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RE-INDUSTRIALISATION IN THE WORLD AND IN HUNGARY

Abstract: The global industrial division of labour has changed rapidly in recent years. Relocation activities have become particularly vigorous after 2000. Industry has quickly shifted from one country to another. In some countries (e.g. the US and in Western Europe), de-industrialisation has been dominant, while other countries have experienced a marked process of industrialisation. In the meantime, developing countries have increased their overall contribution to global industrial output and labour. Both traditional and new (or high-tech) industrial sectors have displayed high growth rates. The peripheries of Europe, including CEE countries, are characterised by re-industrialisation, although traditional industries are on the decline. In other words, industrial structure has also changed in this part of Europe, but industry as such continues to drive economic development. In these countries, foreign direct investment and international relocation have had a crucial impact on the relevant processes. The three-fold distinction between de-industrialisation, industrialisation and re-industrialisation can prove useful also when studying the case of one particular country. This paper focuses specifically on changes in the Hungarian economy. We will first define the key concept of (re-/de-)industrialisation in general terms and provide an overview of global trends. We then go on to show that from the mid-1990s more and more Hungarian regions have witnessed re-industrialisation processes, most significantly counties in Hungary's western regions. We will conclude that, regional differences notwithstanding, industry remains the key economic sector for the country's economic development.

Key words: industrialisation, re-industrialisation, relocation, de-industrialisation, industry, foreign direct investment, FDI.

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1. INTRODUCTION

In 2008, one of Nokia's production sites in Bochum, Germany, was moved to Nemeszsuk near Cluj-Napoca (Romania). By and large, this event fits into the pattern of relocation which has come to dominate Europe in recent decades. At the same time, this particular event does not only involve the eastward move of FDI, but also the possible emergence of a new industrial and technological centre and even, potentially, that of a new Eastern European growth pole.

It has been recently reported that Schaub Lorenz International, a German company, manufacturing plasma and LCD TVs moved its location from China to Nola in the south of Italy (Pressetext, 2008). A French company, Robust Plastik Assembling, manufacturing wireless phones moved back from China to Hungary (Hunya and Sass, 2006). These cases may well be regarded as examples of 'repatriation', i.e. as evidence for the changing direction of relocation.

That location trends are not unequivocal is also illustrated by two recently reported and somewhat contradictory news items. First, a significant downsizing of the German car industry, formerly the driving force of German industry, was forecasted involving a loss 150,000 jobs. It was predicted that a considerable number of car manufacturing sites (Volkswagen, Mercedes, BMW, Porsche, Opel) would be moved to Eastern Europe and Asia (Dudenhöffer, 2008). By contrast, this February *Spiegel* magazine already talked about the expected revival of German industry to be led by the sector of machine industry (Reiermann, 2008). Expert estimates were quoted according to which the creation of 300,000 new jobs was anticipated in Germany, one-third of which would be in industry. The highly innovative German manufacturing industry exports production and service packages as well as entire production chains to the US and delivers ready-for-use steel works and manufacturing lines to China and India. Industrial exports from Germany have gone up significantly in recent years. More than half of the output of such key industrial sectors as machinery, car and chemicals is sold abroad.

There can be no doubt that the global division of labour in industry has undergone major changes in recent years. The related trends of de-industrialisation and relocation continue to unfold today.

The notion of re-industrialisation has also appeared in the literature.[1] At the same time, few convincing explanations have been put forward as to what this concept is meant to stand for. Is it to cover the reversal of processes characteristic of industrial development in earlier times such as industrial decline and the relocation of factories and sectors to other areas? Or rather, is this concept

[1] The term 're-industrialisation' can be used to cover a more or less spontaneous development as well as one brought about by political intervention. This study focuses on the former kind of process.

intended to refer to the re-location of industrial activities into formerly abandoned areas, settlements and buildings? Also, what kinds of new industrial activities are involved? Could re-industrialisation even mean the revival of relocated or disappearing professions and skills? And if all of the above is relevant, what factors may have contributed to reversing earlier trends?

This paper aims to pick a way through this thicket by finding an answer to the question *what is re-industrialisation and which areas are most characterised by it.* This is not an easy task. First, because patterns of industrial activity continue to shift, and second, because the data available are incomplete and not always commensurable. For example, a lot depends on the choice of what point in time is used for benchmarking changes and also which geographical areas are selected for closer scrutiny.

The following analysis concentrates on *re-industrialisation.* We argue that re-industrialisation is one of the relevant processes in the global reshaping and development of industry. This particular process is defined, as any, by international developments as well as local conditions. No contradiction results, therefore, from the fact that various authors have pinpointed quite different features of this process because local circumstances may indeed be quite diverse. This paper will first define the concept of re-industrialisation and then survey global and Hungarian trends of re-industrialisation.

2. THE NOTION OF RE-INDUSTRIALISATION. SPATIAL PROCESSES OF RE-INDUSTRIALISATION

Deemed to be one of the characteristic processes of post-industrial transformation, *de-industrialisation* has attracted the most attention for decades. This term refers to the decreasing significance and share of industrial activities in the economy's overall structure and the falling number of jobs, in both relative and absolute terms, in industrial sectors. De-industrialisation is typically paralleled by the process of tertiarisation, i.e. the growth of the services sector. This development has been dominant in developed countries, although it has appeared in developing countries as well.

References to the process of *re-industrialisation* crop up with increasing frequency, however, especially in Western European literature from the mid-1980s onwards. The term can give rise to the impression that a familiar process, i.e. tertiarisation, had come to an end or been reversed. That is, as if industry had reclaimed its previously lost positions. That is not what is meant here, however.

