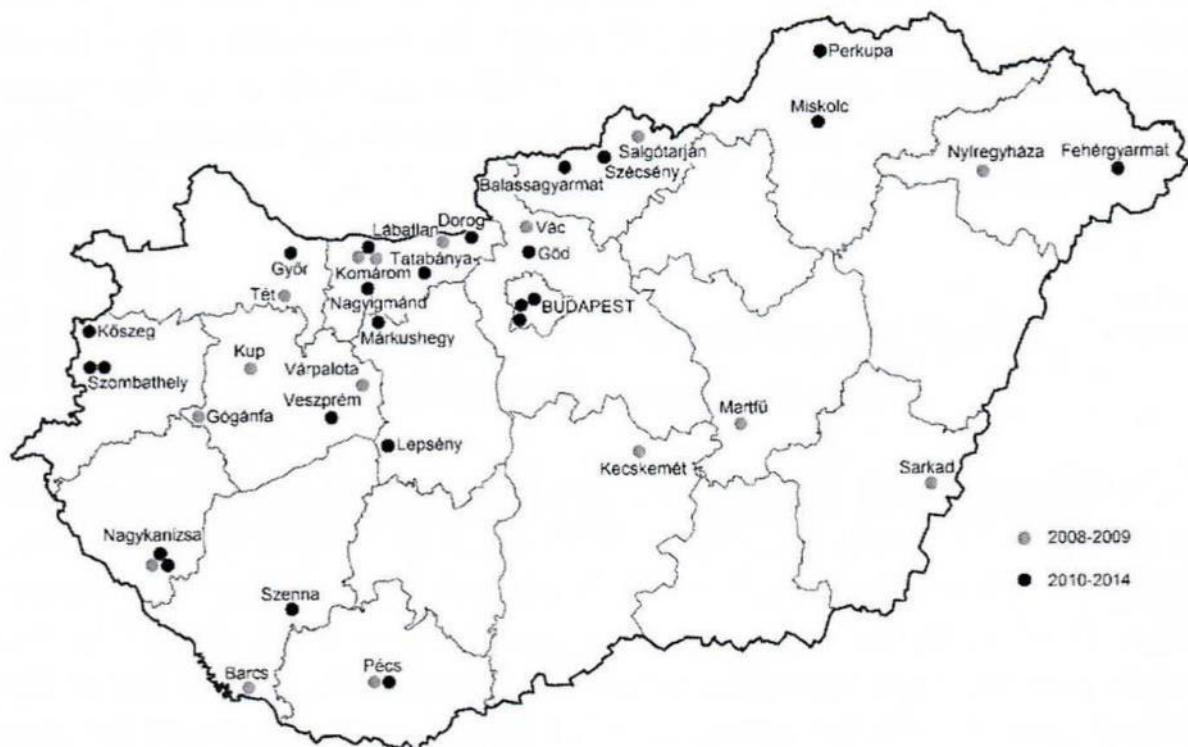
Figure 2. Number of all industrial enterprises by counties in Hungary.

Even enterprises with foreign interest that were considered financially solid and “invulnerable” declined in number, decreasing by 169 between 2008 and 2009. An outstanding number of enterprises with foreign interest disappeared from the industry of Budapest. Furthermore, a substantial amount of such enterprises ceased to exist in Tolna (18), Komárom-Esztergom (10) and Heves (16) counties. Their decline continued through 2010 with the exception of Central Hungary and Northern Transdanubia. Although the number of enterprises with foreign interest began to grow by 2011, it has not proven to be a lasting increase. In part, this can be explained by that parent companies conduct such organizational and structural changes within multinational companies which do not leave Hungarian subsidiaries unaffected. It is not impossible either that the cause of decline is investors having already made their investments in accordance with their intentions and that foreign investors are becoming increasingly cautious and considerate and strive for the minimum risk possible. This is also reflected in the shrinkage of foreign capital investments. According to data by UNCTAD, while in 2008, \$6.3 billion was invested in the Hungarian economy, in 2009 investments only amounted to \$2 billion. The boost in foreign capital investments in 2011 and 2012 perhaps can be also attributed to automotive investments carried out at the time, such as the construction of the new Mercedes-Benz plant in the town Kecskemét or foreign capital investments in car factories (Audi, Opel, Suzuki) and their suppliers in Northern Transdanubia (Kiss, 2012).

## **SOME DEMOGRAPHIC CHARACTERISTICS OF INDUSTRIAL ENTERPRISES**

With regard to the fact that the statistical data do not provide information on the individual enterprises, one needed sources to alleviate this deficiency. Taking this consideration and the hypothesis into account that the economic dailies (*Világgazdaság*, *Napi Gazdaság*) mostly publish the closure or the founding of the more important industrial enterprises or the transfer of the existing ones, I collected articles of this kind regarding the period between 2008 and 2014 for further analysis. Despite the fact that only a fraction of the terminated or newly-founded companies appeared in the press, the gathered information was appropriate to provide some details on the demography of enterprises and their conduct during the crisis.

