Industrial Districts and Cities in Central Europe

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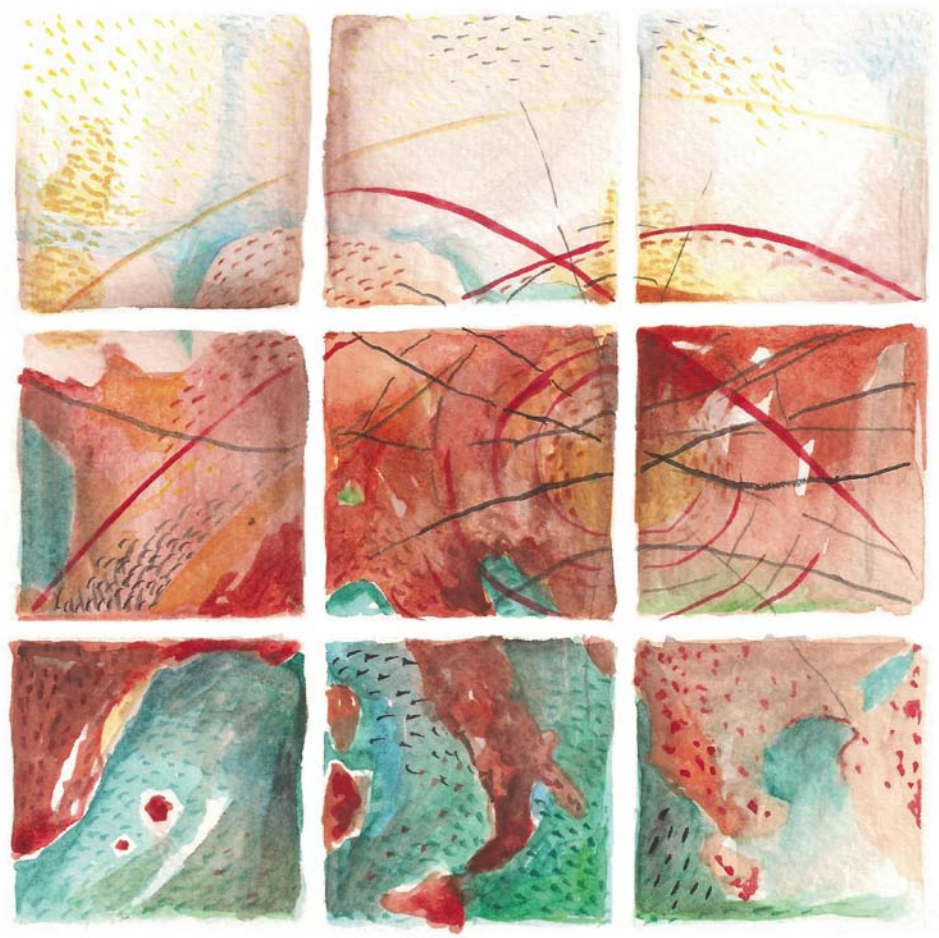

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MONOGRAPHIES OF THE "GYŐR AUTOMOTIVE INDUSTRIAL DISTRICT AS THE NEW TREND AND MEANS OF SPATIAL DEVELOPMENT" RESEARCH NO. 6.

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CONTENTS

Research Programme of the Győr Automotive District

JÁNOS RECHNITZER

The research on the spatial structure of society has been strengthened throughout the last 30 years in Hungary. The institutional framework of the new branch of studies called regional science has been established, thus, it has a broad base in higher education and research, its embedding in scientific life and its international relationships, as well as its human resources, are widespread reaching from Doctoral Schools to qualifications awarded by the Hungarian Academy of Sciences.

The history of new branch of studies began in Győr when a research group of the Hungarian Academy of Science was established here, then an Institute was founded in the city (1986) and it went on in the early 90ies at the legal predecessor of the Széchenyi István University. In the first phase a separate major, later on an independent Master course was offered by the University. From 2004 on the Doctoral School started its work and in the second phase (from the beginning of the 2010ies) independent research programmes were started. These programmes were influenced by the genius loci influenced, since the scientific profile of the University was strictly linked to the automotive industry and the research of traffic systems, thus, it naturally welcomed and required the spatial economic analysis of these sectors. In the framework of a research finished in 2012 (TÁMOP-4.2.1./B-09/KONV-2010-0003 "Mobility and environment: Environmental researches in the Central and Western Hungarian region) we reviewed the location factors of the automotive industry in Central and Eastern Europe, looking for Hungarian and regional positions and analyzing the specificities, structural and operational factors of supplier networks (Rechnitzer – Smahó 2012a; 2012b). In the research group these results raised the following scientific questions: how a district or region based on automotive industry is organized, how its economic, social, institutional and networking specificities can be described, and how its development can be influenced, formed by different tools.

The scientific questions were elaborated in Research Programme nr. TÁMOP-4.2.2.A-11/1/KONV-2012-0010 The Győr Automotive District, as the direction and tool of regional development, and after the successful project the analyses were started in the fall of 2012, presumably they are going to be finished by the fall of 2014[1] .

1 The results of this research are going to be published in six volumes in Hungarian language and two volumes in English. The present volume is a collection of theoretical research results.

Development Trend of a Hungarian City

Győr and its region[2] belong to the most dynamically developing regions of Hungary. It is city with county rights, and the capital of Győr-Moson-Sopron County. The city is located 120 km distance from Budapest and Vienna, while it is situated 80 km from the Slovak capital Bratislava. Győr and its region has highway, railroad and water transport connections to the national and neighboring (Vienna, Bratislava) capitals. There are two international airports (Vienna, Bratislava) and two ports in the vicinity of the city (Győr-Gönyű, Komárno).

The city has excellent transport connections. Its is located in two (IV, VII.) European transport corridors. The main roads determining the economic life of the Northern-Transdanubian region start from or pass by this city. Győr has a regional airport (Győr-Pér) and port (Győr-Gönyű).

The economic trauma of the transition found the city in a relatively beneficial situation: due to its favorable geographic location and multifold economic structure the city has undergone significant developments in the 90ies. Győr became a favored destination for foreign investments; the appearance of new industry diversified further the city's economic structure. As suppliers for Audi global companies settled in the city, however, national and international SMEs on advanced technological level are present as well.

Győr is one of the centers of secondary schooling in the Transdanubia. The College of Transportation and Telecommunication Technology (Közlekedési és Távközlési Műszaki Főiskola) was established in 1977 and the range of courses offered has been increasingly widened, in 2002 Széchenyi István University was established. Besides the determining technical studies the university offers economic, legal, musical and health science programmes, 22 BA/BSc and 18 MA/MSc study programmes and doctoral programmes in three Doctoral Schools. The number of university students approaches 17,000.

In comparisons with the other cities of the Western-Transdanubian region (Sopron, Szombathely, Nagykanizsa, Zalaegerszeg) Győr's leading role is unambiguous; its provisioning indicators are almost in every aspect higher than in other cities with county rights or cities in the region hosting higher education institutions. Only in the aspect of proportion of leading professors and in case of the members of the Hungarian Academy of Sciences' public body (researches with scientific qualifications) is it lagging behind Sopron, however, Győr's primacy is outstanding considering every factor connected to innovations and its indicators are similar to other Hungarian regional centers, development poles.

We can state clearly that Győr has caught up to the traditional Hungarian regional centers, its strong, always renewing economic potential triggered the establishment of new higher education and R&D systems. This is supported by the fact that institutions organizing and forming practical innovation, as well as the ones representing new technologies are in large number present in the city.

2 When speaking of region we understand the city's catchment area within a radius of 60–100 km. The focal cities are the following: Komárom, Tatabánya, Veszprém, Pápa, Kapuvár, Mosonmagyaróvár, and beyond the state border Dunajská Streda and Komárno. A more precise delineation of the region follows in the first phase of the analysis.

The goal of Győr's development is to create a regional center, as sub-center of the Vienna-Bratislava-Budapest Central and Eastern European development region, in which – through the improving establishment of the institutions supporting knowledge – industrial and technologic conditions can be renewed. It is an explicit goal that the institutions of the city shall be able to assist the integration of the Northern Transdanubian region into a new European development area, and this integration shall be accomplished by a development, which sustains urban environment and enhances its capacities in order to provide attractive living conditions for the people living in both the center and the region.

The direction of the urban policy placing innovation into the focal point of development is that the conditions and milieu of industry's and services' renewal shall be established. The knowledge base, higher education background and R&D potential concentrated in the city – thoroughly linked to this sector – are providing favorable conditions. Through the results of development policies such a growth center can be established in the Northern Transdanubian region that participate in the network of European regional centers, and is able to induce the further dynamic development of the whole region.

Győr is a traditional industrial center, which was able to modernize its economic structure in the 90ies by itself. The formerly determining automotive industrial background was renewed by the fact that the German Audi AG owned Audi Hungaria Motor Ltd. established an engine factory plant in the city in 1994. Today the plant produces two million motor vehicle engines, and soon 100 thousand motor vehicles are going to be assembled, and thereby even more modern industrial and service operators will settle in the city and the region. Győr has been establishing gradually its regional service functions, among others university level education, health care, commerce and trade, advanced business and technological services, cultural and sporting activities.

New focal points have been set for the future development of the city. The first one is that the city has to be considered a part of the Vienna-Bratislava-Győr development region, where new types of network cooperation may be established. Through its modern logistic base, institutional background and concentrating knowledge base, improving higher education and R&D base only Győr is in the position to integrate the Northern Transdanubian region, its economy and settlement network into the new European development area.

The second key aspect is that the local and regional economy, with improving economic connections, voices its new demands for human capital. Therefore, the amelioration of the operational background – vocational training and higher education, as well as the research-development-innovation – is unavoidable.

The third focus is that the demand for transformation, catching up of the urban environment to the level of the European regional centers, has risen, and new elements (development of cultural activities) have emerged to improve the quality of life.

The city has reached a new innovation path, whose development directions can be determined as follows:

- Establishment of knowledge bases and institutional background for knowledge;
- Development of new services supporting the technological base;
- Widening the scale of regional cooperation;
- Establishing new elements to the urban milieu and environment.

Related to the above four sub systems the development is realized in key projects, which do interact to a significant degree and therefore they provide a mutual synergy for the future of the city.

Directions of Research and Planned Results

The European development trends (Territorial Agenda 2020), the Hungarian development directions (New Széchenyi Plan, Széll Kálmán Plan 1 and 2, Hungarian Growth Plan, National Spatial Development Concept 2014–2020), and the processes generated by the city and its region provide an opportunity for the fundamental research and exploration of the operation and factors forming the development and spatial impacts of a development oriented Hungarian – mainly automotive – center. Through the analysis of a successful and forward-looking – automotive industrial district, which has a wide set of functions and regional connections, the research might offer new approaches to the theory and practice of both national and international development policies.

The research is conducted on two levels, thus, the goals are completed in these dimensions.

The theoretical goal is the thorough and professional description of the theoretical model of a development center and industrial district, as new systems forming and developing the region. These analyses need to present all specificities, which prevail in the Central and Eastern European region considering the economic structure, situation of the urban network, as well as the tools and institutions of urban and spatial development.

The theoretical research needs to find answers for the development questions of growth poles: changes of their inner contents, how their establishment and development can be motivated, how development levels can be determined; to what factors the transition between a growth pole and an industrial district can be traced back and what international specificities can be identified.

It was shown by the former researches that the State may have a role in the organization of poles, and later districts. The analysis of these interventions forms part also the theoretical section. The question may raise what regulation models can be applied, where the role of local level steps in, where the boundaries of governance type interventions appear, however the institutional base needs to be researched as well.

In the European urban network the urban structure of the Central and Eastern European macro-region needs to be reviewed, looking for development identities and differences. The situation of industry based macro-centers in the Central and Eastern European urban network needs to be analyzed too, their specificities need to be compared, their competitiveness needs to be assessed; those industrial potentials need to be determined, which might alter their development in the present or the future (in the next 10-15 years).

Among the theoretical researches we analyze the relationship between economic development and growth poles, industrial districts, their interdependence and mutual determinisms. We design models on the factors determining urban development, their dependencies, the system of their internal relations and depict interdependencies. By the

use of these models we intend to elaborate development scenarios, so that the impacts of the interventions determined in other segments of the research, their results or their adverse impacts can be detected in an exact manner.

Thus, taking the example of a Hungarian city, the researches model potential directions and space of action for (automotive) industry oriented development. This – by suggesting new solutions and techniques– might widen the radius of development policy. As expected scientific result we need to mention here the presentation of territorial cooperation's (urban, regional governance) new institutional models, whose utilization might prevail from public services through novel types of use of local resources to the institutional framework of planning and development. The research elaborated several regional cooperation models, which might increase the effectiveness of (especially the territorial and urban) development and thereby the more effective use of fragmented resources and institutions.

The analyses might form a scientific base for the programming period 2014–2020, by the exploration of new territorial organizational structures and the description of their operation and development orientation. Our research results might make findings and recommendations considering the whole region, its internal (intraregional), domestic and cross border (interregional) relationships, and – with regard to both methodology and content – it could support planning.

The studies published in this volume release only a few results of this theoretical section. When planning a research we sketch a wide range of goals, then, by analyses we verify or reject them, or we even might correct their direction. Well, the hereby published studies have partially deepened our assumptions, partially alleviated our expectations.

The second phase of research is the phase of empirical analyses, which are city and region specific, and the results might verify the assumptions of the theoretical models: whether a real industrial district was established, how it follows the existing Western and Eastern European structures, and if all this is verified, what interventions and developments could contribute to the success of the local actors.

In the Hungarian regional science – so far – there were no complex fundamental researches conducted to analyze growth poles and the structure and regional impacts of industrial macro centers built on them. Thus, the programme should also serve the elaborate analyzing methods for these spatial structures and – as a consequence of its testing – research models applicable for other large cities as well.

In this block we need to mention researches aiming at the exploration of Győr and its area. Historic research of the modern, industrial Győr and the analysis of the Development Processes over the course of the 20th Century have been rather mosaic like, than systematic. Although knowledge is already available on the factors forming the historic trends of the city and its region, deeper, more ambitious explorations have not been designed yet. Historic roots of the factors influencing internal resources (e.g. the structure of knowledge production and transfer, techniques and mediators of industrial and economic culture, or the character and drivers of renewal incentive behaviors) are not fully known yet. Lacking these the "Győr model" cannot be understood and the directions and methods to design it cannot be elaborated.

We attach great importance to the research of the city's and its region's social structure. Throughout the last 30 years no in-depth socio structural analyses have been conducted in this region, so, our research does not only fulfill a need, but – supported by the appropriate surveys and researches – it presents the structural cross-section of a large city and its region, which can quickly and effectively react to economic and social challenges.

The second goal is the exploration and scientific description of the Győr Automotive District, evaluation of its resources, determination of the city's and its area's system of relations, demarcation of the cooperation's organizational, institutional and financial framework and eventually the elaboration of the key points of a new type – regional level – planning and development system.

In this cross cutting research we need to highlight those researches, which aim at the delineation of the industrial district, covering economic functions, fields of social and public services and the region-forming role of education and formation institutions. We are expecting new results both methodologically and relating to the actual region, since any level of analyses can serve the purpose of widening the toolbox of science, however, they need to be able to be applied successfully in case of other centers and their regions.

The third goal of the empirical research is the testing of regional level research and educational cooperation; then, based on these, the establishment of their contentual and institutional framework. The analyses make it possible that relevant regional actors of research, higher education, local government, economic, professional and scientific organizations within and across national borders continually communicate and generate new co-operations. This way we need to strengthen the evolving social science research network, encourage the local institutions of economic and social researches, and their integration into the national and international scientific initiatives.

Growth Poles/Centres in Development Policy

LÁSZLÓ FARAGÓ

KULCSSZAVAK: growth pole, growth centre, development policy, sectoral strategies, spatial development

ABSTRACT: The present study discusses the experiences of previous applications of the growth pole strategy. He mentions top-down planning, financing of the public sector and (primarily) economic investments concentrated in a relatively small number of metropolitan areas (urban industrial development) among the dominant features of the doctrine. The implementation of the pole strategy transforms the spatial structure of the country and the affected regions. It results in decentralisation at the level of the nation and initially, concentration at the level of regions. It is rarely able to ameliorate the situation of lagging rural areas, however, success is more likely in the case of the development of metropolitan areas disposing of sufficient potentials. The multi-level strategy realised in various degrees and with varying economic content produces a more balanced spatial structure. The study focuses on the Hungarian (mostly failed) examples of its implementation and outlines some possibilities of its adaptation in the current situation.

Introduction

A doctrine of development policy and spatial development, the theory of growth poles reached the peak of its popularity in the 1960s and 1970s and was adopted worldwide, only to constitute the subject of severe criticism in the 1980s. From the late 1990s, similar spatial economic development theories and programmes emerged under different names and in different forms. The application of growth poles and other policies relying on similar principles was witnessed in Europe (polycentric urban development, cluster development, new industrial districts). The economic foundations of the programme of poles emerged in new economic geography as well. One of the reasons if its revival was that metropolitan areas, the driving forces of economic development became the focus of developments once more.