In our view, re-industrialisation is a complex process consisting of the following components:

– owing to technological developments, new industrial sectors (producing info-communications devices) emerge. Statistical surveys assign some info-communications technologies (ICT) to the processing industry. Harking back to the recently-coined term 'new economy', this segment could be referred to as 'new industry'. Another part of ICT, i.e. information and communications services, are better classified as tertiary activities. (The meaning of the concept of information-based economy can of course be given a wider interpretation as well. This interpretation would cover all the new technologies used in other economic and industrial sectors precipitating the increasing physical and geographical fragmentation of economic and industrial activities. In other words, the processes at issue here significantly contribute to the spatial restructuring of economy and industry, see Csatári and Kanalas, 2003; Nagy, 2002; Jakobi, 2007);

– simultaneously, long-term structural changes continue to unfold. In the process, the positions of sectors generating larger added value improve at the expense of those producing smaller added value. In other words, vehicle industry, pharmaceutics, electronics and other sectors increasingly dominate the industrial structure. By contrast, mass producing light industries, iron and steel production, construction material production and even food processing are on the decline;

– economic/industrial restructuring include the drive towards the strengthening of more sophisticated activities, production of state-of-the-art high-tech goods and strategic components. Re-industrialisation crucially involves growing productivity based on the use of new technologies as well as the structural transformation of sectors, activities and products.

In sum, re-industrialisation involves the appearance of new sectors, activities and products in new locations. At the same time, re-industrialisation also refers to a significant structural transformation in the course of which traditional industries are closed down or downsized only to be replaced by other *industrial* activities.

Measuring the process of re-industrialisation raises the question of whether output or rather the number of jobs should be taken as the basis for comparison. Also, should one seek to measure absolute changes or the changes of relative positions in the industrial/economic structure? These are not merely technical issues. On the one hand, the loss of a large number of jobs, the closing of factories and the disappearance of entire industrial sectors pose a pressing social issue, even if a given country's overall indicators show growing employment. After all, it is not the same people and not at the same places who change jobs. On the other, industrial cultures can disappear from regions which may be bigger than a country. One of the explanations for the EU's special agricultural policy is that rural culture as such must be kept alive in the whole of Europe. But what about, we may ask, industrial culture? Should not the preservation of this culture

also be classified as a priority by the European Union? All this goes to show that jobs in industry and industrial employment are sensitive aspects of re-industrialisation – and these are crucial issues in the eyes of public opinion. At the same time, structural transformation in industry/economy is undoubtedly the most important means to development. (Increased productivity can also result from falling employment.) It is also true that sectors and products disappeared from economies in previous centuries as well. Why should we then hold onto sectors and products increasingly marginalised in national economies?

We believe that a choice between these two methodological approaches is not inevitable. We suggest a compromise. Accordingly, the following analysis will seek to bridge the gap between the employment-oriented and the production-oriented approaches.

Recent industrial developments have led to a new international division of labour. One way to characterise macro-regions of the world is to focus on changes in industry.

From a spatial point of view, these regions can be assigned to the following groups:

– the first type is characterised by falling industrial production and the migration of industry. These are economies marked by *de-industrialisation* and *industrial relocation***.** These economies have also witnessed a significant transformation of industrial structures. Traditional sectors with lower added value have been replaced by high-tech, high productivity industrial sectors producing higher added value and by the 'new industry'. It is not surprising that this type of region is mostly to be found in developed countries. These countries have seen a dramatic decrease of industrial jobs frequently paralleled by increasing industrial GDP. Tertiarisation has also been prominent with the result that the loss of industrial jobs has been offset by new employment opportunities in the tertiary sector. What is more, the economic performance of these countries has in fact significantly improved simultaneously with industrial relocation. Such de-industrialisation and industrial relocation began in the US during the 1960s, and in Western Europe during the 1980s, and especially increased in intensity around 2000;

– the second type comprises *re-industralising* regions and countries. These have experienced structural transformation of industry with a significant impact on the economy as a whole. New industrial sectors (not only in ICT) have appeared owing especially to FDI. The loss of traditional industrial employment opportunities has been compensated for by newly-emerging industrial activities. At the same time, slower tertiarisation led to falling levels of employment and growing unemployment. Industrial productivity has shown spectacular improvement often despite the fact that simpler components of high-tech industries with lower added value were located by foreign investors in these countries (e.g. assembly in car industry). Re-industrialisation is also characterised by a sectoral

and territorial concentration of industrial investments, at least when compared to former patterns of production. Thus re-industrialisation is often brought about by the activities of a few companies only. Such processes of re-industrialisation are typical of peripheral Western European countries (Ireland, Finland, Spain) and rapidly transforming Central and Eastern European countries (the Visegrád countries, Slovenia, Baltic countries);

– the third type becomes identified with other Eastern European countries (Russia, Romania, Bulgaria etc.), which have taken longer to overcome the economic and industrial crisis and to move from de-industrialisation towards re--industrialisation. Although re-industrialisation is also observable in these countries, it is too early to say how intensive this process will turn out to be and what kind of changes it will yield;

– the fourth type groups dynamically developing countries, such as China, countries in Southeast Asia, India, Latin America, which are undergoing a primary process of *industrialisation*. This involves the growth of traditional industrial sectors paralleled by the dynamic development of new industry and high-tech industrial activities. A significant number of industrial jobs have been created in these countries. At the same time, the share of industrial jobs in the total employment structure has been slowly decreasing even in these countries.