According to settlement level data gathered from the economic dailies 40 companies were closed down in Hungarian industry between October 2008 and December 2014. The first big wave of firm closures came into existence between 2008 and 2009 when 16 firms disappeared and then a second more modest wave in 2011 which led to the closure of ten companies. In the beginning, mostly firms (e.g., Perlos, Sunarrow, Beteiligungs, Digital Disc Drives) operating in the machinery industry (car manufacturing and electronics) came to an end (in a proportion close to 37 percent) whereas the closures that occurred from 2011 signify that the crisis affected enterprises (for example Pannon Perlit Ltd., Latex 2000 Zrt., Diósgyőri Öntöde) and branches outside the machinery industry, such as furniture manufacturing, building material production, metal and food processing (malt and poultry processing), and the chemical industry more seriously. On the one hand, this could have been caused by the crisis having reached these branches slightly later. On the other hand, it can be presumed that they were not able to react to it and recover as quickly as the car industry (Figure 3).



Source: Economic newspapers.

Figure 3. Closed down firms in Hungarian industry, 2008-2014.

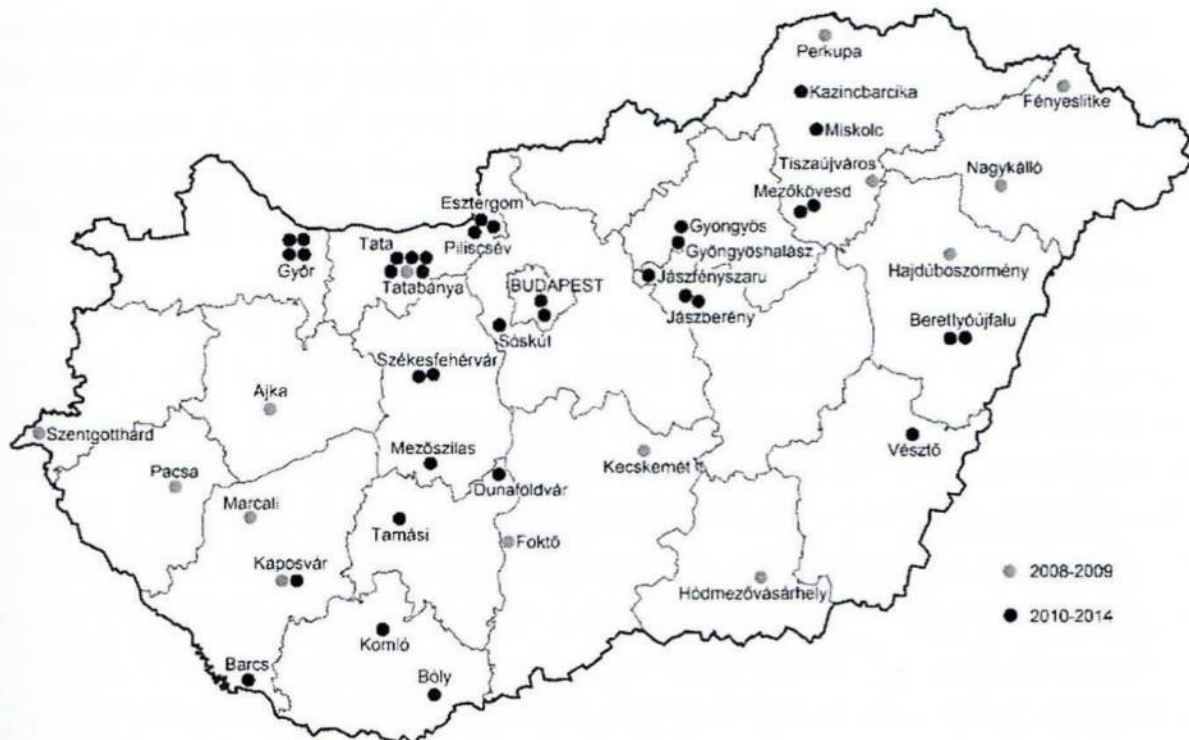
Company closures usually occur as a result of some external (such as economic crisis) and/or internal (inside the enterprise) factors (such as the deterioration of financial outcome, the decrease of customers, delay in delivery and payment deadlines, and that good professionals and leaders leave the company) whose omens can be different depending on the life cycles of the organization (Noszkay, 2009). The special risk factors that endanger the operation and life of the company can be determined in all operational phases of the enterprises. For example if a company is not able to take realistic risks even in the start phase, if the development of products and the widening of its markets are missed out in the mature phase then these may lead to the decline of the company. It is also common knowledge that the starting, the young, the small and the enterprises with less capital are the most in danger during the time of crisis (Vállalkozások..., 2011).