The various *integrated* strategies and regional economic development programmes, which are based on similar hypotheses and development options belong to the same family. These types of spatial economic development tools exploit the positive agglomeration effects and the advantages of sectoral and spatial co-operations. The primary objective of such development policies is the promotion of economic development and

the resulting amelioration of regional well-being. One of the criteria of growth poles and related theories is that *developments are concentrated on a restricted number of locations and "propulsive" leading industrial sectors which will exert a multiplier effect on the regional economy later on.*

Professional literature applied several synonymous notions in various eras and countries which relied on similar economic and spatial development hypotheses and involved similar interventions: growth point, growth centre, growth area, development pole, development centre, new towns, local production systems, development axes, polycentric urban development, technopolitan development, poles of excellence, cluster development and more recently, competitiveness poles. For instance, new towns and centres constructed around large cities in the United Kingdom are also among the planned growth poles (Parr 1999/a), or the polycentric spatial development strategy becoming increasingly widespread in Europe also implies the designation of the network of development centres (metropolitan areas).

The Four Major Phases of the Life-Cycle of the Growth Pole Strategy[1]

(1) Following the theory's precedents applied during the first half of the 20th century (e.g. Tennessee Valley), the explicit theory of poles emerged in the 1950s (Perroux 1950, 1955), and was regarded as the major instrument of spatial development in the middle years of the 1960s, the golden era of general economic development and planning, *a strategy to be generally applied in the most diverse (developed and developing) countries and regions* (Kuklinski 1978; Parr 1999/a). It was especially widely used in regions struggling with various economic problems (France, United Kingdom, USA, Canada, etc.).

(2) From the second half of the 1960s until the first years of the 1970s, the application of the strategy became more and more widespread. It was applied in several advanced (Austria, Belgium, France, Great-Britain, Spain, USA, etc.) and developing countries (Bolivia, India, Peru, Venezuela, etc.). This strategy contributed to the creation of new industrial districts and towns in several countries (such as Australia, Brazil, Great-Britain). It constituted the dominant trend of *regional economic planning* during this period. The implementation of the strategy involved state intervention for the most part. Planning was dominated by the comprehensive rational approach (Faragó 1995, 112.). Successful examples of implementation could be found worldwide (the French counterweight metropolises were transformed into competitive metropolitan areas), and in other cases, the desired objectives were not attained, and finally, by the end of the 1970s, most countries had abandoned the strategy entirely.

1 I am not going to discuss the French classical example in details since it is discussed in the study of Ildikó Egyed in the framework of the present project, a shortened version of which is published in the present volume. For further details see Egyed 2009, 2012 and 2013.

(3) According to the bulk of the retrospective evaluations prepared in the 1980s, top-down growth-pole strategies are unable to promote regional economic development. One of the deficiencies of the theory was that no *minimum requirements of adaptability were determined*. Experience demonstrated that *if too many centres were developed in a given country, they failed to produce the anticipated results.* This mistake was committed particularly frequently in countries where the policy served the amelioration of the situation of lagging areas. State funding was not targeted at the restricted number of the most eligible areas, investments were "spread like butter on bread", which meant that the desirable outcomes were not achieved. In several cases, in designated poles in lagging areas and their immediate environment, no self-sustaining processes were induced, therefore regional funding had to be maintained in the long run at an unchanged rate, or in the absence of funding, regional economic growth could no longer be guaranteed. In several countries, the growth of poles was evaluated as a phenomenon that impacted the situation of the rest of the region's settlements in a negative way (washback effect), and it was assumed that the application of a different policy would have been more efficient. Contrary to the hypotheses, the majority of upstream (subcontractor) and downstream (sales) linkages *were not established in the local or regional space* (OECD 2001). Permanent, concrete results were detected in districts where large, modern new industrial complexes were constructed in metropolitan regions which were able to profit from a wide circle of subcontractors. (This is true in the case of the region of Győr, and the pursuit of this path will likely produce further benefits.) The application of the growth pole/centre theory in itself does not necessarily lead to success in lagging areas, however, through the utilisation of previous experiences and by combining it with other theories, success might be achieved in areas where the economic foundations of growth exist. From the 1980s, intensifying neoliberal discourse promoted market processes and bottom-up initiatives much more than large-scale national spatial development programmes.

(4) The growth pole/centre theory and practice returned from the second half of the 1990s in other forms, and the foundations of the theory which stand the test of time were seeked in order to avoid the failures of practical application. Consensus was achieved in that the growth pole strategy did not provide a remedy for a large variety of territorial problems and was far from being a universal panacea, however, through a thorough analysis of the committed mistakes it was possible to determine the elements of the theory which stood the test of time, and, once being adopted in an appropriate manner and placed in a territorial context, its utilisation could be an option. During the first decade of the 21st century, several cluster development policies, polycentric and multipolar development theories, industrial districts, and competitiveness poles serving reindustrialisation were based upon the same presumptions, and similar modes of intervention were recommended. With the development of growth poles/centres, the objective was to achieve a more balanced, multipolar economic development once more. The theory and practice re-emerged in new EU member states. (The case of Hungary will be presented later; the Romanian example is discussed by Mutățea 2013; the Greek example is analysed by Christofakis 2011.)

The criteria of the (Planning) Doctrine/Strategy of Growth Poles/Centres

In classical literature, the term *growth pole* designates a preferred sector or product (chain). Initially, the founder of francophone regional science, François Perroux (1950, 1955) imagined his model in an abstract classical space-neutral economic space (pôle de croissance) and he only integrated territorial aspects in his theory later on (1988). Growth does not appear everywhere simultanously; it appears at points or poles of growth with varying intensity; spreading along various channels and producing various overall effects on the entire economy (Parr 1999/a, 1197. cites Perroux's book written in 1955). Perroux primarily focussed on the diffusion of economic effects between various industrial sectors in the 1950s and not so much on the explicit territorial impacts. The development of a national economy is the function of the development of key industrial sectors which are concentrated in poles. Territorial (geographical, regional, urban) aspects will only be studied in detail much later (e.g. Boudeville 1966; Perroux 1988). Boudeville (1966) argued that the clusterisation of industry was a spatial phenomenon, it occurred in concrete urban areas. Economic intervention involves concrete actions to be implemented in certain locations of the geographical space and it is the combination of these two which constitutes the attributes of growth poles. In seeking the fundamental features of the theory, one might ask whether economic interventions occurring in centres (cities) without producing spatial effects can be labelled as growth poles or they only serve the development of a given city (or settlement network at best).

The policy of poles, as a public policy is based on the discovery (experience) that the *natural development of the economy is concentrated in specific points in space* (localised investments), and in the availability of sufficient conditions, it is going to intensify and its effects will be felt in the larger economic and geographical space. If this process is launched through public intervention (top-down planning) in an area (space, sector) where the market would fail to operate in a spontaneous manner, territorial development will be induced which is likely to contribute to the development of the entire national economy. Such types of growth poles are not developed spontaneously, on a market basis; they are planned and supported. The inclusion of planning, the use of public resources, the role of the state are also among the basic attributes of growth poles. Localisation is not a zero sum game, territorial intervention induces a new development which would have never been realised in its absence. The implementation of the pole policy and strategy transforms the spatial structure of the region, the country and the settlement network as well. Pole creation is similar to an acupuncture treatment (as opposed to the metaphor of "buttered bread"). It is not the whole body that is covered with pins; interventions occur only in designated spots, the body is stimulated only in areas where the desired effects can be achieved, therefore, the intervention does not only improve the condition of the given area, but produces changes in other areas (organs) as well.

The logic of intervention is based upon the presumption that industrial *development can be generated* through external support in a few designated poles (sectors, metropolitan

areas) which dispose of sufficient potentials, and that this development will automatically launch the development of the surrounding region as well. The existence of several of these poles/centres may serve the economic development of the entire country. The objective of growth, development and competitiveness poles alike is to induce territorial economic development. Currently, enhancing competitiveness is among the minimum criteria of new investments. Attaining competitiveness supposes achieving a critical mass in one of the targeted segments of the economy which is able to ensure international visibility at the same time. This requirement cannot be satisfied at each level and in each pole regardless of size.

The *sine qua non* of the development of poles is the availability of social and productive infrastructural conditions in the wider sense. Public investments are targeted primarily at the improvement of infrastructural deficiencies in the wider sense and the necessary developments. The basic criterion of the development of poles is the concentrated availability and the fullest possible exploitation of these factors. The higher the ranking of the settlement in the hierarchic system in which such a programme is realised, the greater the chances of the successful development of more complex and advanced services. The second requirement is the territorial concentration of economic activity and firms in multiple sectors (steel industry, car production, etc.), which is the pre-condition of internal (e.g. economies of scale) and external economies (agglomeration effects). The development of the growth pole results in a favourable transformation of the region's spatial structure from the aspect of competitiveness (Wilson 1964). This apparently contradicts the original theory of Perroux, according to which the hinterland may also profit from the development of the pole. On one hand, the allocation of capacities within the region is a realistic opportunity, moreover, it is highly beneficial if the circle of subcontractors are located within the region. On the other hand, if the centre of an area/region develops, it will be able to provide an increasing number of jobs and services to the wider area which facilitates a better exploitation of the region's assets. For this to be realised, accessibility must be guaranteed. Once the conditions are sufficiently developed and the investors searching for a location for their investments discern the concentration and agglomeration advantages, further development will occur on a market basis. If an urban area is no longer deemed attractive by investors due to bottleneck resources (e.g. the lack of infrastructure or qualified labour force), then public investments will have to target their elimination. Cooperation and related investments must be accorded priority in the case of economic stimulation in order to enhance efficiency and competitiveness.

A basic question of the strategy is intraregional: the relationship between the pole city and its area (region). An automatic spillover, spread effect was anticipated ("spillover" Myrdal 1957: "spreads", Hirschman 1958: "trickling-down effect"). That is, the resulting multiplier effect in the hinterland of the pole which augments the incomes of households, and due to which firms enjoy the benefits of external economies and new markets, which, in turn, contributes to the growth of the pole. This impact can generally be measured in the immediate proximity of poles and their catchment area (functional urban area). In more remote areas, poles initially serve as a magnet, and the positive impact will be felt in their own area to a lesser extent or only later. Poles will become the target areas of migra-

tion and will not prevent the outward migration from rural areas and the devaluation of these areas. Instead, they will contribute to increasing interregional disparities. The agglomeration and other external economic effects are so intense in the poles that often, further economic decentralisation will produce no additional benefits within the region (Parr 1999/b). Nevertheless, regional poles may moderate the migration of the population to metropolises or capital cities and increase the economic performance of a region, which, in turn, produces a more balanced national spatial structure and this in itself may be regarded as a positive result. During the elaboration of the strategy, the moderation of "backwash" (Myrdal 1957) or polarisation effects (Hirschman 1958) is a priority, i.e. to prevent the flow of the factors of production to more rapidly growing new pole areas, and the new pole from draining its environment (the relationship between Budapest and more remote areas of Pest county), and the further intensification of existing interregional disparities. However, each intervention targeting this objective founded upon the arguments of classical economics reduces the efficiency of the original intervention and the exploitation of the growth potential in the new poles. From the point of view of economics, concentrated growth and the depopulation of peripheries is not an unfavourable process, but one boosting competitiveness. From territorial aspects (equality of chances, cohesion), the objective might be to achieve more balanced territorial development.

In most countries, the growth pole strategy has become the programme of developing. lagging areas and moderating territorial inequalities. The question whether the pole strategy can be successfully applied in regions characterised with an outdated economic structure, massive outward migration, weak development/financing opportunities and where negative effects mutually strengthen each other must be carefully analysed. On the basis of previous experiences, it can be demonstrated that in lagging, severely disadvantaged areas, peripheral regions, only those projects were successful which did not promote the well-being of the entire lagging region but where interventions were concentrated on designated centres with the full exploitation of strengths and opportunities, accompanied by infrastructural development and the amelioration of the opportunities of mobility. It was not the labour force which accompanied the jobs, instead, both were implanted where they could function in the most efficient way (e.g. the development of Central-Scotland in the middle years of the 1960s), therefore, a sustainable economic-territorial structure could be developed. External funding (the reallocation of capital between regions) stimulated the movement of labour force within the region (commuting, moving). Labour force became easier and cheaper to mobilise within the region than if it had been required to move to other regions (Hoover 1971). This practice moderated interregional disparities, yet it produced concentration within the regions.

The growth pole strategy, due to its nature, ever since its initial applications, has been considered to be a *decentralisation* policy/planning instrument and an alternative to traditional macroeconomic economic development instruments. At the same time, it must also be clarified that it refers to *an intervention concentrated at a territorial (regional) level*, and urban regions were its primary beneficiaries. In Western Europe, the policy contributed to metropolis-based regional development in the long run as well. This specific feature is similar to polycentric development theory applied during the past two decades. This may

also imply *national-scale decentralisation, (it is about developing several centres/poles), however, at the level of the region, investments are concentrated in poles/centres, i.e. cities disposing of sufficient potentials*. This implies an efficiency-based exploitation of the available assets. During planned decentralisation, the minimum required size, available infrastructure, qualified labour force and the possible connections with advanced metropolises must be taken into account in the development of new centres. However, too close proximity must also be avoided in order to serve effective deconcentration, decentralisation instead of suburbanisation. For instance, in England, pole-type new towns were built approximately 50 kms from large cities (London, Liverpool, Birmingham). Parr (2003) connects polycentric development to metropolitan regions where new centres (poles) are situated at a less than one-hour drive from the core metropolis. (In Hungary, the settlements of the inner urban ring around Budapest are in a similar situation. The proximity of Budapest is a significant driving force of development in their case.) Therefore, the minimum requirements of the realisation of the growth pole programme are often lacking in provincial (not metropolitan) areas. The development of new centres became a priority only in cases when negative externalities dominated in metropolitan centres and the agglomeration advantages were inferior to those.

In several countries, the pole policy was implemented not only in the immediate proximity of metropolitan regions or within them, but in more remote areas as well, e.g. in France, 8 counterweight metropolises with sufficient potentials were designated at a distance of 300–1000 kms from Paris. Experience shows that the development of poles in remote rural areas increased transportation demands between urban areas, and their primary partners, of course, were the metropolises (capital cities). Therefore, this strategy, far from moderating the primacy of the prominent cities in the urban hierarchy, contributed to strengthening it, and the newcomers (or rather latecomers) of development policy were unable to decrease their disadvantages and become real competitors of traditional metropolises.

The professional and political question surrounding the pole program is whether planned poles should be *natural* growth centres (e.g. large cities of Hungary), or instead, they should be created to counterbalance those. Currently, this question is particularly relevant since according to new economic geography, the natural development trend of the economy is concentration. Experience showed that the best results could be achieved through exploitation of the existing assets (e.g. historical cities, former industrial centres) and the widening of opportunities. The realisation of a new industrial investment or a new centre in rural areas often remained an enclave with no organic integration to their environment. It is advisable to base the new sectors and firms upon the available opportunities. In several countries, quasi-pole programmes were realised in rural areas as well: United Kingdom: "key village concept" (Cloke 1979); Sweden: the integration of public services to a national system (Bylund 1972); Germany: development of rural centres (Krumme 1972); development of growth poles in India and Kenya (Johnson 1970; Richardson – Richardson 1975 etc). Efficient integrated rural developments are primarily concentrated on the agricultural sector and public services. These are complementery in nature and serve as an alternatives to classical pole strategies.

Parr (1999/b) called attention to the importance of territorial configuration. It is worth noting that growth poles can be created on various levels of the settlement hierarchy. *Only a strategy realised on multiple levels, differing scales and with diverse economic content may eliminate the previously mentioned contradiction.* In Romania for instance, during the programming cycle of 2007–2013, growth poles were established at the level below Bucharest, and below them, urban development poles were created. In the meantime, in Hungary, the position of the five large cities, and later on, the county seats was envisaged similarly. It is important to select an adequate number of towns of a sufficient size at various levels of the settlement network (both at the regional and national level). The optimisation of the total net benefit of the investment in poles must be targeted, during which magnitude and frequency are determined simultaneously (Parr 1999/b). The objective of political decision-makers is generally to cover the entire area (e.g. to create poles in each region of the country, and to ensure that their accessibility does not surpass a given threshold value). If poles are smaller in size, their frequency will be higher, but they will represent an inferior level in the hierarchy. The designation of several small poles seems more beneficial, however, the possibilities of increasing their frequency are restricted by the exploitation of advantages associated with concentration. In determining the location, the concrete cities, economic (efficiency, competitiveness) and spatial development aspects must be weighed simultanously.

The development of growth centres as a *territorial policy instrument* is generally targeted directly at job creation. On the contrary, developments based on knowledge and R&D generally produce less new jobs than labour-intensive developments, and they often replace outdated technologies and existing firms in peripheral areas, thus their impact on employment can even be negative. The new modern developments in a pole frequently lead to the closing of lower-level, traditional technology-based firms, even in cases where the operation of labour-intensive, less advanced technology-based firms would be acceptable at lower hierarchical levels, particularly if those firms satisfy the demands on the regional market.