3. RELOCATION, INDUSTRIALISATION AND RE-INDUSTRIALISATION IN THE GLOBAL ECONOMY

Relocation, industrialisation and re-industrialisation are not clearly separable processes either in spatial or temporal terms. There are no pure paradigms. These processes have been unfolding simultaneously in a country or a region, sometimes even within one and the same sector. The grouping of characteristic regional types above can contribute, however, to clarifying the conceptual ambiguities surrounding the notion of re-industrialisation.

The volume of global re-structuring processes impacting on all macro-regions is well illustrated by figures from a selection of countries as summed up in table 1. The table headings also help to separate the region-types identified above. In some countries of the developed world, the number of industrial jobs and their share in the total workforce remained constant or began to fall considerably as early as the 1960s and 1970s. This group was joined by some countries of East Asia after 1990 (e.g. South Korea, see table 1). Former Communist countries also experienced a significant downsizing of industrial jobs after 1990. However, the number of industrial jobs began to increase in these countries once again, in some cases already from the mid-1990s, while in others with some

delay after the turn of the century.[2] The third type of region shows evidence of industrialisation. This includes Turkey at Europe's eastern boundary. However, similar processes, unfolding at roughly the same pace, have been observed in East Asia and Latin America as well. This has resulted in millions of new industrial jobs. These region-types are summarised in table 1 which highlights some typical cases.

Table 1. Industrial employment in some countries of the world (1000 people)

Country	1985	1995	2005	Change 1995–2005
De-industrialising countries				
Japan	20,250	21,670	17,750	–3,920
Germany	10,684	13,003	10,849	–2,154
United States	30,048	29,984	28,074	–1,910
United Kingdom	8,430	6,951	6,224	–727
South Korea	4,415	6,827	6,137	–690
France	6,768	5,782	5,514	–268
Switzerland	1,194	1,133	993	–140
Sweden	1,283	1,033	939	–94
*Re-industrialising countries**				
Spain	3,377	3,769	5,637	+1,868
Ireland	313	361	537	+176
Hungary	1,496	1,199	1,265	+66
Slovakia	...	835	859	+24
Finland	777	571	619	+48
Industrialising countries		1,990	2005	change 1990–2005
China		121,220	*130,480	+9,260
Indonesia		10,416	17,065	+6,649
Mexico		6,503	11,021	+4,518
Brazil		14,093	**17,757	+3,664
Turkey		3,599	5,452	+1,853

*2002, **2004.
Source: *OECD ALFS Database*; KSH (2004); ILO (2007).

[2] When re-industrialisation actually began depended on a number of factors. These included the pace of transition to a market economy, but also how significant traditional heavy industrial sectors used to be and how quickly they disintegrated.

The first group includes *de-industrialising regions*. Here we can also talk about the re-location of industrial activities to other countries (relocation). It was first the US to experience decreasing industrial employment. The share of jobs in manufacturing decreased here from a record high of 28% in 1965 to 10.8% in 2006. Even in the US, however, re-structuring involved in reality a process marked by peaks and troughs interspersed with periods of low-intensity recovery and recession. The number of industrial jobs remained approximately constant between 1970 and 1990 (Rowthorn and Ramaswamy, 1997), but decreased by 3 million people after 2000 (Bureau of Labor Statistics, 2008).

In Western Europe, the same development began later and was not as rapid as in the US. Among the EU-15 member states, the share of industry in total employment typically fell by 10–20% between 1970 and 2005. In absolute terms, more than 2 million industrial jobs were lost in Germany, 700,000 in the UK and 250,000 in France between 1995 and 2005. The difficulty of giving an unequivocal characterisation of de-industrialisation is well illustrated by the fact that, contrary to employment, the GDP share of industry has not decreased in overall economic output. This fact is to be attributed to growing productivity (Haahr, Hansen and Andersen, 2006). To summarise, sectors with lower added value and productivity have been replaced by more productive sectors in the economies of developed regions. Countries have profited from this development in both economic and societal terms. This remains true even if announcements of corporate decisions to relocate and cut industrial jobs regularly provoke a public outcry.

The CEE countries are located in between the first (de-industrialising) and third (industrialising) groups. These countries show typical signs of re-industrialisation which differ, however, from those identified in Western Europe. Here, traditional industrial jobs, which disappeared in the wake of the transition to a market economy, were not replaced by the growing demand for labour in the services sectors as was the case in Western Europe during the 1990s. At the same time, the resulting surplus of industrial labour capacities shaped labour markets. This has contributed decisively to the FDI-driven acceleration of re-industrialisation from the mid 1990s onwards (and later in Russia and the ex-Soviet republics too). The number of industrial employees began to grow in Hungary from 1996, in the Czech Republic and Slovakia from 2000 and in Poland from 2003. In some countries (the Czech Republic, Hungary), the turn of the century brought two–three years of stagnation or even a decrease in the number of industrial jobs. Data from 2006 confirm, however, that this was indeed only a passing phase. Similar developments have been observed in Ireland, on the Western periphery of the European Union, with the difference that here investments, mostly originating from the US, began to gather pace already in the early 1990s (Breathnach, 1998).

The movement from the West towards the East is corroborated not only by macro-level data (i.e. employment), but also by corporate figures. These show that the number of job losses due to industrial relocation is the highest in industrial rather than services sectors of Western European economies. Western European decrease was found to correlate with a parallel increase in Eastern Europe, especially in the industrial sectors of machinery and electrical machinery. At the same time, employment in low-tech sectors (food, textiles) went back in both groups of countries (Eurofound, 2006). It appears that quickly expanding production in Asian regions increasingly caters for demand in the latter sectors.