The terminated companies mentioned the following reasons the most often – not in the order of priority – (such as diminishing purchases, increased production costs, shrinking demand, inability to pay back loans and debts, high energy prices, increasing market competition, narrowing of export opportunities, restructuring of production inside the company, rationalization, outdated products and failure to implement new technologies) which led to their closure. As a matter of fact, there is not much difference between the reasons triggering the crisis in the two phases, and the branch the company belongs to and its age do not have an impact on the reasons either. It was however emphasized in the case of several companies terminated in 2011 that the position of the company became weakened due to the crises emerged in 2008 and they were unable to remedy the problems manifest in the years afterwards, and these led indirectly to their closure. It is as if the crisis accelerated the termination of companies which were already in difficulty, and especially those companies which depended on one or more other companies could fall into danger or into a vulnerable position easily. There was also a company (e.g., Elcoteq) which was forced to close down because its biggest customer, Nokia fell into a serious crisis and finally closed down. A clothing industrial enterprise also closed down in Kőszeg because its only customer, Triumph had terminated the contract. The outdated product structure as a reason occurred just the same way at multi-nationals such as at the Hungarian subsidiary of for example Samsung or at the 90 year old Latex company. The former was not able to cope with the challenges of accelerated technological development, or bring out new products, and the products of the latter became outdated during a long past and lost their prominence compared to the new, more modern and cheaper products of the textile industry.

To reveal the number of new enterprises founded between 2008 and 2014 according to economic dailies was also an important goal. As the number of industrial enterprises diminished during the time of the crisis, it is only a matter of accident that their number exceeded the closed ones. This can be possibly accounted for by the fact that the papers are more pleased to inform one about these events. Fifty new companies were founded between 2008 and 2014, and their significant part (27 percent) between 2008 and 2009. Close to half of the new companies were founded in the machinery industry which was followed by the chemical industry and food processing on almost the same scale (16-14 percent). The dominance gained by the previous two branches amongst the newly-founded companies essentially results from the connection most of them have with the car industry as suppliers. This is to some extent the consequence of the close connection the foundation of new companies has with the economic and commercial environment of the given location (Garofoli, 1994). The structure of newly founded companies (Givaudan, Melecs EWS, Emerson, Mivisa, Knorr-Bremse, Samyang EP, etc.) is also multi colored. Apart from the traditional industrial investors (like Germans, Austrians, Americans, Italians,) the number of Chinese and Indian investors had also increased in the past few years. The foundation of new companies was also motivated by not only increasing demand, new market opportunities, and moving closer to the markets but also by the lack of companies manufacturing similar or the same products in the East Central European area.

Two main characteristics of the spatial distribution of new companies are worth to be mentioned. One is that the new industrial enterprises became founded in the peripheries of South Transdanubia and the North-East. These areas are far away from the new industrial district which was considered the “core” region of the crisis. After 2010 however, new industrial enterprises appeared primarily in the Northern part of the country not only in Northern Transdanubia but also in the North of Hungary where the traditional industrial areas used to be. Since the millennium, new industrial enterprises could also be seen moving towards the direction of Northern Hungary as Northern Transdanubia became almost ‘full’ and there was a shortage of free workforce. For this reason, several companies made openings in the direction of old industrial areas where there was a greater selection of still free workforce and sites available. What is more, a highway link (M3) was even ensured. Most new enterprises were established in the vicinity of the motorway. As opposed to this the southern part of the country (Southern Transdanubia, Southern Great Plain) only had a modest share of the new industrial investments. The duality and dichotomy, the division of the country into an industrial North and

a less industrialized South has become more and more conspicuous in the past years and the geographical pattern of enterprises also proves this point (Figure 4).



Source: Economic newspapers.

Figure 4. Newly established firms in Hungarian industry, 2008-2014.

Amongst the responses the companies gave to the crisis the transfer of production (relocation) did not get a more significant role, neither inside the country nor internationally (to and from Hungary). This is also surprising because many were worried at the outbreak of the crisis that enterprises with foreign interest would relocate their production to countries with lower production costs and cheaper workforce. The relocation was most prevalent mainly in cost sensitive branches (such as the car industry, electronics and textile industries) in whose production a global shift had taken place in the past decades (Dicken, 2003).