Nowadays, economic processes are shaped by multiple simultaneous impacts, and development policy should also be based upon the combination of various theories. Specialisation in production, territorial concentration, the spatial agglomeration of economic activities, spatial clusterisation are fundamentally determined by the following groups of factors:

1. The *spatial concentration* of firms (selection of the same location), i.e. agglomeration improves the *external economies* of production (positive externalities), enhances competitiveness, which produces internal benefits for the firm as well as national economic (micro- and macroeconomic) advantages (see Marshall 1890/1920; Myrdal 1957; Hirschman 1958; Lengyel – Rechnitzer 2004, etc.).
2. The growth of firms and their specialisation increases the volume of production, and the *growing economies of scale* automatically enhances *internal economies* (see e.g. Krugman 2003 and the results of new economic geography in general).
3. The *coign of vantage* originating from the existing status quo, the established centres enjoy competitive advantages due to the already realised economies of scale and their existing capacities (Florida 2008; Barabási 2003, etc.).

The practical *problems* associated with planning and implementation of pole strategies:
- Lack of coherence between the receptive area and the development concept (e.g. planning modern massive industrial investments in rural areas may encounter serious obstacles);
- The diffusion of intraregional and interregional growth is not guaranteed;
- Each type of economic activity was supported without distinction (the financing of inappropriate economic activities failed to produce the desirable outcomes);
- Lack of concentration (too many activities were supported in too many poles), the critical mass is not available;
- Non-implementability (lack of material and other conditions);
- Irreality (the effects were not sufficiently analysed);
- The internal logic was not appropriate (e.g. inconsistent system of objectives);
- The strategy was not adapted to local conditions and the risks of implementation were high;
- An unclear definition of the time factor (when do effects emerge and what is their duration);
- Political conflict arose (e.g. between traditional and new centres in determining who will receive the support; between the city and its surrounding area).

Growth Pole or/and Centre?

The question in this subtitle refers to the dilemma whether development policies included in this category involve traditional economic development interventions in the economic space (which are realised in concrete geographical space), or whether they are targeted at the economic development of a given territory (city district, region) which will entail the development of the entire national economy. In the approach of Egyed (2013) the question is posed in the following manner "Spatial development or industrial policy,". The growth pole as a localisation can be conceived as a laboratory (incubator), where concrete experiments of economic development are performed.

Literature makes a slight distinction between growth poles and centres and policies constructed on their basis, however, the two essentially refer to the same idea, namely that their implementation occurs through state intervention. The primary difference is that while the former involves a sectoral approach and its main objective is economic development, the latter is more spatial policy-oriented. The difference resembles that observed in the case of industrial and spatial clusters. In the designation of poles, what matters besides the position of centres in relation to each other is their location in economic and geographical space.

Originally, Perroux (1955) placed the emphasis on the integration and agglomeration of vertical chains: a growth poles is the *spatial agglomeration of interrelated industrial firms*. Later on, emphasis shifted towards the spatial approach which became the instrument of spatial economic planning.

Growth pole programmes follow a fundamentally sectoral approach and are generally constructed upon a single product or vertical industrial chain (e.g. Airbus-type large-scale projects, automotive cluster). The main question is the availability of sufficient economic potentials and their further development. The question of location, the availability of sufficient conditions and spatial development aspects are of secondary importance. Naturally, several sectoral developments may result in the creation of a multipolar territorial system, but may also contribute to the further increase of territorial disparities. The development of growth centres is basically a territorial policy intervention. The objective is to create a polycentric, multipolar spatial structure which contributes to the economic development of less advanced urban areas. In this case, the most significant task is the selection of appropriate locations succeeded by local assets-based developments.

Polycentric and Multipolar Development

The foundation of this guiding principle of development and territorial policy is that a multipolar and multi-centred spatial structure is more efficient, just and sustainable than a monocentric one. A balanced spatial structure can be achieved through decentralisation based on the principle of subsidiarity. Peripheries must be included in the development through their reliance on dynamic centres. From the aspect of the country, polycentric development and the evasion of a monocentric spatial structure would be highly beneficial. In order to counterbalance industrial concentration, concentrated decentralisation should be implemented. To the practice of concentrated decentralisation, i.e. the development of centres (poles) on the basis of the criteria of efficiency and economies of scale accessibility and availability to all must be added.

The term "multipolar" refers to similar developments, yet it seeks to avoid this title and prefers to use the term "networking" instead.

Hungarian Precedents

A potential new Hungarian Pole Programme has significant Hungarian forerunners which may provide useful lessons for us. It is quite noteworthy that irrespective of the political organisation of the era, the Hungarian practice was in harmony with international trends. This raises the chance of efficient application of the growth-pole strategy as a development tool in countries with diverse development levels and political organisation.

The Socialist industrialisation of the 1950s can also be regarded as a *proto industrial growth pole* strategy, which transforms both the structure of the economy and the settlement network. The sectors and settlements of new developments were selected on the basis of their suitability for industrial development and were realised in the form of central investments. The construction of dwelling places for workers of industrial complexes involved massive settlement developments as well. Consequently, significant industrial towns and districts were constructed (Komló – coal mining, Ajka – alumina

production, Kazincbarcika – chemical industry, Dunaújváros – metallurgical industry and steel industry, etc.). The majority of the rural population migrated to these new centres or commuted to these areas to find a job. Therefore, the voluntary socialist industrialisation of the 1950s, – irrespective of its political intention – resembles the growth pole strategy in its instruments and results which was realised all over the world during that era.

In the 1960s, so-called "counterweight poles" were selected and developed in several countries (e.g. in France, Australia) in order to counterbalance the capital city and the few metropolises. Following this example, the moderation of the predominant role of the capital city and strengthening the most significant rural centres were the main targets in Hungary as well. In practice, this policy was a total failure, since it did not serve the interests of Budapest to enter into competition with the five large cities. The rest of the county seats did not promote this policy either, those who were left out ended up in intense lobbying activity in favour of a "more balanced development". *The development of each city with a county status based on the same grounds and upon similar principles resulted in downward leveling.*

The National Settlement Network Development Concept (OTK) of 1971 targeted the creation of a national network of centres. Sufficiently large development (growth) centres were designated on three different levels where the economic and public service development programmes were concentrated. The four levels of the settlement network including the capital city and the size of the centres were in perfect harmony with international trends (cf. Parr 1999/b, 1257). Conscious economic development seldom occurred in practice, instead, a concentrated development of public services was realised on the basis of the OTK (1971). Industrial firms located in the capital city received funding – in a similar way to the French decentralisation premium – which chose to move to rural areas. This did not imply economic decentralisation, since it was mostly the highly polluting, outdated technology-based sites which were implanted in rural areas, and this process upheld the advantages of the capital city.

Growth poles reappeared under the name of regional poles in an explicit way in the National Spatial Development Concept passed in 2005 and the preparatory works of the planned National Development Plan as well.

The newly announced pole programme was initially designed to include only the five large cities, but later on the capital city also joined and several smaller poles were also selected. As a named complex programme, it was not included in the New Hungary Development Plan, only those programmes were implemented which could be included in the individual operational programmes. The "Accredited Innovation Cluster" project served this objective as well.

The pole programme is not mentioned in current planning documents as a top-priority strategy. The document titled "National Development 2030" – with a slight exaggeration – envisages a single Budapest region which has an inner and an outer urban ring.

The realisation of a quasi pole programme and the construction of the Győr Automotive Cluster (GYJK) may occur in the framework of a Partnership Agreement and its operational programmes. In the planning of the detailed programme, the changing frameworks and the determining factors must also be taken into account. From 2014

onwards, regional (structural and cohesion) policy no longer has its individual system of objectives, thematic goals are derived from the common EU objectives (EU 2020). Among the top priority thematic objectives of the Community Strategic Framework (CSF) are research, the promotion of innovation and technological development; improving the availability, utilisation and quality of information and communication technologies and supporting SMEs. These all serve the objectives of a pole programme based on industrial development. However, no single classical territorial objective is present among these goals. This is slightly remedied by the fact that (large) cities are accorded a dominant role in the realisation of the goals, therefore poles can be referred to by their name. During the planning of the GYJK-strategy, the following factors must be taken into account:

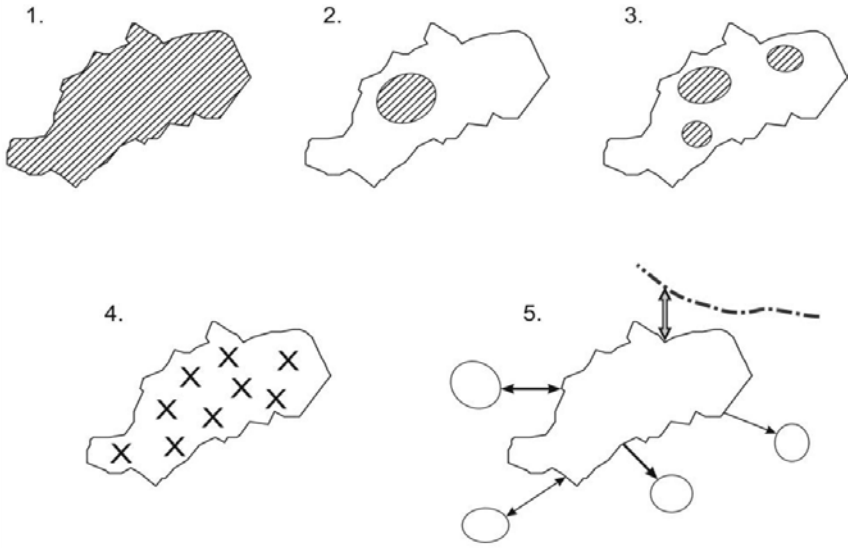
- Only those developments based on *integrated* investment strategies may receive funding which follow an acutely *strategic* and *comprehensive* approach (Par 1 of Article 7 of ERDF regulation).
- Multi-fund financing is possible (Figure 3), this enables the inclusion of physical investments and human developments in a single programme.
- The integrated measures have new instruments (ITI, CLLD).
- Member states must name those cities where integrated sustainable urban planning receives Cohesion Policy funding, therefore Győr must be listed among the named cities.

It is not sufficient to prepare a good strategic plan, new strategic management must also be elaborated which is adapted to the system of requirements of "new governance". Modern planning in the wider sense which integrated the management and control of the implementation of plans at the same time must meet the requirements of modern programming. The identity of the owner and executor of the GYJK-programme must also be clarified. Gov. Decree No. 1181/2013. (IV. 5.) enables the Municipality of Győr as a city with county rights to become the (strategic) owner of the GYJK development package and implement the project as a beneficiary.

The GYJK-programme must be compatible with the "place based" approach, i.e. local based development. (This may contribute to eliminating a previously encountered deficiency of growth pole strategies.) The new instruments of the developments are integrated territorial investments (ITI) and community-led local developments (CLLD). In the majority of ITIs, only those urban project packages are included which require decision-making several years in advance and whose implementation must be decentralised. The GYJK-programme must also be transformed into such a programme. One of its possible advantages is that project selection will be based on negotiation and funding will be fixed in advance and decentralised.

CLLD-programmes managed by the county municipality might affect Győr and its surrounding area to varying degrees (Figure 1), and these may also include GYJK programmes.

Figure 1: The potential spatial scope of various types of programmes



Source: Author's construction.

The opportunities to be considered in the case of GYJK:

- Innovative urban development activities (0.2 per cent of ERDF will be allocated in the form of projects);
- In the framework of European territorial cooperations:
  - raising competitiveness and employment through cross-border cooperation;
  - promoting cross-border territorial integration, cooperation in environmental affairs, transportation, water and energy networks;
  - in the case of transnational programmes: the Danube Region Strategy of the European Union is the Danube macro-regional strategy.

From the aspect of industrial development, Győr is the country's second most suitable settlement after Budapest (See: Hungarian Growth Plan), therefore it may be included among the highest-level growth poles. In the National Development and Territorial Development Concept 2030, it is included as a named high priority urban area of the outer urban ring, a metropolitan area of national and perspectively international importance, the key settlement of Győr-Moson-Sopron county and its major development area. It is important to prepare the Győr Automotive Cluster programme package in coherence with the Integrated Urban Development Strategy (IUDS) and the county development plan and to include the individual projects in these documents.

Summary: Systematic Selection and Concentration

Implementing a new Pole Programme is possible in the framework of a polycentric or multipolar development strategy in Hungary. Realistic objectives need to be articulated on the basis of an accurate diagnosis of the spatial problems, these need to be acknowledged by political stakeholders and the system of instruments of implementation must also be ensured. The economic and spatial structure must be harmonised. Various scales and types of Pole Programmes have to be implemented at various levels of the settlement hierarchy. The principle of concentration must be respected at each level: a small number of poles and a limited scope of economic activities within them must be designated and financed. Infrastructure and productive capital are to be concentrated in the designated poles. Only those economic activities are to be subsidized which may guarantee long-term competitiveness and provide the basis of services and subcontractors in a given locality on a market basis and in the region as well. Since each locality, each selected pole is different, there are no universally applicable strategies, rather, they must be elaborated with the involvement of local stakeholders respecting the specific features of each given area. The state/local government, economy, research and education are the three main stakeholders. Significant growth and development can be discerned even outside the designated poles, however, public expenditure must be targeted at the designated poles. This implies decentralisation at the national level, nevertheless, it may lead to concentration at the level of the region. Regions must be provided access to investments concentrated in the poles and a wider exploitation of potential advantages must be guaranteed. Pole programmes require an integration between sectoral, urban, county-level and national planning.

Industrial Districts: Building Blocks of the Organised Economy

GÁBOR LUX

KEYWORDS: industrial districts, endogenous development, reindustrialisation, globalisation, varieties of capitalism, knowledge-based development

ABSTRACT: This chapter provides a comprehensive summary of contemporary transformation processes experienced by industrial districts. It is proposed that, along with other concepts of concentrated development, their recent popularity owes itself to global competitive pressures, and a need for regions in advanced economies to embark on "high-road" growth paths to withstand cost-based competition and maintain the status quo. Industrial districts, whose understanding in literature has evolved over two decades to encompass the role of institutions and endogenous innovation capability, are well positioned to take advantage of conditions in the knowledge economy, and are best seen as frameworks of dynamic adaptation. This is contrasted with new challenges brought about by the market entry of transnational corporations and institutional consolidation within the "iconic" North Italian districts, which results in divergent paths of adaptation leading to restructuring or dissolution. Finally, the chapter examines whether the district concept can be adapted to the development needs of Europe's socio-economic peripheries, and proposes policy lessons which can be applied to the restructuring of post-socialist industrial economic space.

Introduction

Industrial districts are concentrated units of the space economy; they represent territorially embedded enterprise networks combining production quality with social integration. Industrial districts include some of the highly competitive regions of Europe and North America; existing not only as a theoretical idea, but also as a normative concept of development policy advocated by major international organisations.

Beccattini (2000) offers a summarised definition that clearly establishes both the parallels and differences between industrial districts and regional clusters. Both are spatial concentrations of embedded enterprises (in iconic cases, mainly SMEs) producing goods

and services linked to a central productive activity; and likewise, they act within the context of a specific place, or collection of places. The distinction is mainly a matter of emphasis and conceptual origins. Clusters stress the dynamic integration of productive units, while district theories focus on the complex framework of local society that encompasses the business sector. Cluster theory has strong North American foundations, and stresses competition as a central diving force, while industrial district literature originates in Italy, where social consensus and cooperation are considered to have intrinsic value.

This paper does not aim to recapitulate the whole breadth of district literature: both theoretical reflections and case studies are found in abundance, and are well known around the world. The basic operating principles, typologies and common policy experiments are therefore only summed up to establish a ground for further discussion. Instead, the paper's focus is on three contemporary dilemmas of district development. First, I consider how the transformations and pressures of the global economy have contributed to the rise of the "new industrial district", and how further stages of this process have upset their former balance in knowledge-based society. This leads to two practical questions: whether industrial districts can remain viable under modern economic conditions, and whether they can offer a realistic development path for regions on the European periphery. This last issue is rounded out with a discussion on the lessons post-socialist countries can take from industrial districts – either as an analytical concept or an instrument for development policy.

Industrial Districts in Modern Economic Space

In recent decades, socio-economic processes have increasingly been affected by the rapid development of transport and infocommunication technologies (ICT), deregulation, and the growing permeability of borders. Capital, knowledge, and within certain limits, labour has become vastly more mobile than ever before. Foreign Direct Investment (FDI) plays a leading role in shaping space, and the regional consequences of globalisation are implicitly associated with its flows, even if – as *Rechnitzer* (2008) has warned – FDI flows are only one aspect of a complex socio-economic reality. Re-organised space is also re-scaled. While peripheries lose from their significance (Faragó 2010), substantial advantages are accrued in the privileged nodes of the global network. Global city-regions with both command-and-control and intermediating functions, and establishing a leading role in the highest value-added segments of the post-Fordist service economy, benefit most from worldwide competition (Sassen 1991, 2006; Taylor 1997; Derudder – Taylor – Wilcox – Catalano 2003; Erdősi 2003a, 2003b; Gál – Sass 2009; Csomós 2013; Lux 2013).