From the third group, we would like to pay special attention to a typical area of industrial relocation, namely the industrialising countries of East Asia. These are the so-called NIC-countries.[3] This terminology is somewhat simplistic insofar as these countries had industry also before the new wave of industrialisation, although those industrial sectors were typically traditional and their output was much smaller. At the same time, the expression well illustrates the differences between industrialisation and re-industrialisation. Taking the spatial division of labour into account, researchers distinguish several generations of industrialisation (NIC1: Taiwan, Singapore, Hong Kong, South Korea; NIC2: Malaysia, Thailand, Indonesia, the Philippines; NIC3: China, Vietnam). Each is associated with different levels of economic development (Probáld, 1998). The division into different generations also implies that these countries themselves have passed through different stages of industrialisation. Once again, however, it needs to be emphasized that industrial transformation has not been reached via a linear path even in these countries (Bernard and Ravenhill, 1995).

Japanese export of capital and the availability of labour have both played a large role in jump starting relevant developments in East Asia. These changes led in turn to the emergence of a trade triangle. At the multinational companies controlling industrial production in East Asia, the dependence on Japanese, Taiwanese and South Korean headquarters has been stronger than usual. The third pillar is Europe and the US which are the most important target areas of the exported products (Bernard and Ravenhill, 1995). No similar trade triangle has emerged in Central and Eastern Europe. The majority of exported products is directed back to Western Europe where the investors are based.

After having surveyed theories and the pertaining literature, let us take a look at available figures. We can observe the following. Relative shares of industrial activities can be somewhat misleading precisely because of the general increase in levels of employment. Rowthorn and Ramaswamy (1997), for example,

[3] Instead of the expression most commonly used – newly industrialised countries – we will be using the label 'industrialising' for these countries. This is to avoid the implication suggested by the former term that the relevant developments have come to an end. There is no evidence that this would be the case. Also, this helps us to avoid confusion with references to CEE countries, which may result from the minimal differences in terminology ('re-industrialising' vs 'newly industrialised').

compare de-industrialisation in Taiwan to the cases of Singapore and Hong Kong in the last thirty years, although more than 1.2 million new jobs were created between 1975 and 2005 (table 2). In South Korea, the share of industry in the total workforce remained constant, but this was actually made possible by the emergence of 2 million new industrial jobs. In the Philippines, decreasing industrial contribution to employment involved a doubling of industrial employment opportunities. In Malaysia, Thailand and Indonesia changing relative shares were paralleled by absolute growth.

Table 2. Changes in industrial employment in selected countries of East Asia (1975–2005)

Country		Changes in the number of manufacturing jobs (thousand people)
Japan		–2,469
Taiwan	NIC1	1,208
Singapore	NIC1	266
Hong Kong	NIC1	–514
South Korea	NIC1	2,029
Malaysia	NIC2	1,823
Thailand	NIC2	4,271
Indonesia	NIC2	8,711
Philippines	NIC2	1,393

Source: based on Timmer and de Vries (2007).

Looking at the region as a whole one finds a significant change of positions between 1975 and 2005. Around 2.5 million jobs disappeared in Japan's industry and 0.5 million in Hong Kong. By contrast, a total of 19.7 million industrial jobs were created in other countries of the region. That is to say, for every job opportunity lost eight new ones opened in other countries belonging to this group. The fact that relative shares of industry in total employment remained constant in some countries also points to a significant growth of the tertiary sector as well.

4. RE-INDUSTRIALISATION IN HUNGARY

Industry became less important during the last years of the state-planned economy, although economic policies of Communist governments had always given special priority to industrial activities in earlier times. This loss in importance was immediately followed by a serious crisis in the first years of system

change. Large companies fell apart. Many of them went bankrupt and were closed down. By 1994, the size of the industrial workforce had decreased by 40% and the contribution of industrial sectors to the GDP went back as well. In 1992, industrial output was only three-quarters of its level in 1989 (thus equalling the industrial output of 1975). *De-industrialisation* dominated in this period. This left its mark on the spatial structure of the economy in the years following the system change.

From the mid 1990s onwards, industry began to play a decisive role in accelerating economic growth (although de-industrialisation continued to exist in some areas such as Budapest and Borsod-Abaúj-Zemplén county). In short, economic growth was driven by *re-industrialisation.* Industry was developing at a faster pace than the whole of the economy and hence at a faster pace too than the tertiary sector and agriculture. FDI crucially contributed to this development. Re-industrialisation resulted in the creation of new jobs. By 2000, the number of industrial employees had increased by 100 thousand people. Rapid economic development in the second half of the 1990s was also driven by industry. The role of industry in the increase of GDP was more significant than its share in the GDP. This was especially true outside the capital. One-third of GDP growth between 1994 and 2001 was generated by industrial sectors (and this goes up to 40% if one excludes the capital). An increasing share of investments targeted industrial sectors (1994: 28%, 2000: 36%). Re-industrialisation was particularly important in counties of the Northern Transdanubia. At the same time, even in other regions of the country (excluding Budapest) industry played a more important role than its significance in the region's economic structure would have allowed us to expect.

After 2000, the rate of growth has decreased mainly due to the impact of general trends in the world economy. FDI began to fall, industry lost some of its former positions and the number of employees fell to its level in the mid-1990s. At the same time, a significant structural transformation took place in industry. Some labour-intensive, low added value sectors began to shrink (light industry, some segments of the electronics sector, cable production etc.) as a result of increasing relocation away from Hungary (e.g. IBM, Marc, Flextronics). Simultaneously, productivity grew at an unprecedented rate and the relative shares of capital-intensive and higher added value activities went up. Following the years of recession after 2000, industry began to drive economic growth once again (although this growth did not equal that of former times). In sum, industry returned to its growth trajectory, even if this was not as steep as at the end of the 1990s. The relative contribution of industry to the GDP in 2005 equals that of 1994 (25%). Manufacturing continues to remain one of the most dynamics sectors of the Hungarian economy and is also responsible for most exports.