Despite the crisis and the preliminary presumptions, only a few enterprises with foreign interest intended to leave Hungary. During the crisis only one Belgian company manufacturing underwear relocated its production from Szekszárd to Tunisia because of the lower wages. The wages there were one third of those in Hungary. In 2010 Sony decided to transfer the production of its subsidiary founded in 1996 (electronic devices) to Malaysia. The closure was part of the consolidation endeavors of the Sony site. PMP also announced



in 2010 that it would transfer its production to the Czech Republic because they could not manufacture windscreen wipers for the new Suzuki and this meant the termination of 70 jobs. In the past two years only two companies organized the transfer of production to another country. In 2012 the American automotive supplier, Remy considered moving from Hungary to Mexico because its European sales were below expectations but would make the final decision by reviewing the entire production strategy which could result in the loss of 4-5,000 jobs. In 2013 it was alleged in connection with Mercedes that it would transfer a part of its production from Hungary to Mexico because it was planning a joint factory with Nissan there.

Relocations to Hungary significantly outnumbered relocations from Hungary. While six companies transferred their production to Hungary between 2008 and 2009, 14 did between 2010 and 2014 such as the German Erbslöh, Schmitt, Bosch and Ziehl-Abegg Motor, the Swedish Electrolux, the Turkish Metyx, the Swiss Maxon Motor and Billa, and the Korean Samsung. The increasing relocation also indicates that due to the crisis multinational companies were forced to globally reorganize and review their production together with their subsidiaries and work out new strategies. General Electric for example located its American production capacity to Budapest because the Hungarian factory played a leading role in LED manufacturing. Givaudan relocated certain manufacturing processes from Switzerland and England to Hungary because the parent company rationalised its aroma manufacturing activity.

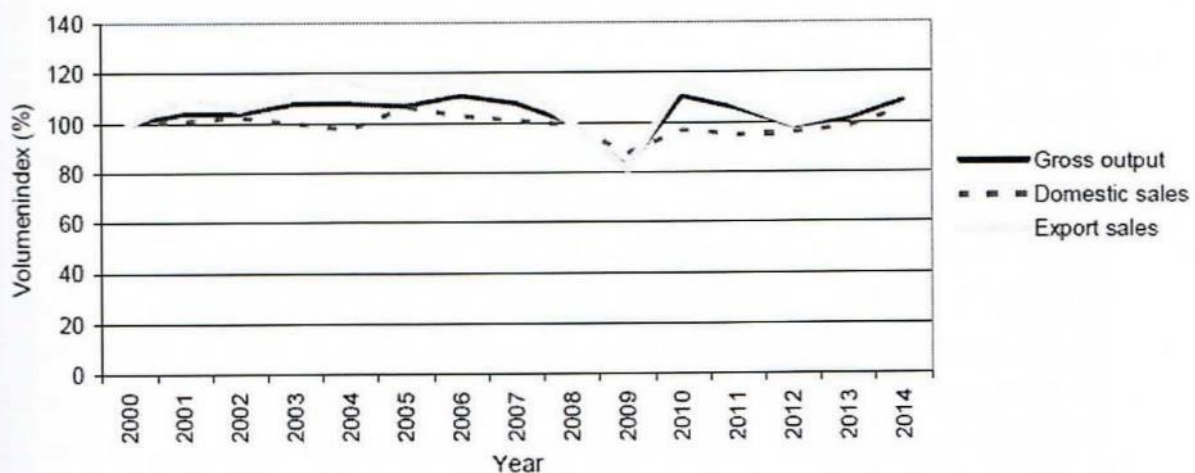
The main driving force behind relocations is generally the reduction of costs (Kiss, 2007b). Particularly, the reduction of wages is very important because they make up a relevant proportion of the production costs. Numerous other roles could play a part, too. According to the basis of newspaper articles it can be said about relocation to Hungary that its first driving motive was also the reduction of costs but other reasons (such as the enhancement of utilizing capacity, relocation of new products and new manufacturing programs, organizational rationalization, increase of efficiency, cheaper and bigger sites, increasing demand, preserving competitiveness, and widening market relations) could have been its incentives as well. These transfers took place primarily within machinery industry. They were predominantly connected (to 38%) with the car industry but the electronics industry and other machinery industries were also represented. Apart from these, two production transfers took place in the chemical industry (rubber production, vaccine production) and one in food processing as well as another one in the leather industry. The

reason for the latter was that they were better able to provide for the Romanian and Croatian market.

Production was primarily relocated to Hungary from European countries (Germany, Austria, Switzerland, etc.), Asia (e.g., China, South Korea) and the US. The main target area of the relocation was Northern Transdanubia and to the least extent the Great Plain because its agriculture and food processing do not make it closely connected with the global economy. At the same time, the geographical location of companies was not concentrated; they were from different areas of the country.

## CHANGES IN THE OPERATION OF INDUSTRIAL ENTERPRISES

The crisis also affected the operation and activity of industrial enterprises. A part of them reacted to the crisis by reducing production which resulted in a fall of industrial production by 18% in the whole country. This fall was almost the same volume as that at the beginning of the 1990s during the structural crisis. The improvement that took place from 2010 was followed by another lapse in 2012 but this was on a more modest scale than the previous one (hardly 7%). Sales fell simultaneously with production between 2008 and 2009 which had the worst effect on exports. Domestic sales only started to improve in 2014 after slight stagnation following a trough in 2009 (Figure 5).