In other spheres such as mass production, homogenisation takes place: barriers to entry are so low that the space of competition becomes worldwide, and actors on the periphery can successfully crowd out more developed competitors with low production costs and massive labour reserves. The greatest opportunities are captured by national

champions from emerging economies, as well as TNCs which can organise their operations on the global scale, cherry-picking the most advantageous locations for an optimal mix of factor intensity, added value and knowledge content. This perspective – integrating tax heavens, cheap production locations and lucrative consumer markets in the global core – is reserved for those with a "bird's eye view": those who can't support globe-spanning activities are unable to reap these unique benefits.

The global restructuring of production results in a sort of equilibrium; but its point is frighteningly low even from a post-socialist perspective, and represents an even greater threat for the economic, social and political stability of developed countries, where widespread automation offers opportunities for even more radical cost cuts. This trend has contributed to the decline of once prosperous Old Industrial Regions; it can be seen in the current plight of Southern European countries once catching up on the basis of cost advantages; and in Anglo-Saxon literature, as well as public debate, has become a significant concern as "the disappearing middle".

Several studies have investigated the origins and consequences of disappearing medium-skill jobs. Goos and Manning (2007) show evidence of labour-market polarisation induced by industry-level offshoring: the highest resilience is shown by non-routine tasks found on both the highest and lowest skilled levels of the labour market, but high-skilled employees are much more successful in capturing a share of offshoring-driven income redistribution. Similarly, Oldenski (2012) examines the "offshoreability" of various activities, and concludes that this metric has a great effect on a certain state's modern comparative advantages. Acemoglu and Autor (2010) draw attention to the massive real wage decreases experienced by low-waged employees, particularly men, a change which contradicts assumptions about the factor-augmenting role of technology, and suggests that it may in fact have a substitution effect; expensive labour is replaced by cheaper offshored alternatives or automation. Since this process is systemic, it is not counteracted by job creation in new industries; an entire skill group becomes superfluous among both blue- and white-collar employees whose knowledge can be easily codified and replaced. According to calculations by Tüzemen and Willis (2013), researchers at the Kansas City FED, the labour market share of medium-skilled workers in the USA has shrunk from 59 to 45 per cent between 1983 and 2012, a figure which also includes the halving of manufacturing employment (22 to 11 per cent). Some groups face higher than average vulnerability in this process; and it is particularly noteworthy that an increasing share of young employees have no realistic prospects of breaking into the more valuable jobs of the labour market.

The previous changes have become a mainstay of the current decades, since they are the outcomes of a broader restructuring process. We see a continuation of the Fordist – post-Fordist/post-industrial shift, even if the latter terms can be misleading – neo-Fordist production goes on in numerous "post-Fordist" regions (Lengyel 2010), and industry has stayed an integral element of the "post-industrial" economy, even if its manifestations and roles are different (Lux 2010). On the level of specific industries, only adaptive strategies can hope to offer viable responses; particularly for small and medium-sized enterprises (SMEs), whose scale or organisational structure prevents them from pursuing extensive

outsourcing, or withstand global competition by radically downsizing their production costs. The most promising path of adaptation is upgrading towards higher value-added activities to capture the more lucrative segments and activities of globally organised value chains (Szalavetz 2012). Upgrading and its innovation content is not equivalent to technological innovation (whose results are very much present in mass production), and is not restricted to high-tech industries, but encompasses both technological and non-technological changes to stay ahead of the curve (Benneworth 2004; Szalavetz 2011; Gál – Ptaček 2011).

Industry-level adaptation has its own implications for territorial development. We can speak of spatial formations which provide some form of assistance to local firms, and show increased resilience against external market pressures. Under new competitive conditions, formerly stable regional positions are shaken up, and space outside privileged global centres becomes "slippery" – any company can be relocated, and every market attacked. *Markusen's* (1996) reflection on "sticky places in slippery space", now 18 years old, has only increased in relevance: *as networks, industrial districts are particularly suited to anchor (embed) strategic industrial capacities, following competitive strategies which remain viable in the global order without sacrificing social cohesion and quality of life* (q.v. *Zeitlin* 2008). For SMEs, industrial districts offer a common umbrella against external competition.

Therefore, the industrial district concept, traditionally associated with North Italian and British antecedents, has become a desirable and much-imitated spatial framework of industrial upgrading and social organisation. Regions enmeshed by strong but flexible economic networks offer a credible development alternative for less dense regions and sub-metropolitan cities in an increasingly polarised, metropolis-dominated world. Cluster-building, industrial districts, as well as the development of regional innovation systems and innovative milieus thus represent different expressions of a common development philosophy. Industrial districts have become a standardised concept of the mainstream development policy paradigm, even if they often arose under highly specific conditions: they have often been treated as a universal panacea that can be applied in widely different territorial, socio-economic and historical contexts – sometimes more, but often much less successfully than expected.

The Traditional Operating Logic of Industrial Districts

Like other conceptual frameworks of mainstream development policy, industrial districts operate on the basis of exploiting the benefits of resource concentration. This spatial process takes place within the context of global competition, where specific places are appreciated, and, through the *global–local paradox*, become the long-term bearers of locally embedded competitive advantages (Lengyel – Rechnitzer 2004). The paradigm of concentrated development considers economic actors to be both competing and collaborating

units, and economic space under their influence to be an interlinked matrix of socio-economic linkages. With different points of emphasis, this thought has become a common ground for multiple approaches of modern regional development.

The logic of industrial districts, combining resource concentration with network-building, has significant traditions going back to Alfred Marshall's neo-classical location theory, establishing a link between industrial growth and urbanisation on the basis of economic externalities. Companies with a similar profile have three key motivations to locate close to one another: access to labour with specialised skills, access to industry-relevant input markets, as well as knowledge flows among individual companies (Krugman 1991).[1] 1 Jointly enjoyed advantages tighten linkages among companies, leading to agglomeration processes; and it is this increase of economic density which produces spatially delimited districts. The extent of advantages is not without limits: they are only available within a certain distance of economic concentrations, as transport or communication costs create significant distance-based barriers to exploiting them (Gordon – McCann 2000).

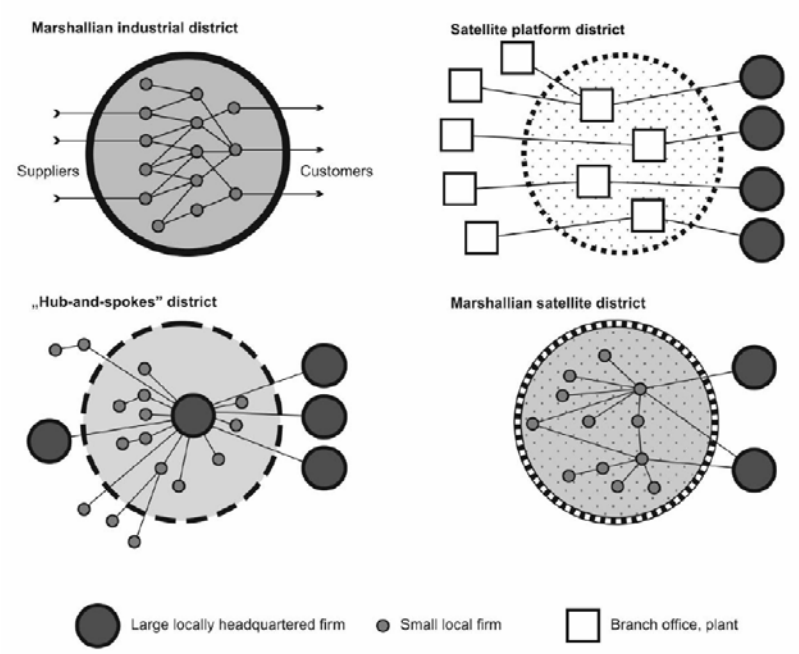
This paper does not attempt a detailed description of industrial districts in their basic form: it has been discussed at length by several authors. A summary definition is provided by *Lengyel and Rechnitzer* (2004, 165.) on the basis of Armstrong and Taylor:

- "A local district *consisting of mainly SMEs, with its spatial concentrations and industrial specialisations, showing considerable flexibility.*
- A relationship network *composed of mostly homogenous actors with a similar socio-cultural background, broadly shared common norms and social embeddedness.*
- *Forward and backward business linkages, forming a broad base of business associations and division of labour, based on the market and non-market exchange of goods, services and information.*
- *A network of local community and private institutions* developing the district's economic actors."

An industrial district is a framework to exploit the advantages of Marshallian, but also network externalities, the latter providing advantages to every member of the network on the basis of the number of participants.

1 The role of externalities has been further expanded upon by Scitovsky (1954), identifying the indirect effects of corporate investments in improving the profitability of other enterprises in their proximity – i.e. by exploring new consumer markets.

Figure 1: The spatial types of industrial districts



Source: Lengyel 2010, 211.

The originally singular model of industrial districts has also become differentiated through the identification of new district types (especially in *Markusen's* influential 1996 paper); *Lengyel* (2010) thus already describes five main formations (Figure 1).

- *Traditional (Marshallian) industrial districts* are local SME networks based on strong trust and a background of local institutions.
- In *hub-and-spokes industrial districts*, one or more large companies fulfil a central integrating role; local SMEs are mainly linked to these central companies in vertical integration.
- In *satellite industrial platforms*, large companies with centres outside the district establish local branches; their relationships are mostly externally oriented, and there is little local decision-making autonomy and cooperation ability.
- *Hybrid (Marshallian satellite) industrial districts* consist of strongly linked local SME networks, but these companies, although engaged in common development activity, exist in a state of strong external dependency.
- *State-anchored industrial districts* emerge around large state-owned companies, government agencies, military bases, universities or research institutions, which establish a certain degree of cooperation with the local enterprise network.

Paniccia (2006) uses an analogous, but differently named typology (canonical, diversified or urban, satellite platform or hub-and-spokes, concentrated or integrated, and science-based or technological), and distinguishes a sixth district type.

– *Co-location areas* consist of capital-poor companies located in each other's proximity and using some joint services, but showing no strong horizontal integration. These firms often specialise in non-branded generic products for local or regional markets. This form describes certain early-stage industrial districts in Italy (e.g. Marche), but also industrial formations in emerging and post-socialist economies. Often, the site of a defunct company (e.g. a socialist firm) serves as their "incubator". On other occasions, co-location areas emerge from groups of craftsmen.

In this paper, I will use the first, more widespread and better named typology, but add co-location areas due to their relevance to the discussion of peripheral regions in post-socialist countries, as well as the development of early-stage industrial districts. Marshallian (Italienate) districts are also given particular attention; both because they are the most researched type, and because even under different historical, institutional and social backgrounds, the industrial districts of SME networks offer valuable insights for post-socialist industrial regions.

Industrial Districts in the Knowledge Economy

What does the new industrial district literature bring to the table? *Harrison* (1992), describing the revival of district theories as "old wine in new bottles", nevertheless draws attention to theoretical evolution. The neo-classical interpretation, using the concepts of local externalities and agglomeration, fails to account for the most important organising element of an industrial district: its internal cohesion, what *Becattini* (2002) calls "localised thickening". The new industrial district paradigm no longer assumes the boundless competition, independent firms and entirely price-based signal system of neo-classical economics; rather, it emphasises mutual corporate dependencies, flexible organisational boundaries, "coopetition"; and most importantly, the intermediating role of trust. *The atomistic idea of Marshallian space is replaced by an organised one ruled by mutual dependencies.* This conceptualisation of space has much to do with the ideas of social capital, embeddedness and trust, terms which have come to be regarded as central in social sciences.

The new approach, becoming widespread in the 1990s, also disposes of the static view of industrial districts, increasingly analysing them in life-cycle models. The foundations of this approach were already present in product life-cycle theory, but here, they are reimagined in a spatial context. Leading authors of the 90s (e.g. Harrison 1992; Asheim 1996 or Markusen 1996) had already proposed that industrial districts, far from stable formations, might represent a transitory phase of development. These hypotheses have been mostly validated by subsequent events. The views of *Dimou* (1994) have been particularly prescient by viewing industrial districts as the catalysts of territorially embedded restructuring processes (28.): *"(T)he industrial district appears as an organizational fact, stemming from the interactions between an industrial dynamic defined at a global level and a social dynamic defined at a territorial level. As long as these two components of the district evolve in the same way – that is, as long*

as the territory regulates efficiently the industrial progress – the district structure subsists through time. When this parallel evolution no longer exists, we assist its transformation through an accelerated process of decomposition / recomposition of this particular space of production. ... This situation can lead to centrifugal pressures issuing from the contradictory evolution of the industrial and the territorial dynamics. The question is then to know to what extent this particular space of production possesses the territorial elements which permit the management and regulation of the transformation of a mono-specialized industrial structure to a pluri-specialized one, without facing a major social and economic crisis.". This is a dynamic view, sceptical about the necessity of specific district forms. It is not the exact copying of specific organisational forms that define an industrial district and demand attention, but their management of restructuring processes – the ability to maintain and develop their skill base through continuous adaptation.

The role of learning comes to the forefront in *Asheim's* (1996) paper, integrating the findings of industrial district and innovation system theories, and viewing districts as learning regions seeking to develop their endogenous innovation ability under the conditions of post-Fordism. This is not far from Marshall's original observations on the role of knowledge spillovers ("industrial atmosphere") – continuous innovation was already present in the classical district, particularly in the form of incremental refinement (learning-by-doing and learning-by-using), in common use as a positive externality. The post-Fordist economy, in contrast, highlights endogenous innovative capacity, particularly a region's ability to not only withstand external competition, but also to prevent the rigidities and lock-ins found in Old Industrial Regions.

Competitive advantages do not hinge on a specific technological and knowledge set, but continuous collective learning and regionally embedded innovation – prompting the region's institutions to adapt by building strong horizontal relationships (Asheim 1996), providing appropriate institutional thickness for efficient information exchange and spillover creation, diminishing transaction costs within the innovation system (Caniëls – Romijn 2006). As production systems, efficient learning regions are characterised not by uniformity, but a complex network of interactions with high uncertainty, variety and pluralism; behaviour that encourages a high division of labour in a balance between competition and cooperation (Belussi – Sedita 2009). The efficient utilisation of knowledge assumes a high quality of human resources: skills, quality of life, good living standards, networks of knowledge transfer, as well as innovative milieus on the local and regional levels (Rechnitzer 2008). The central positions of learning regions are occupied by universities and research institutions (Gál 2005).

Knowledge flows emerge among the actors and institutions of innovation systems, extending beyond industrial actors (companies, suppliers, buyers, corporate R&D units) to academic, NGO and government-supported knowledge bases, as well as a range of business services from marketing to technical support, IP protection, innovation support etc. There is continuous interaction within the system; and while most industrial actors have relationship networks fine-tuned for incremental innovation, the fusion of for- and non-profit actors also support radical innovation through combining radically different knowledge creation approaches and knowledge elements (Varga 2009). In discussing successfully restructuring industrial regions, Cooke (1995, 14.) names five criteria for efficient networking in innovation activity:

- *"an initial predisposition to exchange information;*
- *trust in the reliability of the other participants;*
- *a recognition that best practices are transferable through learning;*
- *a willingness to keep key reciprocal relationships preferential;*
- *inclusion and active participation through empowerment in the flow-processes of the network".*

Grabher (1993) recommends the creation of redundant networks which do not carry the risks of over-specialisation and lock-in due to looser network structures (*loose coupling*), and the possibility of multi-directional, even random connections. This reduces mutual dependency, but opens broad possibilities for sharing knowledge and building up network externalities. This suggestion might contradict the common wisdom of mainstream economics, where the role of specialisation is often treated uncritically, but it is perfectly suited for the logic of industrial districts if we view them as frameworks of collective learning. Thus, innovation systems and learning regions support regional innovation policies, and the construction of a supportive institutional system – policy goals which are found in both European core regions and the peripheries intending to follow their example.

Consolidation and Disintegration in Industrial Districts

The most influential papers on new industrial districts were published from the late 1980s to approximately 2000, and this interest has largely been sustained by their resilience in global competition. However, two more decades and the financial crisis have brought further significant changes in the world economy and industrial development. Today, there is even more emphasis on metropolitan city-regions and the challenges posed by emerging economies.