Consequently, industrial output and its contribution to overall economic performance changed both in terms of production and investments. Different stages of development can be identified (figure 1): *recession (general de-industrialisation)* (1989–1992), *stabilisation and investments* (1993–1996), *industrial boom (general re-industrialisation)* (1997–2000), *regress* (2001–2002), *low-intensity growth* (after 2003). The industrial dynamics of these stages was to a large extent determined by developments in the world economy, privatisation and intensifying competition. The patterns of movement of international companies also differed in these stages.

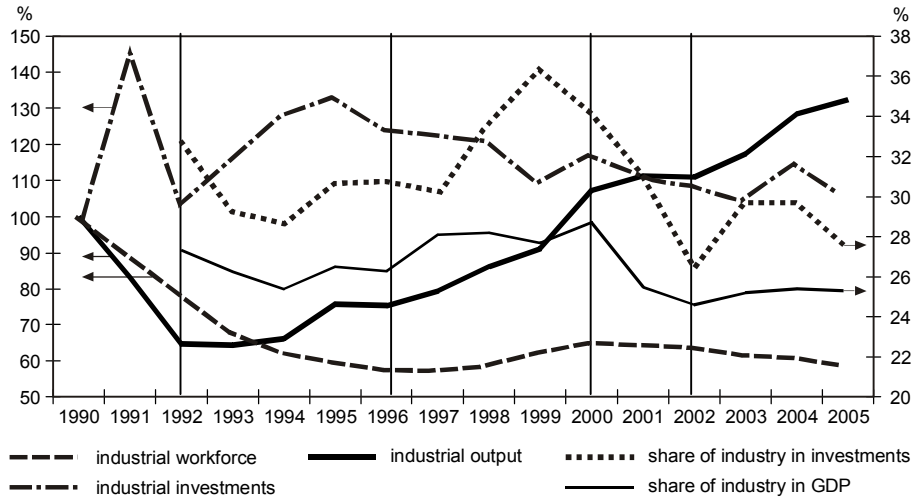

Fig. 1. Stages of industrial development in Hungary

Source: KSH. N.B.: the figures for industrial employees, production and investments on the scale on the left-hand side show changes relative to the 1990 baseline. The scale on the right shows changes of the share of industry in GDP and investments

Re-industrialisation has transformed the internal structure of industry. Material and energy-intensive sectors of heavy industry, which had been promoted by the state-planned economy, lost their former positions. Following a brief spell of recovery, labour-intensive sectors of light industry also began to shrink after 2000. Owing mainly to FDI, the driving sectors of the Hungarian industry became export-oriented sectors of machinery which employed new high productivity technologies. These sectors were formerly absent from the Hungarian economy (e.g. manufacturing of motor-vehicles, electrical machinery and telecommunications industries). In some counties, as much as two-thirds of the GDP is generated by machinery (e.g. Komárom-Esztergom, Győr-Moson-Sopron). With a handful of exceptions (Budapest, Tolna, Csongrád counties),

however, machinery became the most important sector everywhere (Rédei, Jakobi and Jeney, 2002; Kukely, 2004). As a consequence, the industrial structures of regions became quite similar. In contrast to the phase of de-industrialisation, now every region (excepting Southern Transdanubia and the Southern Great Plain) shows a structure more or less identical with the structure of industry in the country as a whole (table 3). However, similar structural features are coupled with diverse levels of output and varying penetration of foreign capital in these regions.

Table 3. Correlation between national and regional industrial structures on the basis of industrial GDP

Region	1994	2005
Central Hungary	0.91	0.93
Central Transdanubia	0.80	0.92
Western Transdanubia	0.84	0.93
Southern Transdanubia	0.43	0.57
Northern Hungary	0.82	0.98
Northern Great Plain	0.91	0.98
Southern Great Plain	0.82	0.84

Source: based on data by KSH.

4.1. Spatial Consequences of Re-industrialisation

The spatial structure of industry has undergone significant changes after system change (Barta, 2002; Kiss É., 2002; Nemes Nagy, 1999). A completely new structure emerged entirely replacing what existed before. The centre of industrial production shifted towards the west of the country. Spatial inequalities grew (figure 2).

Budapest's concentration of industry has decreased. The capital's economic growth has been driven by tertiary sectors. At the same time, Budapest's impact can be felt in a growing area. Due to metropolisation, a new division of labour has emerged between the capital and surrounding areas. The interaction is significantly more intense than it used to be. Industrial production 'migrates' increasingly to the agglomeration zone encircling the capital. This is where new industrial investments are concentrated.

Industry played a decisive role in determining regional differences elsewhere too. The most dynamically developing counties of the Northern Transdanubia owe their success primarily to industrial growth. At the same time, the relative backwardness of regions struggling with the problems of structural transformation (i.e. mainly the disappearance of former industrial activities) has increased.

Industrial-type regions[4] occupied the extremes of rankings in terms of development during the 1990s (Kiss J., 1998). However, both in Northern Hungary and the Northern Great Plain industry began to develop after the turn of the century. New industrial investments were carried out. Meanwhile, the disadvantage of regions of Southern Hungary has become more and more pronounced (table 4).