Source: Statistical Yearbooks of Hungary.

Figure 5. Industrial production and sales in Hungary, 2000-2014 (previous year = 100.0).

The production and sales became reduced differentially in the individual industrial branches but the fall in production was generally much greater than that in sales. The greatest fall took place in the metal (40 percent) and vehicle (30 percent) industries and in rubber and plastic production (25 percent) between 2008 and 2009 which can be explained by the globalization of the car industry and the strong dependence on it. Amongst the Hungarian car manufacture plants, Suzuki was the most hit by the crisis because its production fell to a great extent. For example: they manufactured 300,000 cars in 2008 and only 171,000 cars in 2009. The fall in production of the car industry was also highly unfavorable because it had broken the developing supplier relationships which were in the process of becoming solidified at that time (Somai, 2009). The fall in production of the electronics and computer industries which are also more globalized branches showed a lesser extent (12 percent). The production of the wood, paper and printing, textile, leather, and the shoe industries fell to a similar extent while that of food processing had hardly changed. The repeated lapse took place in the production of most industries in 2012. The production of the vehicle industry however only fell by a few percent at that time. To put it another way, the fall in the industrial production in the second wave was not caused primarily by the car industry and its related branches but much more by the textile (28 percent), metal (13 percent) and electronics (12 percent) industries. The former ones had been struggling with difficulties for a long time and the prolonged crisis only made their situation worse just like that of the latter one. Although, the production of some branches (such as the pharmaceutical rubber and plastic industries) fell behind that of the previous year even in 2013, the production grew after that in almost all industries (Table 5).

The industrial production and sales and especially the export sales fell the most drastically in the areas where the major suppliers of car manufacturers and electronic companies were concentrated. Between 2008 and 2009 industrial production plummeted by 25-30 percent especially in the northern part of Transdanubia (in Győr-Moson-Sopron, Vas and Komárom-Esztergom counties). Contrary to this the lapse was not of the same extent in other areas of the country. In 2012 it was rather the production of Central Hungary and Central Transdanubia (Fejér, Komárom-Esztergom counties) that fell to a greater extent. In the former region the reason for the decrease was the 'natural' process of deindustrialization and in the latter because of the slow recuperation of the electronics industry which also disadvantaged the export of the branch. The closing down of the Nokia which was one of the most relevant representatives of the sector also played a significant role in it.

**Table 5. Industrial production and exports by branches in Hungary, 2007-2014 (previous year = 100.0)**

Industrial branch	Production								Exports							
	2007	2008	2009	2010	2011	2012	2013	2014	2007	2008	2009	2010	2011	2012	2013	2014
Manufacture of basic metals and fabricated metal products	102.9	100.9	61.3	112.7	112.9	99.7	100.7	105.8	113.4	102.9	60.4	112.2	111.6	99.9	105.0	102.1
Manufacture of machinery and equipment	115.7	112.8	90.8	141.7	144.1	101.2	97.0	103.7	117.6	116.6	97.6	158.0	143.7	99.1	97.9	105.7
Manufacture of electrical equipment	102.5	95.7	78.9	87.6	89.1	99.0	102.9	106.4	103.1	97.5	80.2	84.9	88.6	98.7	103.0	108.0
Manufacture of computer, electronic and optical products	114.5	97.3	85.5	122.3	94.6	82.8	88.1	101.3	121.0	97.9	86.2	120.3	96.0	83.6	88.0	101.8
Manufacture of transport equipment	115.6	100.8	70.6	118.1	111.8	107.8	118.2	120.6	115.9	100.6	71.5	118.8	112.1	110.0	117.7	120.5
Manufacture of chemicals and chemical products	106.2	94.4	83.9	113.7	107.7	99.7	105.6	109.2	109.6	94.1	86.2	112.5	106.1	98.3	111.1	108.2
Manufacture of rubber and plastic products	116.5	102.1	77.1*	107.7	109.2	100.7	97.3	105.7	136.6	104.9	82.2*	117.1	116.4	107.2	99.6	107.4
Manufacture of pharmaceuticals, medicinal chemical and botanical products	95.6	107.2	99.8	106.3	109.2	103.5	88.2	102.9	95.7	105.8	100.7	112.9	108.6	105.4	87.1	98.4
Manufacture of textiles, apparel, leather and related products	99.7	88.6	76.7	97.4	124.4	96.5	97.7	115.8	103.8	86.2	76.9	96.6	127.6	92.7	103.0	116.4
Manufacture of wood and paper products, and printing	102.2	100.5	88.7	119.3	97.4	98.1	100.6	108.5	116.5	102.4	85.4	130.5	102.9	101.3	101.2	103.1
Manufacture of food products, beverages and tobacco products	96.1	93.3	98.0	99.3	102.5	104.6	99.0	104.8	103.8	98.9	104.8	107.8	106.4	111.0	105.4	102.6

Source: Hungarian Statistical Yearbooks.