The French and Italian industries have been strongly affected by the double pressure of cost-based competition from Central and Eastern Europe (CEE) and especially the Far East; and the strong innovative performance of North America in high value-added production. They have been less successful in integrating CEE competitors and establishing a new division of labour than Germany, which has created an integrated "complete space" of industrial production that encompasses all important functions within a manufacturing zone stretching from Bavaria to Budapest and Ljubljana (Czirfusz 2007; Frigant – Layan 2009; Pavlínek – Domanski – Guzik 2009; Lux 2010; Molnár 2012). Meanwhile, the problems of the "disappearing middle" have also been affecting their economies, perhaps most strikingly during the current crisis. *Rabellotti – Carabelli – Hirsch* (2009) call attention to the severe decline of total factor productivity in the "Made in Italy" branches which form the backbone of several industrial districts. Some Italian economists go as far as to consider the "dwarfism" and traditional industrial focus of industrial districts as a structural disadvantage. The demographics of industrial districts are unfavourable: between 1991 and 2001, 43 units, more than a fifth of the previous 199 have dissolved, and paradoxically, their number has only increased in Southern Italy. *Beccattini* and *Dei Ottati* (2006), while less pessimistic, admit that while districts are well suited to outlive short-term downturns, can be more susceptible to long-term market turbulence, whose signs were already "in the air" of the uncertain 2000s.

Fundamental economic assumptions are also changing. At the turn of the 1980s and 1990s, both followers and critics of the then triumphant neo-liberal paradigm had placed great expectations on "small is beautiful", the rise of SMEs which would challenge large firms in a new world of flexible specialisation, realising Bell's (1973) visions of a post-industrial society. *Harrison (*1992, 109) notes: *"The large vertically-integrated corporation is viewed as a dinosaur, unable to compete in a 'post-industrial' world characterized by continually fluctuating consumer demands, heightened international competition, and the need for more 'flexible' forms of work and inter-firm interaction. Many of the big firms are expected to collapse under their own weight, even as a panoply of small, flexible enterprises rushes in to fill the ecological void.".* These hopes, much like reports of "the death of distance", have been greatly exaggerated. The expected dispersal of large regional concentrations and the catching-up of the periphery through widespread ICT deployment did not take place (Nuur – Laestadius 2010). In fact, the "corporate dinosaurs" have been much more successful in adapting to the new world than ever anticipated – once again confirming their position as unquestionable movers and shakers. Zeitlin (2008), reviewing the economic history of industrial districts, recalls a paradox: districts seemed to offer an alternative to vertically integrated corporations, but they reached the peak of their academic popularity precisely at the time when a new wave of global integration called their viability into question. Industrial districts experienced two direct challenges in global competition: Foreign Direct Investment into markets dominated by districts, and the disruption of their internal balance of power due to accelerated socio-economic change.

Increasing FDI flows can have radically different effects on the operation of an industrial district. Marshallian and hub-and-spokes districts represent a development model based on local endogenous resources, while satellite platforms, hybrid and state-anchored industrial districts either use exogenous, or a combination of endogenous and exogenous resources. The massive, shock-like appearance of FDI is always exogenous, and it can reshape the district in both negative and positive ways. *Menghinello, De Propris* and *Driffield's* (2010) model calculations comparing more and less developed Italian industrial districts show that FDI has different motivations, as well as different spatial effects based on their territorial context. In less developed southern industrial districts, investment decisions have mainly been based on quantitative location factors and tax and investment subsidies, leading to productivity increases by increasing the production base and establishing new industrial activities. In the more advanced north, qualitative factors have played a greater role: developed industrial milieus, high technology and high value-added production have drawn investors. Here, however, the regional outcome of FDI has been negative: new companies improved industry-level productivity, but the advantages were offset by significant crowding-out and congestion effects. Adverse effects were also observed in the south where FDI aimed to capture the markets of local, weak industrial networks, having a negative effect on the market of both products and production factors. This double effect underscores FDI's relevance in the catching-up of regions with a low level of internal investments, but invites caution where it displaces local production. Altogether, FDI's effects are (obviously) much more pronounced in capital-poor than capital-rich regions.

Beyond external competition, many industrial districts have also undergone substantial internal transformation – particularly among Northern Italy's traditional (Marshallian)

industrial districts. Intensifying internal competition and the emergence of rival competencies has subjected districts to a strong selection process, leading to organisational consolidation and the stronger role of a few leading firms. Accordingly, the internal relationships of districts have moved from the horizontal to the more hierarchical, pointing in the direction of vertical integration and other (non-Marshallian) district formations. This phenomenon was considered a novelty in Italy, because as *Bellandi* (2002) has shown, Italian industry had traditionally had hard boundaries between industrial districts ruled by large companies, and others by SME networks – these were almost entirely separate worlds.

Parrilli (2009) calls attention to the role of transforming social norms in district restructuring. Multi-generational craftsmanship skills, traditionally based on strong familial and social ties, have become weaker as these ties have become less binding with increasing mobility, young workers seeking work outside the district, and an increasing number of immigrants. The shift of relationships from informal to formal has led to less entrepreneurial activity in local business networks; and the cohesion of society also underwent extensive changes. All this has led to the weakening of trust as a public good underpinning the district, and consequently, higher transaction costs and changes in the district type. SME networks do not necessarily dissolve under these developments, but they must find new ways to reorganise themselves.

In the transformation process, gatekeeper firms, the winners of organisational consolidation play a central role. These companies emerge from their surroundings as the controllers of production and the coordinators of critical flows, transforming the district's internal relation system. *Morrison* (2008) emphasises the role of gatekeepers in managing industrial knowledge: while the majority of district firms work mainly from a common, shared knowledge base, gatekeepers exploit their broader relationship system and their bridging role between internal and external knowledge elements in a systematic seeking behaviour for newly adaptable knowledge. The distribution of knowledge becomes more unequal: leading firms not only have a greater supply of it, but they also control its access, restricting the previously common imitation behaviour of others. Inside their organisation, they strive to codify tacit knowledge, transforming it from a district-embedded externality to an endogenous resource.[2] This process has much to do with social change: previous informal relationships become formal, and the relevance of informal knowledge-sharing declines in comparison with other channels. Horizontal cooperation transforms into supplier and subcontracting relationships.

It can be asked if this extent of transformation can result in splitting industrial districts by doing away with the central organising force which distinguishes them from the surrounding (non-district based) socio-economic landscape. It is certainly not inevitable: there are examples of both disintegration and reorganisation in Europe, although

2 Citing the example of Chilean winemaking, Giuliani (2011) confutes the idea that network differences would even out: weaker companies in the district realise no great advantages from the presence of gateway firms, and their survival becomes increasingly dependent on the bridging activity of public or public-private support institutions.

the new district may represent a different form, or undertake significant restructuring before it is once again consolidated. The emergence of leading firms reshapes SME-based Marshallian formations into a hub-and-spokes configuration where smaller companies continue to integrate on the local scale, while larger ones become a part of global networks. There are similar results if industrial districts – attractive as both production sites and markets – draw the attention of external business entities, although the local embedding of new entrants is always a gradual process.

Another form of reorganisation points towards satellite platforms, based on the disembedding of leading firms or the "cannibalistic" behaviour of FDI plants, disrupting smaller companies and shattering the district's connective tissue. An emerging satellite district can remain highly competitive, at least in the short term, but brings about different social and business conditions. In the megacentre-dominated landscape of globalisation, this is an existential threat even to successful Marshallian districts. These are of course not clear-cut alternatives, and the most likely outcome of change is the creation of a hybrid district, characterised by the coexistence of parallel Marshallian and satellite structures. *The real stake is to keep high-quality value creation, competitive knowledge and skilled labour within the district (region).* It is a fundamental dilemma whether to outsource low value-added activities to less costly locations, and how the costs and benefits of transforming to a multiple-location company should be distributed between local society and economics – a question of efficiency as much as social justice.

Table 1: The changing conceptualisation of industrial districts

Marshallian industrial districts	**New industrial districts**	**Post-millennial industrial districts**
Neo-classical economics	Institutional economics, life-cycle theory, flexible specialisation	Evolutionary economics, regional resilience theory
Atomistic space, perfect competition	Space of mutual dependencies, competition and cooperation, embeddedness	"Flat" world, global-scale competition, external and internal selection pressure
Traditional district formation	New, differentiated district formations	The industrial district as a framework of dynamic adaptation
Role of local externalities	Role of institutions and society	Role of flexible adaptation ability
Innovation as an externality, available for all companies through spillovers	Innovation as an endogenous resource, a result of institutional development and collective learning	Innovation as a partially monopolised strategic resource, asymmetric access
Technological innovation	Technological and non-technological innovation	

Source: Author's construction.

Within a gradually changing framework of conceptual development (Table 1), the successful or failed transformation of industrial districts in knowledge-based society can be easily interpreted on the basis of regional resilience theories, themselves based on earlier concepts such as theories explaining the restructuring of Old Industrial Regions, or the findings of evolutionary economic geography.

The evolutionary view of industrial district life-cycles has been expanded by *Belussi* and *Sedita* (2009) by offering a multiple-path development model. Institutions which structure (organise) a district's actors, and both limit and regulate their interactions as "bearers of history", can set a limit to the paths being available to districts, but may themselves be changed in the long run. This makes institutions exogenous conditions in the short term development of industrial districts, but endogenous in the long term. The development of institutions and industrial systems tends to be a path-dependent process, the availability of possible decisions at a specific time being limited by previous ones even when the circumstances have changed. This, however, does not imply a single possible path of development, but multiple ones with widely different outcomes.[3]

When it comes to the long-term defensive and offensive restructuring strategies open for industrial districts, the following (overlapping) possibilities seem the most relevant:

- *The acceptance of cost-based competitive strategies* mainly involves downwards wage pressures. In addition to its social costs, this strategy can be clearly seen as self-destructive, since it devalues highly qualified labour, a critical district resource, all in favour of a temporary and mostly unsustainable advantage. This possibility can rather be seen as a threat – leading to the dissolution of industrial districts.
- *The partial delocalisation of the production process*, or becoming a multi-site company can involve lower value-added activities, and leads to subcontracting or component manufacturing in lower-wage regions. This strategy represents a beneficial choice for the district if the more lucrative segments of the value chain remain "in house", but both sides benefit from the division of labour. The balance might, however, prove unstable in the longer term: both the peripheries' natural push for upgrading and wage convergence, and the core's increasing competition may result in the transfer of more and more valuable activities, or a break in the relationship and a need to seek new partners for outsourcing.[4]
- *Upgrading through technological or non-technological innovation* encompasses specialisation in activities with higher added value or knowledge content. This has become the standard objective for many industrial districts over the last decades. The chances of success are the highest if the new product palette is hard to imitate by external actors, or it is underpinned by a unique competency.

3 Similar conclusions have been drawn on cluster evolution by Martin and *Sunley* (2011) by suggesting a four-phase "adaptive cycle" model of development. Alternate outcomes include cluster mutation, stabilisation, re-orientation, failure and disappearance.

4 The knitwear industry of Castell Goffredo shows evidence of both outcomes: outsourcing was focused on less valuable activities and largely remained within Italy; however, the district came to suffer from a decline of internal subcontracting and the resulting district-level deskilling process (Capasco – Cusmano – Morrison 2013).

- *Product differentiation and segmentation* aims to service a narrower but easily defensible niche market, simultaneously divesting or outsourcing less profitable activities. Even low-tech industries can survive and prosper by targeting specific high-income market niches – a road taken by numerous Italian industrial districts. Product differentiation naturally assumes both competency in the chosen segments, and an ability to defend it from new competitors through continuous learning.
- *Re-specialisation* is a partial or full abandonment of the core district industries to prevent or soften a deeper crisis. The district can explore industries which are locally new, but which are well suited for its core competencies and enable a relatively smooth restructuring process. The abundance of social capital and strong development institutions grant a strong initial advantage in this process.[5]
- *High-level innovation* may mean traditionally understood R&D, but also non-technological (organisational or social) innovation. The process may take place within a single industry by modernising the district's basic activity, but it is very often the combination of know-how and technologies from completely different branches which can produce the most interesting results.[6]
- *Broader international integration and stronger global embeddedness* can promise a solution for certain industrial districts by accessing new markets and extending their network of clients. Companies owning regional and national brands can go global, while SME networks can introduce jointly held appellations and undertake common branding activity. A growing export orientation can easily accompany different upgrading strategies.
- *Organisational consolidation* as a strategy mainly puts emphasis on leading medium-sized enterprises as the new foundations of competitiveness (it is hard not to think of Germany's *Mittelstand* here); moreover, *Rabellotti – Carabelli – Hirsch* (2009) also emphasise the role of business groups (company alliances) as a potential way of building networks, reducing transaction costs between companies, and achieving a critical mass on the market.

Sein or Soll? The Industrial Districts of the Periphery

Ever since its Marshallian roots, industrial districts have been discussed as potential policy instruments. Marshall himself distinguishes between naturally emerging and man-made forms, and supported (Marshall in *Beccattini* 2002, 89–90.) *"the formation of a*

5 *Rabellotti – Carabelli – Hirsch* (2009) observed 21 cases of re-specialisation in Italy between 1991 and 2001. The most popular new industries were machinery and household goods. *Beccattini* and *Dei Ottati* (2006) consider light industrial skills as the most promising re-specialisation direction for Italian industrial districts.

6 Several cases of adapting modern ICT solutions could be mentioned here. A particularly good example is the combination of tile industry and inkjet printing technologies in Spain's Castellón region – a "digital revolution" of tile painting that has provided new impulses for both tile-makers and the suppliers of the printing equipment (Reig-Otero – Edwards-Schachter – Feliú-Mingarro – Fernández De Lucio 2012).

colony in some place well beyond the range of London smoke (...). The work of several firms, not always in the same business, might in some cases be sent together. Gradually a prosperous industrial district would grow up, and then self-interest would induce employers to bring down their main workshops, and even to start factories in the colony. (...) It is only the first step that costs; every succeeding step would be easier.". The lively debate around new industrial districts had also offered influential policy conclusions. Industrial districts and (especially) cluster development have become core instruments in EU regional policy as a potential compromise between economic competition and social cohesion – representing the "European way" instead of unlimited free competition.

But natural and policy-made industrial districts continue to carry a fundamental contradiction. *The first category represents a product of spontaneous development in a specific historical and socio-economic context, mostly building its institutions according to its own motivations and interests.* Academic research and public policy both tend to focus on good practice, often unique success stories, which are found in this category. Idealised and even stripped of contradictions, irregularities and historical sediment, these cases are presented as clear-cut development recipes which development policy seeks to duplicate in entirely different environments. The real miracle is not when these efforts fail – but when they in fact succeed. In a context where development is not organic, policy follows the ideas and interests of the developer providing the funding – considerable sums of money are staked on wishful thinking raising false hopes of quick and easy success; and just as often, losing view of realistic local possibilities. Newly created districts, with low embeddedness, might still work, but without sufficient local network-building, might be less resilient, vulnerable to external shocks and delocalisation pressures.

For the peripheries, lessons from district- or cluster-building experiments in non-ideal circumstances are particularly valuable. *What these cases have in common is the limited applicability of policy recipes unless they undergo local adaptation, and learn to rely on locally developed skill sets and institutions. Rodríguez-Clare* (2007), *Nuur* and *Laestadius* (2010), as well as *Kasabov* (2011) show on the example of innovative industries established outside metropolitan core areas, that there are substantial barriers before evolutionary path creation; and this is the case even on the peripheries of highly developed countries (in their examples, Sweden and the UK). Peripheral space experiences stronger pressures from global competition due to competing in similar activities as low-wage countries. District-building policies based on imported knowledge are able to achieve a certain degree of specialisation and kick-start the accumulation of human capital, but sufficiently dense, strong and varied knowledge networks are very hard to form – and even harder to appropriately embed into the entrepreneurial culture of the periphery. Furthermore, in their early development stages, the new networks are very vulnerable to the fluctuations of markets and financing. *The more promising approach in these situations is not the voluntaristic idea of radical restructuring, but step-by-step capacity-building through the gradual integration of local resources, active knowledge management and continuous learning.* It is useful to build on existing, even weak clusters and exploit local comparative advantages. The most important public policy step might be to reduce the transaction costs which impede networking among entrepreneurs – in some cases through deregulation; and in some cases through active support – as well as to provide support for innovation transfer and knowledge creation.