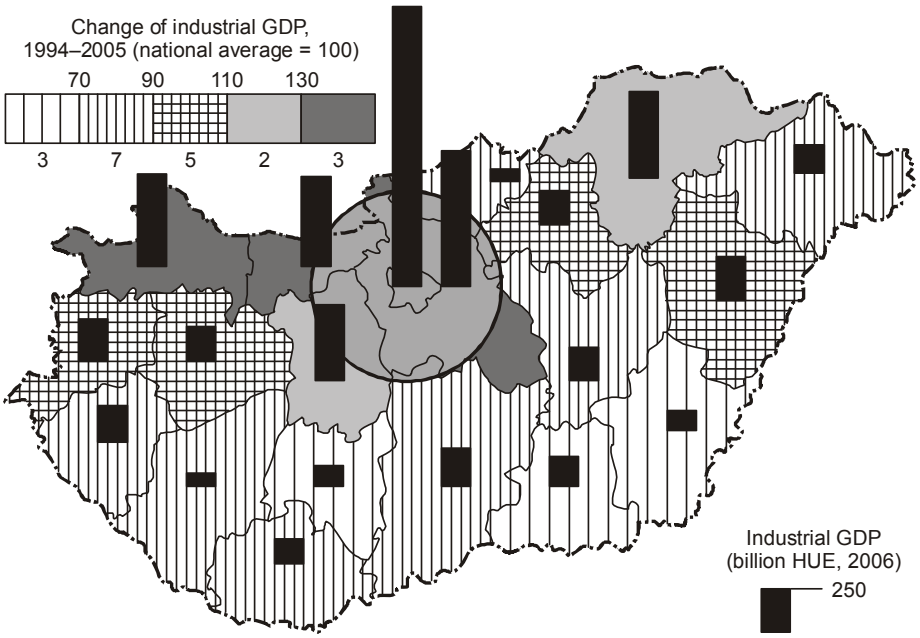

Fig. 2: Spatial differences in added value of industrial production
Source: based on data by KSH. N.B.: 250 HUF equals approx. 1 EUR

Table 4. Regional concentration of industrial gross value added (%)

Specification	Region	1994	2000	2005
Developed	Central Hungary, Western Transdanubia, Central Transdanubia	60.5	66.9	68.5
'Catching up'	Northern Hungary, Northern Great Plain	21.6	18.5	19.8
'Lagging behind'	Southern Transdanubia, Southern Great Plain	17.9	14.6	11.7
Total		100.0	100.0	100.0

Source: based on data by KSH.

[4] We label counties 'industrial' where more than one-third of the total workforce is employed in industrial sectors.

Table 5. Counties by various industrial indicators

Driving sectors*	Industrial exports	Industrial FDI	Medium- and high-tech industry**	Productivity	Added value	Ranking by all indicators
Komárom-Esztergom	Komárom-Esztergom	Budapest	Budapest	Komárom-Esztergom	Budapest	Komárom-Esztergom
Győr-Moson-Sopron	Budapest	Győr-Moson-Sopron	Pest	Győr-Moson-Sopron	Pest	Budapest
Budapest	Győr-Moson-Sopron	Pest	Komárom-Esztergom	Fejér	Komárom-Esztergom	Győr-Moson-Sopron
Pest	Pest	Komárom-Esztergom	Győr-Moson-Sopron	Borsod-Abaúj-Zemplén	Győr-Moson-Sopron	Pest
Borsod-Abaúj-Zemplén	Borsod-Abaúj-Zemplén	Fejér	Borsod-Abaúj-Zemplén	Zala	Borsod-Abaúj-Zemplén	Borsod-Abaúj-Zemplén

* Manufacture of office machinery and computers; electrical machinery and apparatus n.e.c.; radio, television and communication equipment and apparatus; motor-vehicles, trailers and semi-trailers.

** Manufacture of chemicals, chemical products and man-made fibres; machinery and equipment n.e.c.; manufacture of office machinery and computers; electrical machinery and apparatus n.e.c.; radio, television and communication equipment and apparatus; motor-vehicles, trailers and semi-trailers.

Source: on the basis of KSH figures.

Sectors playing a decisive role in re-industrialisation concentrated export-oriented industrial activities of high productivity. These sectors have also been preferred by FDI. The pattern of distribution of such activities clearly underscores the country's North-South divide. Counties with the highest industrial output are concentrated in northern and central parts of the country (table 5).

In addition to the absolute dimensions of industrial production, significant territorial differences could also be observed in terms of relative rates of industrial development (table 6).

Table 6. Counties by growth rates of industrial production

1990–1995*	1995–2000	2000–2005	1990–2005
Vas	Fejér	Komárom-Esztergom	Komárom-Esztergom
Fejér	Győr-Moson-Sopron	Heves	Fejér
Somogy	Komárom-Esztergom	Borsod-Abaúj-Zemplén	Vas
Zala	Somogy	Pest	Győr-Moson-Sopron
Komárom-Esztergom	Baranya	Jász-Nagykun-Szolnok	Somogy
Tolna	Zala	Zala	Zala
Hajdú-Bihar	Vas	Bács-Kiskun	Pest
Pest	Pest	Veszprém	Heves
Bács-Kiskun	Szabolcs-Szatmár-Bereg	Hajdú-Bihar	Hajdú-Bihar
Győr-Moson-Sopron	Hajdú-Bihar	Budapest	Jász-Nagykun-Szolnok

* Between 1990 and 1995 industrial production fell with the exception of Vas and Fejér counties. The decrease was smaller in the counties listed.

Source: on the basis of data by KSH and Nemes Nagy (1999).