Note: \* Including the manufacture of other non-metallic mineral products.

In accordance with the firm information gathered from economic dailies, there were enterprises which reacted to the crisis by temporarily suspending production. This meant in practice, that they closed a part or the whole of the production site, or the factory in whose background there had been a drastic fall in purchases, high outstanding debts, company buy-outs, and loss of markets, etc. From 2010 they nevertheless relaunched production and implemented further investments and developments. For example in Orosháza, Pannon Fine Food Ltd. refurbished their old plant, had a new slaughter house built and modernized production through which they are able to provide work for 240 persons today. The Pacsa poultry factory also implemented relevant investments (building cold stores and warehouses) and employed 70 persons. Its new owner only reopened one part of the Székesfehérvár Cerbona factory and also bought the trademark, Cerbona and continued the manufacture of muesli bars.

From the eight relaunched enterprises four represented food processing, one the construction material industry and two the machinery industry. Only one of the latter ones was linked to the vehicle industry which shows that the temporary suspension of production was not characteristic of the vehicle production companies. The Kaposvár-based NABI managed to relaunch bus manufacturing due to fresh commissions. It seems that the fluctuation of orders greatly influences the operation of other branches and other businesses too. With the exception of two, all were located outside the Northern Transdanubia.

During crises, enterprises very often revoke or postpone planned investments and developments. This is one of the most common crisis preventive measures. In the start period of the crisis trusting that it will soon be over, businesses will still try and implement planned investments and developments from their existing reserves. Due to the lengthening and deepening of the crisis, the situation will become more severe, the reserves will run out and the opportunities of taking out loans will narrow down and therefore they cannot invest or make developments or they are only able to do so to a much smaller extent. This is how it was also after 2008. Moreover, the conditions of taking out loans also became stricter which forced even more to postpone investments. The great fall in the investment spirit of the enterprises during the latest crisis was the joint consequence of many factors (the uncertain future, the incalculable and high interest rates on the loans, the stricter and stricter loan conditions and the lack of savings, etc.) (Szőke, 2013).

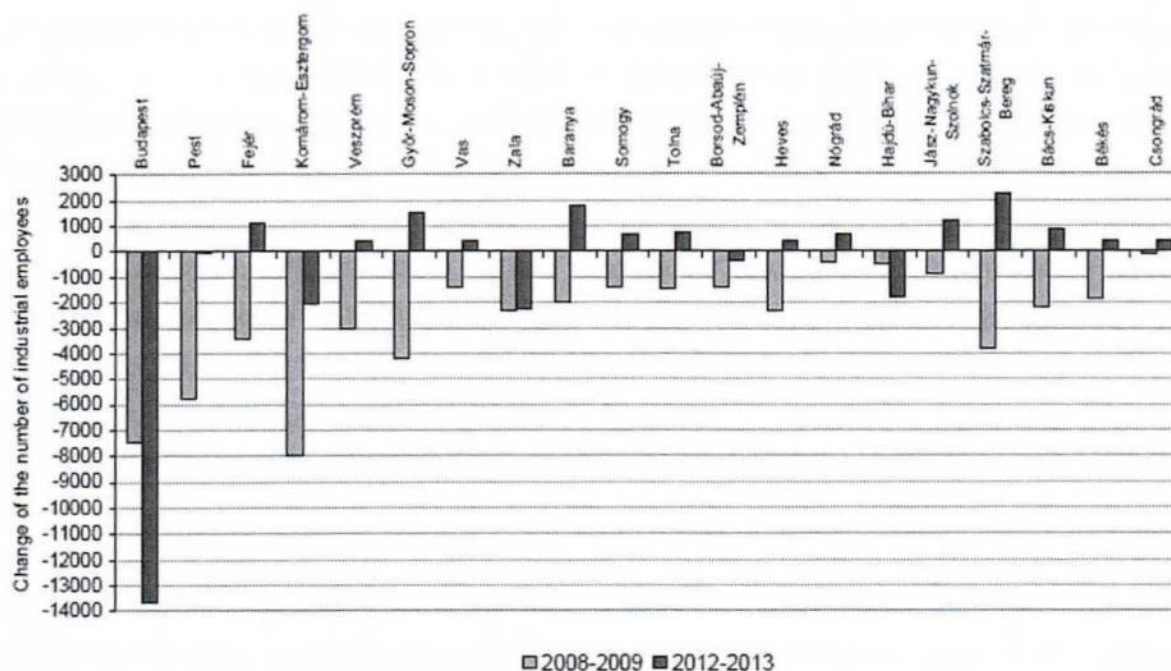
In accordance with a national survey, besides the general reduction in costs, 36 percent of the companies decided to postpone investments (MKIK