Organised Development: Industrial Districts for Post-Socialist Countries

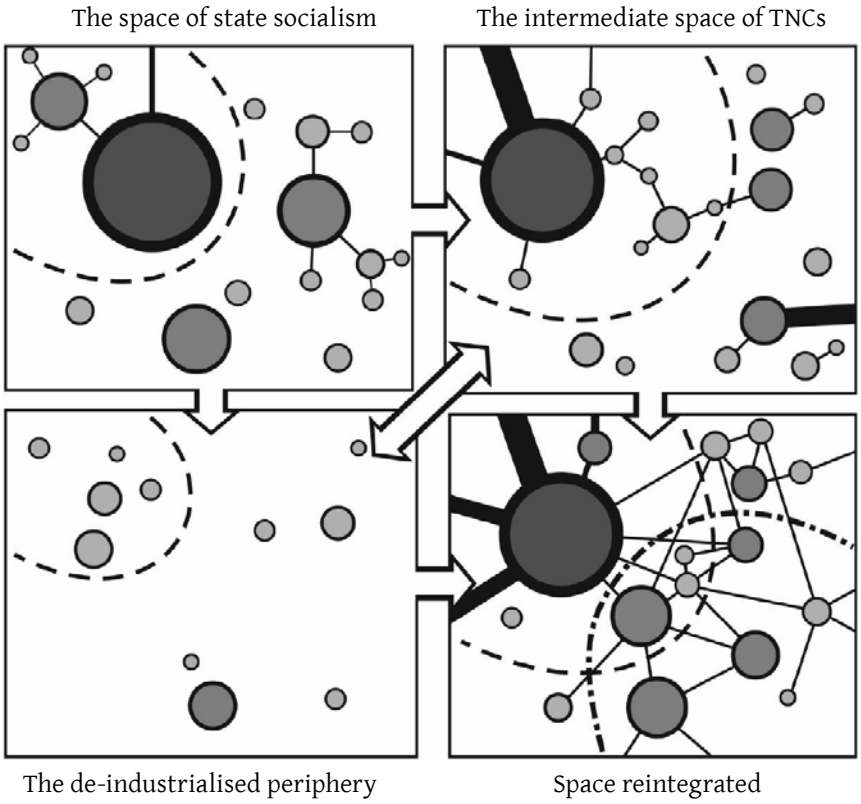
What kind of lessons can be drawn for post-socialist countries from the recent development of industrial districts? Is the model applicable to their circumstances? The general problems of the periphery and the challenges before constructing a working industrial district might be found all over European peripheries, but the post-socialist context introduces other complications. Without going into excessive detail, the following issues become especially relevant:

- The region suffers from a persistent, "historical" capital shortage; partial and temporary successes could not provide long-term solutions to the short supply of market and public resources, or the resulting external dependency. As shown by *Gál* (2013), the periodic "transformation losses" of large-scale systemic changes also compound this problem.
- The duality of post-socialist industry, the enormous differences of efficiency and capitalisation between companies under foreign and domestic ownership (Barta 2005; Kiss 2007) have persisted, and been proven to be long-lasting.
- The long-term weaknesses of institutions and society pose hard challenges for both endogenous and externally directed development.
- The absence of critical mass in several spheres related to industry makes it very hard to compete on the continental or global scale.

Collectively, these problems show that under the conditions of our region, it is very hard to create new development paths. Here lies another problem: much of post-socialist space has always been peripheral, and in the last decades, many regions have lost even the former degree of their economic organisation.

Figure 2 provides an intuitive understanding of industry's spatial transformation, as well as a possible answer about the relevance of industrial districts in post-socialist countries – why their development should receive community resources in spite of all the legitimate doubts about development policy. In the state socialist economy, it was not possible to speak of industrial districts, as industry was dominated by large vertically integrated companies, entirely sidestepping local initiatives and horizontal linkages. Even the most important companies, which had considerable bargaining power, operated under strong external dependency, and the provincial but centrally controlled branch-plant economy, especially widespread in Hungary, could build even fewer functional links with its environment. On the other hand, regional development showed very strong industrial specialisation, leading to a meagre, slow-paced but observable accumulation of local know-how. Certain local productive traditions were also revived under the industrial diversification campaigns of 1960s-1970s Hungary and Poland, drawing on pre-war elements of the regional knowledge base as well as some labour-intensive new technologies. The legacy of these development paths can be traced to this day.

Figure 2: The transformation and reintegration of post-socialist space



Source: Author's construction.

The strong market selection of transition essentially divided industrial space. Outside the most successful regions, mostly integrated into global production chains by TNCs, transformation was characterised by the dissolution of former specialisation, and the emergence of a "homogenous periphery". Large state-owned companies and branch-plants have withered, but instead of "creative destruction" and the building of a new competitive economy, entire regions suffered capital loss: the emergence of new companies and industries was severely limited without sufficient capital, knowledge and social organisation. The weakening and disappearance of industrial specialisation was particularly severe in small and medium-sized towns, which were largely avoided by FDI in favour of large regional centres, and consequently lost their role in integrating the local economy. The homogeneity of the periphery is evident in that, without competitive specialisation, all it can offer at any point is the same set of resources: cheap, mostly unskilled labour and basic infrastructure. Even under low wages, this is insufficient for survival in global competition.

Industrial knowledge, still found a few decades before, has disappeared or remained in very limited quantities: independent but isolated SMEs, often the surviving legacies of a large company's technical and personal legacy. These formations are most similar to co-location areas, although the more successful have the identifying signs of early-stage Marshallian industrial districts. If no network-building takes place among the spatially concentrated industry, hollowing-out processes may continue through the emigration of skilled labour to higher-wage areas; low capital creation; and rare but permanent delocalisation events. Due to the general capital shortage, the assistance of external development funding may be insufficient to bring about evolutionary path creation: linkage possibilities and social capital are in short supply, and low network density poses strong challenges to re-specialisation. Therefore, universities should be opened up to serve as integrating anchors of development, encouraging the formation of an effective *state-anchored* district. This process, however, is still in its early stages in most regions, and there are significant weaknesses in both the universities and the absorption capabilities of the local industry.

The industrial space of TNCs – appearing through privatisation and greenfield investments – shows a more favourable image. Although this process of industrial integration does not lack its own contradictions, it represents a more-or-less successful form of transformation, somewhere between the leading central regions and the much less fortunate peripheries. The initial attraction of this space was heavily based on the transfer of low value-added, labour-intensive activities which did not demand a particularly high degree of network integration or socio-economic embeddedness – the results are typical *satellite platforms*. The initial successes of industrial regions which benefited from this competitive strategy in the 1990s with high investment volumes, new jobs and fast reorganisation after creative destruction etc. ran out of steam in the next decade if they were not able to achieve upgrading and showing new competitive advantages – while they gradually got priced out of low-wage competitiveness.[7] Delocalisation, the decay of industry might finally "empty-out" and peripherise the region, which can lose its remaining competitiveness in the span of a few years if no market-based or policy-driven reindustrialisation takes place.

Genuinely successful adaptation models are found in the regions which are able to achieve the territorial embedding and network integration of settled TNCs, *going through some form of upgrading and moving from the satellite platform district model towards a hub-and-spokes formation*. Even so, trade-offs are visible: even unintentionally, large companies have a crowding-out effect on their surroundings, cherry-picking the labour market and capturing product markets across the region. Across Central and Eastern Europe, skilled labour has become the most important bottleneck in industrial development, and even the lower-than-western wages and career options of TNCs are enormously attractive to potential employees. These *enviable problems* of the more successful industrial regions are perhaps similar to the dilemmas of Western European industrial districts – and therefore ripe for scrutiny.

7 In Hungary, Central Transdanubia shows the clearest example of a region whose early "success stories" in privatisation and conscious low-road competitiveness were followed by an abrupt stop, then long stagnation.

Both peripheries and intermediate regions should move towards the ideal of *reintegrated space* built on strong and adaptable business networks – and this points towards the *positive* or *normative* idea of industrial districts. There is a need for tighter economic organisation which can provide opportunities for FDI for further embeddedness; and for domestic companies to achieve a size and strength which allows them to compete on the global market. This should be achieved in a sustainable (resilient) way, (re-)generating social capital and strengthening local-regional institutions. In the first steps, the regional integration on the peripheries can be seen in the emergence of early-stage *Marshallian or state-anchored industrial districts*, which can encourage and organise further accumulation processes. The presence of competitive industry already results in cumulative causation (snowball effect), creating spillovers which can be exploited by local companies and draw external investments as well. Supplier relations also support multi-directional relationship-building if there are opportunities to turn one-sided dependencies into multi-directional business networks, a balance between domestic and foreign ownership. Accordingly, not only can *hub-and-spokes* districts form, but there will also be possibilities for the creation of SME networks which point more in the Marshallian district direction.

Altogether, reintegrated space realises three different, but closely linked goals:

- *it encourages re-specialisation in an industry which has lost its previous focus;*
- *it makes it possible to transcend the severe differences of dual industry; and*
- *it provides excellent options for upgrading and continuous learning for resilient industrial development.*

The idea of an organised space reintegrated by industrial districts is, of course, a normative ideal. Doubts about both the capabilities of development policy, and the endogenous self-organising power of the economy are always justified. Nevertheless, if the objectives are good, every step in the right direction counts.

The Changing Roles of the State and Their Impact on Urban Policy

EDIT SOMLYÓDYNÉ PFEIL

KEYWORDS: urban policy, urban governance, state restructuring, spatial planning, territorial cohesion, polycentricity, urban development, Hungary.

ABSTRACT: The present study summarises the preliminary results of the basic research titled "The changing roles of the state and their impact on spatial structure". The relevance of the subject is justified by the European and global level re-evaluation of the role of cities which is necessary both from the aspect of the analysis of the situation of Győr and the process of strengthening its economic position. Therefore, through the selection of a sample of states and city regions, our research strived to detect the fundamental transformation which occurred during the past one-and-a-half decades in the institutionalisation of metropolitan areas and regions. *The study attempts to shed light on the background and the relations of this process. Namely that the relationship between nation states and their cities and city regions has changed since their having been activated as economic policy instruments.* The European urban network has become the target of EU Cohesion Policy, since its main emphasis is on the competitiveness factor. Therefore, the system of spatial planning has been modernised, urban regions have become spatial planning units with their own planning competences, serving as instruments of new governance connecting the public sphere with the economic and civil sectors. This transformation process, however, cannot be evaluated in the absence of the decentralisation of power which favoured the subnational administrative levels in most advanced countries. Decentralisation led to the extension of competences, while through the promotion of multi-level governance, the EU, by establishing cooperation between the various territorial levels and sectors, strived to achieve their renewed integration. The key factors of the process are cooperation and coordination, to which we must add the competition between the various spatial units. As a summary, a cooperative and partner state was developed, yet it has conserved its regulatory and supervisory competences. Therefore, it still dictates those framework conditions through which it is able to promote or hinder the development and competitiveness of urban areas.

Exposure of the Research Sub-Theme

A basic research topic in the framework of the project titled *Automotive Industrial District of Győr, was The changing roles of the state and their impact on spatial structure*.[1] The relevance of the topic is justified by the European and global revaluation of the role of cities, which is highly significant both from the aspect of analysing the situation and competitiveness of Győr and strengthening its economic position.

Due to their functions (commercial, politico-administrative, military, etc.), cities already served as the centres of gravity of the spatial structure of Europe connected organically to other elements of the settlement network in previous eras and this symbiosis has significantly strenghtened by the 21st century. Various regional and network linkages of cities are shaped by constraints such as the functioning of the global economy, as a result of which the horizontal relationships of the various elements of urban network are strengthened, and, through the selection of appropriate partners, spatial units engage themselves in associations and networks. On the other hand, the European Union, as a supra-national actor fulfilling the role of the state, operates top-down cooperation dynamics between various levels of spatial management in order to ensure a more efficient and profitable adaptation to social and environmental challenges. In other words, it contributes to the modernisation and improved flexibility of spatial structures in the framework of the realisation of EU integration and cohesion objectives. Neither administrative nor state borders need to be respected in the designation of optimal spaces guaranteeing the functioning of society and the economy, since these can be created through the application of different methods and adding *so-called intermediate territorial levels* to the administrative structure.

The emergence of new spatial structures and spatial units occurs in the midst of apparently contradictory conditions, on one hand, a certain group of states relaxed their omnipotence and decentralised a part of their competences to the profit of subnational organisations, or in certain instances they strengthened the local level, furthermore, they cooperate with economic and civil stakeholders in view of ensuring more efficient governance. We could witness the birth of the *cooperative and coordinative state*, as a result of which, states having functioned in a hierarchical and bureaucratic fashion for several centuries in the core areas of Europe, have been accorded new characteristics. On the other hand, despite revealing its new face, the state *in a wider sense* – irrespective of whether we are talking about the EU or a nation state – still orients, supports, and in certain cases regulates its administrative spatial units far more consciously than two decades ago, particularly its cities and urban areas; and this it does through applying innovative instruments motivated by the economic development and competitiveness.

1 The sub-theme A2 of the *TÁMOP-4.2.2.A-11/1/KONV-2012-0010* project titled the *Győr Automotive Industrial District as* a new direction and instrument of regional development is titled *"The changing roles of the state and their impact on spatial structure"*. Leader of sub-theme: Edit Somlyódyné Pfeil.

Before we turn our attention to the object of our research, the future of Győr, and attempt to outline the new orientations and instruments of the development of the area, we must base our investigations on two fundamental assets. On one hand, it is evident that each city, including the seat of the county of Győr-Moson-Sopron, belongs to the Hungarian and European urban network, therefore, it must not be treated in an isolated manner. On the other hand, a specific asset of Győr is that it is a medium-sized city since it falls into this category at the European scale, and, despite being characterised by certain suburbanisation processes, it cannot enter into competition with European metropolitan areas due to its size and economic performance. Győr is a city of national significance, which, albeit escaping the attractive force of Budapest, still belongs to the agglomeration of Vienna.

The point of departure of our investigations is the observation that Győr – in a similar way to the rest of the four large cities of Hungary – maintains a relatively small number of cooperations with other members of the settlement network, and even if formalised cooperations do exist (such as the Győr Multi-purpose Microregional Association, Arrabona EGTC), their dynamics are lagging far behind the desirable level, and their thematics are not oriented towards bottom-up economic development based on a strategic approach. In addition to this, the results of previous investigations demonstrate that the city does not have an outstanding performance as regards the formation of intersectoral networks, which could become a key factor of the creation of a knowledge-based local economy (Somlyódyné Pfeil 2012). In the knowledge of these facts, the sub-theme of the research attempts to provide a development direction for Győr on the basis of the analysis of European patterns and models, which may contribute to enhancing its governance capacities and ensure the most efficient creation of the conditions required for local economic development.

From the aspect of the sub-theme of our research, it is of outstanding significance that the European Union declared that cities were key stakeholders of economic development, and a significant method of their achieving competitiveness is cooperation and the new type of governance it embodies. In other words, cooperation is between the city and its hinterland, in an area organically shaped by the spatial processes of the economy, on the other hand, cooperation involves the widest circle of stakeholders of economic development, which contributes to a fluidity of the borders between the state, the economy and the non-profit sector. Therefore, the objective of the elaboration of our topic is to determine what type of spatial relations, management and development models can be associated with and adapted to these functions, and in what way these will affect cities of various size.

In order to achieve this aim, the investigation focussing on management and organisation aspects strives to detect the fundamental transformation which occurred during the past one-and-a-half decades in the institutionalisation of the examined metropolitan areas and regions in the states and urban regions contained by our sample. As concerns the research methods, it must be noted that the impact of modern urbanisation on metropolitan cities tended to model-like organisational-institutional structures in Western European countries which are the most economically advanced areas of the continent.

In the midst of modern socio-economic relations, it is no longer advisable to rely on the classical pattern of cooperation between local governments of cities and their hinterlands. The recipe for medium-sized and small towns is to form thematic cooperative networks in order to be able to enter into competition with metropolitan regions and create the concentration of population and economic activities required for the realisation of agglomeration advantages. What can be adapted to the Győr Automotive Industrial District in our case is that the objective of a city region is to spread economic development to a functional economic area constituted by an urban core and its hinterland or agglomeration. *Those public administration institutional structures or governmental measures and decisions should be placed "under one roof" in a fragmented space from a public administrative aspect which ensure political and economic integration transcending administrative boundaries.*

The Changing Concept of the City, the Attitude of the State Towards Cities

In order to be able to detect the relationship between the state and its cities, we must clarify that its object, the concept of the city has undergone a significant transformation. The European Economic and Social Commission decided to shift the focus towards the significance of European metropolises through its opinion formulation: "A metropolitan area is made up of a central core – either an individual town or an urban agglomeration; and a periphery – a group of neighbouring municipalities from which a significant number of residents commute to the central core every day. The notion of 'metropolitan area' is thus close to that of 'employment area' or 'functional urban region'. It takes account of the existence of peripheral areas that are highly focused on a centre, and whose growth depends on the development of that centre. In terms of time, metropolitan areas can extend to up to a one hour commute. They include urban and rural areas." (EESC 2004, 2.3).

The document examines the phenomenon of the networking of urban agglomerations, since due to the expansion of agglomerations, their employment catchment areas overlap and a polycentric urban region is created. An example of this new type of territory is the Randstad Region with a population of seven million inhabitants, the Rhine-Ruhr region with 11 million inhabitants, Öresund Region with two-and-a-half million and even the Vienna-Bratislava Region with its four-and-a-half million inhabitants.

According to an accepted position, the EU defined the notion of functional urban area in the ESDP for member states, even though the position of the Committee of Regions of 1998 already contained a comprehensive definition of metropolitan cities and their catchment area (Committe of Regions 1998). This is an obvious response to the problems induced by economic development, namely that economic activities are not aligned with administrative borders, the system of relationships of the economy can only be envisaged within flexible boundaries. This requirement is hard to reconcile with the fact that the city or urban core has its own representative-decision-making organ, and, in a similar way, in several countries, the sub-national spatial unit which constitutes the supra-urban

level of planning disposes of a governmental organ, yet the functional urban region situated in between disposes of no politico-administrative organ due to its distinctness from the state's overall territorial division.