Breaking down the data into five year periods yields a quite different picture of these developments. This is partly to be attributed to the fact that even a single large investment can make a significant impact on the development of production in a county. In addition, the rate of growth is higher in counties where industrial sectors play a less important role. Only three counties have been among the most dynamically growing counties in all three periods (Komárom-Esztergom, Pest, Zala) and there are only four (Békés, Csongrád, Nógrád, Szabolcs-Szatmár-Bereg) which have never appeared in the top half of the ranking of counties by the rate of their industrial growth. This implies that investors have kept moving on in the search of new factors (e.g. labour) and new areas have also joined the process of re-industrialisation. This is a positive development.

Further, different territorial units have reached the stage of re-industrialisation at different times: Győr-Moson-Sopron and Fejér counties in the mid 1990s, Komárom-Esztergom around 2000, Borsod-Abaúj-Zemplén only

after 2003. After the turn of the century, a number of counties have made it to the top half of the list which were not previously registered there. These include some which had formerly had significant concentrations of traditional industry, but underwent large-scale and lasting de-industrialisation in the 1990s. In other words, re-industrialisation has recently begun to expand in space and led to structural changes in the target regions.

At the same time, growth rates stand for considerably differing volumes of output. Industrial development of the last fifteen years was crucially shaped by the 'industrial boom' of the late 1990s. It follows that those counties stand out in terms of growth which experienced rapid growth during this time (although in the case of Komárom-Esztergom the years after 2000 were the most decisive). Less spectacular but continuous growth characterised counties in the capital's proximity (Pest, Heves, Jász-Nagykun-Szolnok counties) from the end of the 1990s. Among the counties with little industry under the state-planned economy, the positions of Vas and Zala close to the western border have changed significantly.[5] At the same time, some counties which were strongholds of industry in the state-planned economy are yet to recover. For example, Veszprém or Nógrád have fallen much behind their earlier positions. Despite some new investments, these counties are still marked by de-industrialisation.

4.2. Foreign Direct Investment: The Driving Force of Re-industrialisation

Post-transition economic growth and re-industrialisation have been driven by FDI. This remains the case even today (Barta and Kukely, 2007). FDI has played a major role in overcoming the comprehensive crisis brought about by economic transformation. It has enabled enduring and rapid growth and made a significant contribution to economic modernisation. By now, FDI has deeply penetrated the Hungarian economy. It has become a decisive factor in the ownership, sectoral, employment and territorial structure of the economy and energised technological development. The achievements of the Hungarian economy and its improving performance are closely tied up with the activities of foreign companies in the country. In the fifteen years after system change, Hungary's economic growth has been determined by export-oriented and investment-driven sectors, and most importantly by new sectors of manufacturing.

By 2005, more than 60 billion US$ of FDI had entered Hungary. The significance of foreign enterprises is outstandingly high even in an international comparison (a similar situation is only to be found in Ireland). Foreign enter-

[5] The county of Somogy has claimed top positions in the list. Nevertheless, Somogy can hardly be described as an industrialised county. It owes its favourable positions to the fact that the headquarters of Flextronics, a company with four production sites scattered across the country, is located here. In fact, Somogy is the least industrialised county in terms of its contribution to industrial GDP.

prises produce nearly half of gross added value and more than 80% of exports. Approximately half of FDI has targeted industrial sectors, primarily manufacturing. Companies in foreign ownership are responsible for 70% of the country's manufacturing output. Since 2002, an increasing share of FDI has been attracted by the tertiary sector. As a result, although still decisive, the significance of manufacturing has decreased somewhat in terms of employment, sales and corporate capitalisation.

FDI has crucially impacted on the spatial structure of the economy as well (figure 3). Although tertiary investments have dominated in Budapest, still one-third of all industrial FDI has been concentrated in the region of Central Hungary. In all other regions, manufacturing has been the main target of foreign investments. In the regions of Western and Central Transdanubia, as much as 90% of FDI has been attracted by manufacturing. In Northern Hungary and the Southern Great Plain, this was accompanied by significant investments in the energy sector as well. There are no regions outside the capital where industrial investments would have amount to less than three-quarters of all FDI.

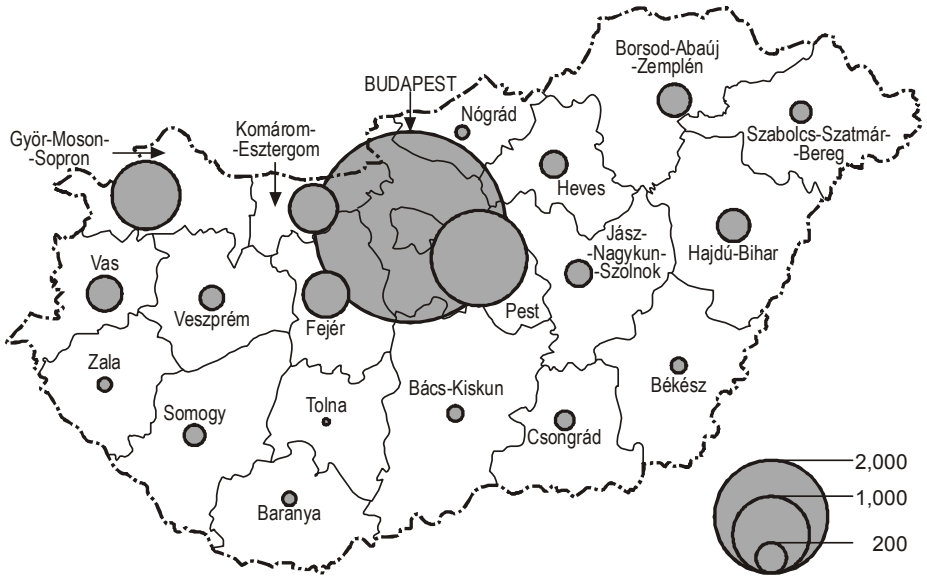

Fig. 3. Territorial structure of FDI in 2005 (1,000 million HUF)
Source: *Statistical Yearbook of Hungary* (2006). 250 HUF equals approx. 1 EUR