GVI-Kopint, 2009). According to another research into 170 enterprises in the Northern Plain, the majority also tried to survive the difficult times of the crisis by reducing and/or postponing investments (Mező-Kovács 2010). It is thus no wonder that the problems occurring on a micro level also became manifested on a macro level. The volume of industrial investments fell by 13 percent in the whole area of the country between 2008 and 2009 and the volume of investments plummeted to a trough level again in 2013. The companies spent less first and foremost on machinery and equipment but their share of the overall investment still continued to exceed what was spent on buildings and other facilities. The fall in investments was also different according to regions and showed close correspondence with the occurrence of the so called 'crisis branches' (car manufacturing and electronics). Due to this phenomenon, investments fell to the greatest extent in Northern Transdanubia (Győr-Moson-Sopron, Fejér, Vas and Zala counties) and in the counties of Somogy, Heves and Borsod-Abaúj Zemplén (by 21-45 percent). In the latter county the volume of investments fell as a consequence of the long-term crisis and slow restructuring of the metal industry contrary to the former ones where the fall in the extent of investments was due to the prevalence of enterprises which were more strongly integrated into the world economy.

According to the articles of economic dailies, 50 companies implemented investment and development between 2010 and 2014. The related appearance of the articles also proves a W-shaped crisis as the number of investments slowly grew from 2010 - was 11 in 2011 - and was again reduced to 5 by 2013. Half of the total investment was connected with the car industry which was in connection with its quick recovery and fast paced development we could experience at home in the past few years. Besides this, major investments were implemented in the other branches of machinery industry, food processing, and chemical industry. For example the Sanmina SCI with an American interest struggled with a severe lack of commissions, but got over the difficulties by 2011, developed and extended both its production and its clients. The German owned Weiss Hungaria Ltd. carried out production widening in 2011 because of the increasing commissions. Many enterprises could also be seen to raise new buildings to widen production. A new production hall was built by the American Johnsons Controls in Mezőlak, by the Japanese Bridgestone in Tatabánya, by the Italian A and A Világítás Bútor Zrt. in Paks, by the Korean Hankook in Bácsalmás. Not only were production plants created but also buildings with other functions. For example General Electric created a global service center in Budapest, Audi a logistics center in Győr, and Valeo-Auto Ltd. a R & D center in Veszprém. At the same time, the

enterprises purchased new production lines, new machines and equipment mostly (to an approximately 60 percent). The implemented developments served many purposes such as that they were able to meet the increasing demand (Jabil Circuit), to modernize production (Prinzhorn), to improve efficiency (Békés Pálinka Ltd.) and the quality of products (Borsodchem), to be able to start the serial manufacturing of new products (Philips), to introduce new technologies (Gép és Ferrotech Ltd.), and to reduce costs (General Electric) and widen capacities (Harmon- Becker).

The most severe consequence of the crisis was the reduction in the number of employees in the industry. The changes in employment were also part of the crisis prevention arrangements of the enterprises (cost reductions, entering new markets, change of product structure, investment and development reduction). According to the official statistical data, the number of people working in the Hungarian industry was reduced by more than 110,000 between 2008 and 2009 and by approximately 13,000 between 2012 and 2013. The decrease was quite uneven by county (Figure 6).



Source: Regional Statistical Yearbooks.

Figure 6. Changes in the number of industrial employees by counties in Hungary between 2008-2009 and 2012-2013.

Following the onset of the crisis, the number of redundancies grew rapidly and in parallel with it widened the number of unemployed. According to internet sources, 26,000 persons were dismissed from 113 companies between October 2008 and August 2009 (Kiss, 2012). Most of these were from car manufacturing and electronic companies. For example about 40 people from Opel, 300 people from Delphi, 160 people from Audi, 400 people from Sanmina, 400 people from Philips, 1,500 people from Suzuki, 1,500 people from Foxconn, 450 people from Tyco Electronics and 250 people from Bosch were sent away after the crisis broken out. These companies were mostly concentrated in Northern Transdanubia. In fact, this region reacted the most quickly to the 'breakdown' of the economy. In time, the crisis was therefore first manifested here. Later, the redundancies incrementally spread to enterprises in other parts of the country. As these operated as suppliers of Northern Transdanubian enterprises in the second or third round they were reached by the 'breeze of the crisis' with some delay. Due to the fall in sales the problems also occurred with suppliers in the car industry within a short time which was 45 days on average because this was the customary payment deadline (Somai, 2009). Other sources also supported the fact that the greatest part of the 2009 industrial reductions in the number of employees affected Central and Western Transdanubia (Leveleki, 2011, Szabó, 2010). It was often the commuters and the hired workforce that first became victim of the redundancies. It also happened that the enterprises reduced the number of employees in several steps. For example, Elcoteq dismissed 1,150 persons in January 2009 and then again 700 persons in August. 116 persons were dismissed from Perlos in November 2008 and 660 persons in December and then 500 persons were laid off again in January.