From the aspect of the management of spatial development, regions and urban regions have been revaluated as spatial units, even though in several European states this level does not exist in an adiminstrative unitform. A main feature of a knowledge-based or post-fordist economy is the modified state spatiality (Brenner 2003), in which the role of local and territorial (self) governments has changed. For the purpose of improving the business environment, the aim is no longer the development of a sectoral-oriented, but rather a cluster-based local economic development policy. In order to achieve this, they must become real decision-making centres with sufficient authorisation to pursue their planning activities at the level of the urban region, dispose of budgetary autonomy, their own sources of income in order to acquire the new functions required for the implantation of companies, qualified labour force and knowledge transfer institutions (Lengyel 2010).

Undoubtedly, it is the national (urban) policy which provides the framework for cities to assume responsibility for their own economic development. This policy has many manifestations in European countries, englobing various institutions, financial resources, planning and regulatory instruments. The decentralisation of power witnessed primarily in Western Europe affected urban policy and the competitiveness of cities as well, seeking to reorganise the division of labour between the national, territorial and local level during the 1980–1990s, and which contributed to the economic success of several countries to a significant degree. Spain, Belgium, France and Italy have granted increasing autonomy and competences to their regions and urban institutions. In possession of political autonomy and scope of action, several metropolitan areas have elaborated and implemented their autonomous economic development strategies. This implies that a change has occurred in the orientation of urban policy as well, since the general objective of states is to secure a better position for their cities in the international competition of cities, i.e. to promote their economic development (Parkinson 2005).

Three main tendencies characterise the attitude of nation states: firstly, the already mentioned decentralisation of power towards the lower hierarchical levels, secondly, the elaboration of explicit national urban strategies, thirdly, guaranteeing the economic opportunities of cities, i.e. their positioning in the international competition of cities, whose time span started in the 1960s and extends to our days.

The existence of urban policy is in correlation with the degree of urbanisation of countries, therefore it is not by chance that the most urbanised states articulated their relavant targets in the late 1960s for the first time. The commencement of explicit national urban development policies can be dated to this period, and the demand for their elaboration intensified during the 1980s. With the aggravating problems, during the 1990s, cities received considerable attention, the method this time was the strengthening of competitiveness and social cohesion, through applying integrated, area-based and partnership-based national strategies. The *third tendency* encompasses the measures taken for enhancing the economic opportunities of cities, which involves the amelioration of their position occupied in the European urban network and urban hierarchy. From the 1990s onwards, central governments have declared the significance of the contribution of cities

to the competitiveness of nation states. These measures were enabled by the creation of the European Single Market. The conclusion is that this process promoted the renewal of the economies and population of European cities to a considerable extent, yet it also intensified competition among cities. The success of urban policies was ensured through additional means outside granting decision-making competences to cities, such as the application of the principle of partnership, the inclusion of civil society or the enforcement of the integrated approach in developments.

The European urban hierarchy is quite stable, yet on the basis of the example of several cities, it can be stated that their economies and competitiveness positions can be improved, this was the case with Madrid, Barcelona and Helsinki which were all able to progress in this field. The following correlation seems quite reasonable: German cities figure among the most successful cities of Europe due to the fact that Germany is the most decentralised state. The case of Barcelona and Madrid can also be explained by this phenomenon, in which the degree of regionalisation has almost satisfied the criteria of becoming a federal state (Parkinson 2005).

Undoubtedly, the European Fifteen have achieved an absolute competitive advantage over post-socialist countries as regards urban policy, where, within the frameworks of national policies, the promotion of EU Structural Policy has become the priority of cities.

The Concept of Polycentrism and Certain Aspects of Spatial Cohesion

Towns achieved their position not so much as a result of their individual efforts, but as a part of the urban network of Europe and the world. Their integration into a system of elements is not achieved solely by the global economy, but through the assistance of the EU's political-institutional structure and its basic organisational principles of operation, such as subsidiarity, multi-level governance and partnership.

Buck et al. (2002) defined the magic triangle of urban development policy as competitiveness, cohesion and governance (cited by Frank 2008). The trio named "Urban triangle" strives to eliminate the apparent contradiction between the desire to achieve social cohesion and fostering economic competitiveness. This is due to the shift in the centre of gravity of cohesion policy. Cohesion policy originally emerged as a counterweight with the aim of the moderation of territorial disparities, however, changes occurred with the adoption of the Lisbon Strategy in 2000, since growth and job creation have become the central priorities of the EU from then onwards. Consequently, Cohesion Policy became integrated into Competitiveness Policy and it no longer opposes market forces but strives to cooperate with those in view of enhancing competitiveness.

Territorial cohesion is a term derived from French spatial development policy and has had a significant impact on the debates surrounding the regional policy of the EU. From an institutional aspect, territorial cohesion is taken into account in the formulation of various policies, it reflects on the Structural Funds, and in a wider sense, it provides a framework for European spatial planning. In the latter, national competencies become imbued

with EU initiatives. Territorial cohesion functions in the form of a special basic principle, in which the traditional concept of spatial planning as a policy and spatial development as a process become intertwined in the entire area of the EU. On one hand, territorial cohesion must guarantee that development strategies are sufficiently connected with local resources for the purpose of the mobilisation of competitive capacities, on the other hand, that the idea of spatial justice prevails in EU policy (Atkinson – Rossignolo 2008).

There are two approaches to the analysis of the relationship between territorial cohesion and urban areas (Servillo 2008). According to the first approach, the area of Europe is characterised by an urban spatial structure. The mutual interdependence of cities is the reason why territorial cohesion is frequently translated into a spatial vision relying on the principle of polycentricity. According to the other approach, urban areas are interpreted as a political system, since cities have been primary political and cultural centres for thousands of years. The globalised world has effected modifications in the urban network, cities compete and cooperate with each other simultaneously as a new tendency, and they establish partnerships with economic stakeholders as well.

Polycentricity, due to ESPON-research, has become a priority of EU regional policy. The concept has been applied since the 1990s as an analytical tool for depicting the changing regional patterns of settlements. It is capable of detecting the changing interrelationships of cities due to their economic activities, which transformed the classical monocentric model of metropolitan areas. In urban regions, new sub-centres were formed as a result of the clusterisation of economic activities, i.e. polycentrism is related to multipolar urban regions (intraurban geography). Polycentrism refers to inter-urban cooperations as well, in cases when historically and politically autonomous cities establish functional relationships with each other (Van Criekingen – Corunut – Luyten 2007). The unconcealed objective of these shapes referred to as urban networks is to permit cooperating actors to achieve a critical mass required for regional-scale action, and by joining and supplementing their resources, to become competitors of large metropolitan areas. Polycentrism as such is applied as a primary fundamental principle of planning in the EU. A polycentric urban network emerges in a natural way, yet it can be created artificially, and we can find numerous examples for this latter case when planners attempt to grant a polycentric image to a certain region or metropolitan area.

In this relation, it is worth considering the example of Switzerland whose urban network is constituted mainly by medium-sized and small cities. The most significant subsection of the regional policy of the country is to provide a favourable environment for enhancing competitiveness on one hand, through boosting the performance of the national economy by supporting innovation. On the other hand, the model of polycentric spatial development serving as the main pillar of its agglomeration policy adopted in 2001 has a favourable impact on the diffusion of innovation, in contrast with highly centralised states where resources are concentrated in the capital cities. It is frequently highlighted in this place that cross-border cooperation enables cantons as subnational level units to support innovation, furthermore, by providing innovation counselling through partnerships, to promote the mutual utilisation of resources by neighbours or the operation of the technology of transfer in cross-border regions (Sohn – Reitel – Walther 2009).

As a response to global economic challenges, the Swiss federal government recognised that its most significant towns had to be organised in a network-type cooperation in order

to ensure their attractiveness for the international economy. This, in the case of Genève and Basel, can be achieved by the instrument of cross-border cooperation. Agglomeration policy defines the objective of small and medium-sized cities to be the reception of development impulses from metropoliten area by the means of their network-type organisation. The essence of this method is to establish an equilibrium between benefits and charges. Switzerland has defined as the dominant orientation of its agglomeration policy the intensification of vertical and horizontal cooperation stemming from its federative state organisation (Tobler 2002).

As a consequence, we cannot omit taking the specific situation of Győr into consideration, namely, through which already discussed spatial structure it desires to stabilise its position, whether it desires to become a sub-centre of the polycentric cross-border city-region with Vienna as its centre, or whether its embeddedness in an urban network formed by small and medium-sized cities is possible, also in a cross-border structure. The cooperative frameworks of both of these paths have been laid down during recent years by the Centrope region and Arrabona EGTC. All this implies that Győr is not an autonomous economic actor, instead, its fundamental interest is to define its position in the urban hierarchy and in relation to metropolitan areas and their core cities as well.

The Modernisation of Spatial Planning as an Instrument of Governance

In order to foster the international competitiveness of their metropolitan areas, an increasing number of EU member states granted special planning competences to urban areas (agglomerations, city regions, etc.), or "intermediate levels" from the aspect of the territorial division of the state, which is in harmony with the EU's effort to encourage cities to adopt a competitiveness-based strategic approach. The modernisation of the instrument of planning occurring in the past 10–15 years played a decisive role in this process, since traditional land use planning was replaced by development-type strategic planning. The modernisation of planning, the predominance of cooperative planning is in strong correlation with the new type of governance which is based on the self-definition and autonomy of local actors engaging themselves in networks.

Governance as a dialogue between sectors and actors is suitable for treating conflicts, self-definition consensus and joining resources. Ultimately, it creates new innovative structures and development priorities, which results in significantly higher efficiency compared with previous hierarchical-bureaucratic planning. In the case of planning at supra-local and city- regional level, public institutions are replaced by networks of the involved and affected actors, in which, in addition to the public sector, the economic sector, higher education and the civil sectors are also represented. The model of governance is an instrument appropriate for widening social participation as well. This way, in the framework of cohesion policy, the demand for a bottom-up, strategic, local asset-based economic development is combined with the enforcement of the principle of multi-level governance, the modernisation of the system of planning and the requirement of social participation.

Governance provides a framework for achieving the flexibility of territorial planning. The function of territorial planning is to counterbalance competitiveness in urban regions due to the scarcity of areas, i.e. through the coordination of the planning activities of the involved local authorities, to internalise the positive and negative external features of land use. The function of the state in this case is that of regulator and supervisor of regulation. This also implies that the state must somewhat retreat from spatial planning and delegate certain competences to the cooperating actors.

The reform of the edifice of spatial planning does not finish at this point, as it has been already mentioned, several states have upgraded their national systems of planning, and adopt a *so-called planning policy*, the objective of which might be the creation or restoration of an equilibrium within the national urban network, in other cases, the better positioning of cities in the global economy. This shift can be explained by the fact that the functions of cities have changed during the past decades. While during the decades post-World War II, the objective of the proportional distribution of cities of various levels of the urban hierarchy was to establish a balanced network of the provision of public services and goods for the civil population, during the past two decades, the *development function of cities* came to the fore. Several of these cities behave like entrepreneurs and act as local initiators of interventions. They cooperate with neighbouring and remote cities for the sake of finding the most suitable partners for their development targets. Geographical distance may lose its significance in the formation of these types of urban networks where cities join on a complementary basis along their development strategy, seeking complementary advantages. This process mostly characterises medium-sized citiess which, by themselves, are unable to compete with metropolitan regions (Cattan 2007).

Governance is characterised by the pair of cooperation and cordination, which do not merely depict the relationship between local-territorial actors, but also the transformed functioning of the state. In the meantime, public organs themselves tend to adopt coordination mechanisms in their internal governance relations together with and not instead of those hierarchical instruments which traditionally characterise states (Einig 2003). In case of the old EU member states, the instrument of coordination, as a result of organic development, serves the efficient communication between the state, the sectors and the territorial administrative levels and contributes to decreasing transaction costs. Among the new member states, it is primarily an instrument created in the form of procedural rules to ensure the more rational utilisation of the Structural Funds, the satisfactory functioning of which is hindered by the poor culture of cooperation.

The current agglomeration policy of the Swiss Federative Spatial Planning Office promotes horizontal cooperation in agglomerations, particularly in order to realise efficient urban planning. Therefore, the Office offers financial support to the development of joint planning projects and the coordination of planning activities of local governments which form an agglomeration or are planning to become a member of an agglomeration. In this respect, the decisive step was that new *agglomeration development programmes* were elaborated in various regions, and with this they acknowledged that several current planning problems affected regions or agglomerations, consequently, their isolated treatment was an obstacle to their efficiency (OECD 2011).

We can also mention France which decided in 2010 to elaborate a special regulation for three of its metropolitan regions (Paris, Lyon and Aix-Marseille-Provence) in order to boost the dynamics of urbanisation, furthermore, to encourage its metropolitan areas to elaborate and realise common spatial development and planning programmes in order to raise the level of their competitiveness and social cohesion (Balázs 2014).

It is evident that as a result of European integration, the fragmentation of competences can be witnessed among various spatial levels and spatial units which are increasingly dependent upon each other. In the meantime, the EU encourages the decentralisation of decision-making competences and renewed integration of the various administrative levels through the instrument of multi-level governance.

According to Schäfer and Stellmacher (2007), competitive metropolitan areas can be imagined only in efficient structures of governance, which can be realised through the practice of strategic spatial planning. This explains why the state emphasises the role of metropolitan areas in the administrative division of space and why they are authorised to adopt development strategies in countries with a knowledge-based economy. These development strategies will be accepted by the state as the basis of negotiation for formulating their own urban and economic policy and are utilised to support their objectives of strategic importance for the country. The nation state coordinates the development of various elements of the spatial structure of the country through the two-fold method of planning and financing, by determining the centres of gravity and generating synergic effects. French, German, Dutsch and Italian states have practiced and refined this system of territorial management for decades through so-called *plan-contracts or public contracts.*

Conclusions About the Role of the Cooperative State

It is highly important for urban regions to apply cooperation as an instrument may guarantee the unity of the urban region in the short or long-term and eliminate concurrence between stakeholders for the purpose of achieving common objectives. The institutionalisation of the urban region has two main trajectories, according to one, local governments continue their operation in the form of public legal organisations. The other and most frequently applied instrument is governance (Somlyódyné Pfeil 2012).

The new era of metropolitan areas began during the first years of the 1990s, the wider relationships of which were discussed in the previous subchapters of the study. The efforts of central and local stakeholders are both oriented towards the creation of functional and competitive urban regions. European integration has intensified territorial competition in metropolitan and urban regions of Europe, governance has increasingly been activated as a mechanism of economic development (policy) with the

- objective of fostering competitiveness (growth and employment);
- orientation: economic targets, fostering external capital-attracting capacity;
- characteristic: innovativity;
- normative fundamental principles: transparence, accountability, efficiency and rentability;
- organisational character: politico-economic coordination (Somlyódyné Pfeil 2011).

This process refers to a situation when the state loses its overall decision-making monopoly concerning the community and public policy. While the traditional concept of democracy separates private and public sectors, the idea of governance promotes and interconnects state-economy and state-citizen linkages. To sum up, urban regions are thematised according to

- planning,
- economic development,
- policy formulation
- and restructuring areas of state spatiality.

Nevertheless, the new type of governance has obviously not decreased the role of the traditional state whose functioning ensures the simultaneous presence of hierarchical, competitive and cooperative relationships. As a consequence, the areas of urban governance can be characterised as a combination of four factors (Benz 2001 sited by Frey 2003, 461.):

- Market: partnership-based negotiation and reconciliation and agreement;
- Hierarchy: the central regulatory power;
- Networks: cooperation;
- Balancing: central redistribution producing efficiency and innovation gains.

The economically successful countries are increasingly held to be the decentralised states, meanwhile, the role of cities is to maximalise their economic opportunities and successes, the most importand conditions of which are determined by the frameworks provided by national governments. Therefore, the risk of organisations institutionalising the urban region is their functional limitation (Herrschel – Newman 2003). Unless they are authorized with sufficient political and financial power, they are threatened by a loss of economic position and decreasing attractivity of their sites from the aspect of capital, labour force and external firms as well. That is, national framework conditions may support or block cooperations, since the central government is the owner of regulatory and controlling instruments.

Therefore, the results of our research might seem ambivalent, and even though the development path from the hierarchical state has led to the birth of the partner and cooperative state, we must still conclude that the nation state is necessary. This state disposes of competences through which

- it is able to transform the existing power structures, and renewing the spatial structure, as we know the extension or centralisation of decision-making competences are linked to economic competitiveness.
- The complexity of interconnections within urban areas and city-regions must be manifested in horizontal and vertical cooperations, the political framework of which are also created by the state.
- The instrument of structural policy formulation is in the hands of the state which operates the balancing mechanisms (definition of funding schemes, supporting model experiments, planning authorisation, etc.).
- Finally, through its agglomeration or urban policy, central government "participate" in the operation of institutions of strategic importance either directly or indirectly as well as in the international positioning of cities.