It is generally true that foreign investors have preferred industrial sectors in all regions outside the capital. At the same time, the region of Central Hungary continues to concentrate 40% of manufacturing companies in foreign ownership. The three most developed regions have located four-fifth of all FDI in the manufacturing sector. During the last decade, the positions of these regions have

even improved somewhat (table 8). In other words, the FDI-generated re-industrialisation process has further increased regional differences. Among regions outside the capital, especially counties in the Northern Transdanubia have benefited from foreign investments into manufacturing. The capitalisation of companies with Hungarian locations in these regions doubles that of the other four regions outside the capital.

Table 7. Changes in the regional structure of foreign-owned manufacturing companies (%)

Region	Share of foreign capital in total equity capital			Net revenue			Workforce		
	1995	2000	2005	1995	2000	2005	1995	2000	2005
Central Hungary	48	39	34	42	28	36	37	30	31
Northern Transdanubia	31	38	46	33	48	41	32	35	35
4 less developed regions	22	23	20	25	24	22	31	36	34
3 most developed regions	78	77	80	75	76	78	69	64	66

Source: KSH Statinfo. For enterprises with at least 10% of foreign ownership.

4.3. The Role of Relocation in Re-industrialisation

Relocation has played a decisive role in re-industrialisation involving the transfer of industrial activities from developed countries to Hungary. Hungary is one of the winners of this relocation movement. The most important reason for relocation is low production costs. This is a particularly significant factor in highly labour intense areas of production and in the production of easily exportable goods. Hungary as a new member state of the Europe Union is located close to European core areas and has a stable economic and societal system. This has proved increasingly attractive for foreign companies. Many companies have carried out sizable investments in Hungary, while closing down or at least downsizing their production in other regions of Europe. In many cases, the investment was made to cater for expanding demand of a certain product. A considerable share of Hungarian production did not focus on domestic demand, but rather was directly exported to Western European markets. In addition to new investments, additional investments of already existing companies have also significantly contributed to re-industrialisation. However, apart from capacity building, there has also been an increasing shift towards higher added value in the range of goods produced. Moreover, the relocation of production away from Hungary has also begun after 2000. The migration of production away from

Hungary has largely affected activities with lower added value (not only in traditional industries, but also in sectors of the new industry).[6] That is to say, the dominant trend of re-industrialisation is paralleled by a less intensive process of de-industrialisation as well. The joint outcome of these two developments is a technological transformation and a massive change in production structures. This promotes economic and industrial development and production with higher added value.

These findings demonstrate that the case of Hungary is a typical example of re-industrialisation where the relevant processes first appear in a spatially concentrated fashion and then gradually spread out at subsequent stages of economic growth.

5. CONCLUSION

This study has sought to emphasise that re-industrialisation does by no means signal a new trend in economic development. It has investigated the continuing significance of ongoing industrial processes which, owing to their innovativeness and spatial impact, have once again focused attention on industry.

Depending on its actual content, re-industrialisation points to two kinds of major change:

– technological development leads to the emergence of new sectors (ICT). These form part of manufacturing. However, ICT as a new technology also penetrates other (traditional) sectors of industry and the economy and catalyses innovative processes in those areas as well. (Thus the two-faced nature of ICT, which is both a services and a manufacturing sector, poses a special problem for statisticians. Several proposals have been made to cope with this issue.)[7] Innovative industrial activities continue to make a decisive impact on economic growth in developed countries;

– industry itself has undergone a process of re-structuring. De-industrialisation results in the disappearance of traditional industrial sectors producing low added value. These are replaced by high-tech or other high productivity sectors. In comparison with earlier structural changes in the economy, it is a novel feature that these recent developments have been driven by multinational

[6] The number of employees in the textile, leather and shoe industry decreased by 50 thousand people between 2000 and 2005. The share of FDI fell dramatically in these sectors as well.

[7] In the revised ISIC and NACE classifications statistical figures for information and communication are listed as a separate economic sector. This includes both producing and service activities. These had been previously assigned to manufacturing; Transport, storage and telecommunications; real estate, renting and business activities; and other sectors.

companies. Thanks to their foreign investments, formerly non-existent and/or high-tech, high productivity sectors are located in economies of less developed countries with increasing frequency.

It should also be noted that the processes we have described here never take place in an entirely 'pure' form. De-industrialisation, relocation, the investments of innovative new industry and the industrial investments of multinational companies everywhere appear simultaneously and in parallel – always complementing one another and sometimes with opposing effect. The spatial types of industry are determined by the most dominant trends. In the developed world, industry is shrinking but the importance of innovative sectors continues to remain high. In CEE countries, located at the boundary of the developed and developing world, the oversized, insufficiently competitive industry could not cope with international competition after system change. At the same time, this very industry has become an attractive target for FDI coming from the developed world. Industry is still present in industrialising regions (NICs). Innovative industrial sectors as well as traditional sectors continue to grow there.

In closing, it should also be noted that re-industrialisation is perhaps not even the right term to cover the processes described in this study. This is because it is not the case that industrialisation would have come to an end and is now showing signs of recovery once again. Nor can we talk about the reversal of an earlier trend. Rather, what is at issue is a complex process involving new and innovative industrial development, on the one hand, and the sectoral and spatial restructuring of industry, on the other.

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