Amongst the branches, the number of employees decreased most (about 60 thousand) in the machinery industry (mainly in vehicle and electronics). Besides these, the decrease was relevant in the metal (14 thousand), wood, paper and printing industry (15 thousand), and in the rubber, plastic and non-metal mineral product manufacturing (9,000 people) and also in food processing (about 5,000 people). In the latter branch, the reduction in the number of employees speeded up in 2009 and the fall in demand as well as the moderation in consumption became to be felt in the food processing industry from then onwards. The second wave of the crisis did not only appear concentrated in branches but also according to regions. Within the machinery industry the computer and electrical industries were the most hit where the number of employees decreased by 16,000 between 2011 and 2014. As opposed to this, since 2010 the number of employees steadily increased in the



car industry. In 2012, the opening of the Mercedes factory also played a role in this as it created several thousand new workplaces in Bács-Kiskun county. The second wave did not hit the number of employees of chemical industry (particularly the rubber and plastic industry) severely as the former one, because the difficulties (less orders) of the electronics industry were offset by the increasing orders of car industry. Light industry and food processing saw only modest reduction to the extent of a few hundred people which can only be identified regionally with difficulties. The crisis of the electronics industry at the same time could be mainly tied to Komárom-Esztergom and Somogy counties where the subsidiaries of Nokia and Flextronics used to operate. These two examples also show that the number of employees or the volume of production in some counties depended to a great extent on the one or two more relevant mainly multinational companies in the area.

The reduction in the number of employees had a differential effect on the individual enterprises. For example, the number of employees changed in 62 percent of the inspected enterprises in the Northern Plain as 75 percent of the companies carried out a less than 30 percent reduction in the number of employees and only a few carried out reductions greater than this (Mező-Kovács, 2010). Even according to other research, the reduction in the number of employees was 25-30% (Antalóczy-Sass, 2010). This however meant a few or even more than a thousand dismissed persons depending on the size of the companies whose effect on society was therefore on different scales.

Besides the reduction in the number of employees, enterprises also reacted to the crisis by applying different ways of employment (such as atypical and part-time employment) which can also be seen in other countries (Kantor, 2009). The domestic and foreign enterprises likewise applied ways of atypical employment regardless of their size. There were businesses which introduced a four-day working week or sent their employees on unpaid holiday for a longer time or reduced the number of shifts or made the employees work a reduced working day of six hours. Using these solutions they strived to reduce actual redundancies. It was important for many enterprises to keep their more qualified and expert staff. Mass reduction in the number of employees mostly affected less qualified staff (Antalóczy-Sass, 2010, Leveleki, 2011).

## CONCLUSION

The Hungarian industry underwent radical transformation after 1989 and became significantly integrated into the global economy which did not only

mean advantages but also carried severe dangers especially during crises. The economic crisis that erupted in 2008 severely hampered its development. Other economic indicators also took an unfavorable turn. Not only did the number and composition of the industrial enterprises see marked changes but also the demography and operation of the enterprises. Fewer new enterprises were formed and the number of closed ones increased. The reasons were predominantly the same. Relocation was of a more modest extent than expected because companies with foreign participation did not leave the country in bulk. Partly, because of this the new spatial pattern of the Hungarian industry which became formed in the 1990s did not become transformed either. The northern part of Transdanubia formed the core area of the crisis. This region suffered first and most severely from the crisis as the enterprises located there were linked closely to the global economy. The crisis first became manifested in the car and electrics industries from the branches and later spread onto other branches because those were often the suppliers of the formerly mentioned sectors. The changes in the volume of production, export sales, and investment also support that the process of the crisis took a W shape. The improvement after the trough in 2008-2009 was followed by another lapse in 2012-2013. This second wave of recession had a much slighter effect on industry and industrial enterprises. Based upon the information gathered from different sources it can be stated that a lot of similarities can be found relative to the effect the crisis had on companies and to the strategies companies applied to manage the crisis (postponement of development-investment, relocation and reduction of production, reducing the number of employees, atypical employment, etc.) regardless of the differences between the companies due to their major features. All these can serve as a basis to be able to get to know more thoroughly the changes that took place in post-socialist countries because of the crisis. Regarding the future it is a very important task for Hungarian industrial politics to strengthen the diversification of the sector and moderate dependency as a new economic crisis can cause much more severe losses than the previous one and requires industrial enterprises to conduct different crisis management methods from traditional strategies.

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