The Responses of the Hungarian State to New Challenges of Urban Development from the Aspect of Győr and its Catchment Area

It is evident that developed countries have witnessed changes in their urban policy due to their incorporation into the national political agenda. The typology of countries has been around for quite a while which makes a distinction between countries with an explicit or an implicit urban policy (Berg et al. 2007; Harding 2007; d'Albergo 2010). We can talk about explicit urban policy when the spatial focus of the state policy has an urban character both during the formulation and implementation of the policy. In this case, urban objectives are clearly present in political documents and discourse, and the scope of political decision-makers having access to the current supply and instruments of public policy is determined. In contrast, in the case of implicit urban policy, economic and social changes in cities are effected by the measures and interventions of various public policies of a specific country, i.e. these changes are only secondary consequences. Here, the territorial approach is absent from public policy, and the impacts are rather aleatory from the viewpoint of urban policy (d'Albergo 2010, 3.).

On the basis of the analytical system of d'Albergo (2010, 4.), direct urban policy means that public urban policy exerts its influence without the inclusion of additional stakeholders in the process of implementation, it relies solely on the cooperation between the central and local governments. Indirect urban policy means that the objective of central decision-makers is to create an environment and institutional, legal, financing, cognitive conditions which enable local actors to effect changes in urban matters through their own policies. In case we attempt to categorise the countries analysed in the current research, it can be stated that France, Germany and Switzerland have an explicit urban policy. These states place the emphasis on intersectoral coordination and strengthening the territorial impacts of their sectoral policies in order to better position their cities. The decentralisation of power was evident in case of each state which meant that the reorganisation of power occurred to the benefit of subnational tiers and city-regions in harmony with the instrument of indirect urban policy.

Naturally, there are also countries characterised by a so-called implicit urban policy, in their case, urban affairs do not constitute an individual policy and no separate institutional system is attached to them, however, urban-related measures emerge in sectoral policies operated at the level of ministries, which are coordinated at the national level. The latter category is constituted by Germany, Italy, Denmark, Finland, Sweden and Portugal (Parkinson 2005). Naturally, the overlaps in these categorisations demonstrate that experts' views may vary and the urban policy of an individual state is also subject to change.

National urban policies show a high degree of variance, the original member states constitute a distinct group among the EU countries, the bulk of which had elaborated their own urban policies by the 1960s. While the thirteen new member states were lacking such policy until the very recent period, only a few countries (e.g. Poland, Romania) strive to develop an urban policy under EU guidlines. If we compare Hungary with the rest

of the EU member states, it is evident that no explicit urban policy has been formulated since thetransition. Nonetheless, the National Spatial Development Concept (OTK) was adopted during the previous governmental cycle, (hereinafter NSDC, 2005), the objective of which was to attach a mid- and long-term overall system of objectives designed with a spatial approach to the absorption of EU funds during the previous seven years.[2] In other words, *an implicit urban policy emerged in the form of a planning document which situated the future vision of urban network within the scope of regional policy. If we continue to seek the further characteristic features of urban policy*, than their lack will become evident, since the NSDC has neither attained the level of communication, nor the realisation of its content. The ten visions concerning the development of the urban network have not been realised, for the most part, it was the physical reconstruction of city centres which was targeted from EU funds. These investments, due to their nature, remained isolated developments implemented by the urban core, they did not lead to cooperation between urban areas. And these types of interventions were associated with social urban renewal only in exceptional cases and in various districts of Budapest.

During the previous EU planning period of 2007–2013, it was particularly important both for the European Commission and nation states to decide along which development strategy to reconcile competitiveness objectives with cohesion, i.e. economic opportunities with social needs. It must be mentioned that during the previous seven years, only 16 percent of EU development funds (acknowledged by the Hungarian government) transferred to Hungary were consecrated to economic development, which is a very low rate. In contrast, during the new planning period, this rate is going to be increased to 60 per cent. This calls attention to the fact that the two pillars of a marked urban policy, economic development and the tackling of social problems were underrepresented in urban development practices of the previous seven-year cycle. In the following, let us take a look at the urban policy-related elements defined by NSDC!

NSDC outlined seven national territorial objectives for the period until 2013, the first two of which are relevant from the point of view of our subject:

1) Developing a highly competitive Budapest metropolitan area;

2) Strengthening development poles to dynamise regions and developing an interconnection system forming a network of cities.[3]

Much was anticipated nine years ago by the fact that the NSDC counted with the creation of a harmoniously functioning system of agglomerations based on the efficient cooperation of members of the agglomeration of Budapest. Moreover, harmonised planning targeting the development of the capital city and its peri-urban ring was the main focus. However, the instruments of implementation gave rise to several concerns since partnership cooperations of various stakeholders of the agglomeration and the establishment of management organisations were mentioned to which the state did not offer any financial

2 Gov. Decree No. 97/2005. on the National Spatial Development Concept.

3 The five additional objectives were the following: The closing up of external and internal peripheries, lagging areas; Integrated development of environmentally sensitive areas of national significance; Strengthening the cooperation between cross-border areas; The spatially integrated development priorities of rural areas; Spatial priorities for sectoral policies.

contribution whatsoever.[4] Thus, no public institution or network cooperation was established in relation to the capital city and its agglomeration which would have been able to remedy the administrative fragmentation of this area.[5]

NSDC took into account the capital city's role of economy-organising centre as well as its spillover effects exerted on the entire territory of the country and on regional poles in particular. The resolution of the Budapest-centric spatial structure was an explicit objective of the concept, using regional poles as its means, which were expected to generate the development of the catchment areas even across borders. This explains the standpoint of those drafting the plans in saying that the most significant role of the poles would have been the introduction and dissemination of innovation. (Győr was included among the regional poles.)

The development of regional poles was based on two objectives. Firstly, the development of the regional functions of big cities (in terms of innovation, economy, culture, governance, commerce); secondly, the creation of adequate conditions – accessibility, cooperative relationships, sub-centres – for the success of their radiation effects. The final solution would have been provided by the directives drawn up in the NSDC for the creation of cooperative regional urban networks which depended on the development of a harmonious system of centres, sub-centres and axes, in all of the seven regions. The development of the planned urban network relationships, the creation of the division of labour between poles and county seat cities were not realised since the development of the planned accessibility was lacking.

In the meantime, the 2014–2020 EU planning period has started, and in the framework of the preparations, the Parliament adopted the Concept replacing the NSDC under the title of National Development and Spatial Development Concept (hereinafter OFTK). A unique feature of the strategy is that sectoral policies and spatial objectives targeting the development of the country were integrated in a single plan.[6] The situational analysis of OFTK lays down that the ideas about spatial cohesion have not been realised during the past seven years, spatial inequalities have increased in Hungary and the excessive dominance of Budapest still prevails.

Thematic objectives are divided into sectoral policy and territorial objectives within which the creation of a "competitive, innovative economy" is featured between mid-term sectoral policy objectives, while the creation of an "urban network guaranteeing a

4 Sub-target No. 10 of point 1 of Chapter III of OTK.

5 In the NSDC, the development of a highly competitive Budapest metropolitan area summarised reasonable and monumental objectives: Strengthening of the role of Budapest and its surrounding area in international economic affairs, as well as its organic integration into the European economy and furthering its role as a gateway city; strengthening its role as an international tourist centre; making the city and its agglomeration livable with the help of overall environmental management and environmental planning; creation of a harmonious and sustainable agglomeration system by creating incentives for the communities within the agglomeration not to physically grow together; modernization of transport connections; the improvement or creation of institionalized cooperation between organizations, settlements and parts of them in question.

6 Gov. Decree 1/2014. (I. 3.) on National Development 2030 – on the National Development and Spatial Development Concept.

polycentric spatial structure" features among the territorial objectives. These are added to the so-called regional strategic areas ensuring long-term development which are the following:

- the dominant macro-regional role of Hungary,
- the macro-regional leading role of Budapest,
- urban network and urban policy,
- modern cities which guarantee high quality of life,
- the comprehensive development of cities and urban areas based on urban network cooperations,
- the economic and cultural modernisation of rural areas, the renewal of relationships between cities and rural areas, etc.

The present study does not extend to an in-depth analysis of OFTK, however, on the basis of the above written, it can be declared that it reproduces the objectives of the previous NSDC in several respects, and it emphasises the multi-dimensional development of the urban network. In light of the negative experiences, it declares that it is vital to encourage the elaboration of integrated urban development concepts and strategies and the joint planning of urban areas. And according to the strategy, this will generate cooperation among the elements of the urban network and their joint development.

On one hand, it is noteworthy that urban policy as an objective is defined explicitly by the National Development Strategy. On the other hand, there is no trace of a ministerial or lower level organ in the state organisation to which urban policy could belong. Neither the Ministry of National Development, nor the structure of the Ministry of Internal Affairs responsible for public administration and local governments contains the task of urban development. The development of cities, however, is among the requirements of the EU in relation to the absorption of the Structural Funds, therefore, each city of county status, and amongst them, Győr, was offered targeted development funds for the 2014–2020 period by the government. The current problem is that the development financial recources of local governments in the city's agglomeration are concentrated by the county government fulfilling the role of the subnational level and responsible for spatial development as well. The two channels of financing do not seem to be coherent.

So far we have reviewed the situation of urban policy from the aspect of the state in Hungary, on the basis of which it has become quite clear that strategic planning is not integrated with the structure of implementation, furthermore, the state does not even strive to position the major cities in the European competition of cities. No pragmatic concept exists for the elimination of the fragmentation of urban areas, and local stakeholders are apparently not interested in the concentration of forces and cooperation excluding competition. The cooperative propensity of local authorities striving for autonomy in Hungary is rather low, there is a continuous absence of regional thinking (Somlyódyné Pfeil 2012a).

In practice, cooperative organisations between Hungarian big cities and their agglomerations cover a small number of cooperations with a narrow content, mostly designed for the common provision of human public services. Frequently, there is no institutionalised cooperation between the local governments of the urban core and its hinterland. On the basis

of the results of an empirical research conducted between 2010–2012[7] , it was demonstrated in the urban areas (agglomerations) of Győr, Pécs and Miskolc that 25 per cent of the local governments maintained no relationship with the core city, according to 13 per cent of local politicians, existing relationships were poor from a certain aspect, and only 62 per cent gave a positive evaluation. This was surprising in that era since para-public institutional system of spatial development – in the form of various regional development councils – were operating at the regional and sub-regional (micro-regional) level, which were unable to establish effective cooperations according to the majority of local stakeholders.8 Furthermore, over half of the local politicians declared that they had no effective joint development projects with other local governments, i.e. they were unable to name a common development objective. In contrast, local governments giving a positive response to the question (45 per cent) described the nature of the common development as well. The examples of common development objectives did not produce illusions in any of ourdesignated agglomerations, no measures were discernable targeting the direct boosting of the economy or the development of the business environment. On the basis of the nature of developments, we concluded that infrastructural technical investments (transport, wastewater, waste) played the dominant role, followed by investments targeting the provision of human services (Somlyódyné Pfeil 2012a). On the basis of the precendents, it is not surprising that the municipality of Győr is determined to maintain its exclusive role in the area of economic development.[8]

These cases mostly reveal the existence of a direct urban policy since the government does not encourage urban development cooperation between various levels and sectors. Hungary, through the development of its institutional capacities during the ten years post-accession, has constantly strived to catch up with the EU. The highly centralised member state has not been able to take substantive steps towards decentralisation. Consequently, the combined weakness of the autonomous territorial levels and the social sector hindered the evolution of the mechanisms of multi-level governance. According to the Report of The State Audit Office on the evaluation of the institutional system of development policy – in contrast with the official rhetorics – there has been no sign of effective decentralisation either in the area of decision-making or in the allocation of funds in Hungary during the period of 2006–2013 (ÁSZ 2013). The central government has highlighted since 2010 and made especially clear since the parliamentary elections of 2014 that it is determined to strenghten the role of the state, which involves the nationalisation of certain tasks of local and territorial governments.

7 *Registry number*: K81789, *Title*: Issues of the institutionalisation of agglomerations within and beyond the structure of public administration. *Research leader*: Somlyódyné Pfeil, E. The research covered a two-year period from June 2010 to May 2012, supported by the Hungarian Scientific Research Fund (Országos Tudományos Kutatási Alap, OTKA). The research focused on empirical findings in the city regions of Győr, Miskolc and Pécs. These three city-regions are those which the methodology of Hungarian statistic considered as agglomerations, in addition to the agglomeration of the capital city.

8 This was justified for instance by the fact that following an ardent struggle, it was decided in July 2012 that the logistic centre of AUDI Hungária Motor Kft. would not be located in the area of the commune of Gönyű but in Győr. The idea of cooperation did not even emerge among the potential sites, both local governments lobbied for the exclusive ownership of the economic investment even though they belong to the same urban area.

This latter fact is a consequence of the victory of the right-wing party in 2010 indicating a change in state organisation. Regions and regionalisation sank into oblivion, the previous regions and microregions organised on the basis of para-state institutions disappeared and were reduced to their previous rank of nomenclature of territorial *units* for *statistics* (NUTS2). They were replaced in the public administrative structure by counties disposing of an indirectly elected representative body and fragmented, small-sized municipalities.

The previous, quite colourful institutional framework of the cooperation among local authorities was put out of force by the legislator. The new Act on Local Governments provides a single overall type of association for each local government, regardless of whether they wish to cooperate in urban or rural areas.

It must be noted, however, that since thetransition, the Hungarian public administration has been lacking a public legal organisational framework into which towns and urban areas could be integrated. There has been no adequate institution for the cooperation, joint planning and development of urban catchment areas, not to mention their operation. There is one exception to this fact related to Budapest and its agglomeration. The (agglomeration) association formed around the capital city remained the unique voluntary and special association until 2011 listed in the Act on Local Governments by name as offered by the legislator. However, no cooperation was established among Budapest and the local governments of the agglomeration during the past 24 years, therefore the agglomeration is not positioned as a unified metropolitan region.

Unfortunately, among the reasons, we must mention the lack of political and economic interest on behalf of central governments during the recent one-and-a-half decades towards the creation of a large-scale metropolitan region institutionalising the Budapest agglomeration. The other possible institutionalisation form was the establishment of the Budapest Agglomeration Development Council, which figures among the regional development councils whose establishment was obligatory. With the modification of the Act on Spatial Development and Spatial Planning entering into force as of January 1, 2012, this organ was also abolished. During the functioning of this para-state institution, it exerted no substantive impact on the development of the metropolitan area. Nevertheless, the agglomeration of Budapest is not referred to as an agglomeration even in the narrative of legal regulation, it has been requalified as a catchment area of the capital city by the legislator.

It is a well known fact that Hungary has only one metropolitan agglomeration in international terms, namely the metropolitan area of Budapest. At the same time, the second level of the urban pyramid, – the category of large towns with a population of 300,000 – 500,000 is totally lacking. The next category of towns are qualified only as medium-sized cities according to EU standards. The five outstanding large cities constituting this category from the aspect of the Hungarian urban network have 100 to 200 thousand inhabitants and are lacking international visibility. Győr, a city with dynamic economic development, situated along the Budapest-Vienna axis belongs to this category. Nevertheless, its population is decreasing, while in 2012 it counted 130,000 inhabitants, one year later the Central Statistical Office registered only 128,000 inhabitants (KSH 2012, 2013). This decrease is explained by intensive suburbanisation.

Győr, the centre of the Automotive Industrial District, due to its size, can aspire for the position of sub-centre of the metropolitan region with Vienna as its centre.

Therefore, from the aspect of Győr, it would be highly beneficial to establish cooperations with the CENTROPE region, which extends beyond four countries' borders. Thus, it institutionalises the cooperation among the Austrian, Slovakian, Czech and Hungarian territorial units and cities. The transnational cooperation targeted an ambitious objective during its foundation in 2003: the establishment of a socio-economic zone transcending administrative boundaries which aspired to become the most economically advanced area of Central Europe. This polycentric region realises thematic cooperations and joint projects, and will obviously be able to ensure the intensive integration of Győr into the border region pursuing competitiveness objectives. Therefore, regional dimension activities in the metropolitan area of Győr are envisageable only through an integration with an even more advanced area. Currently, the problem is that the local government of Győr seceded from the cooperation in 2013 and as a consequence, it has lost significant development opportunities.

In 2011 Győr City of County Status was the initiator of Arrabona European Grouping of Territorial Cooperation constituted by two Hungarian (Győr, Mosonmagyaróvár) and two Slovakian (Dunaszerdahely, Somorja) cities. EGTC currently resembles a polycentric network, but its founders would like to extend its scope of action to the settlements of micro-regions surrounding the cities. Among its objectives – in addition to social and econmic cohesion – access to EU funds and territorial competitiveness are also present.

In light of the above written, the task of Győr according to one of our conclusions is to integrate its urban catchment area, and this requires an increasing number of more intensive cooperations with other local governments and with the economic, knowledge transfer and civil sectors within national borders and at the transnational level as well. For the city of Győr it is crucial to recognise the significance of cooperations so that it may be counted as a stakeholder at regional-level, and not merely as a local actor. In light of our second conclusion, the development of cities and urban areas is not solely the responsibility of the EU, but the Hungarian state as well. Despite the new concept of the role of the state, the state is not redundant, since it is the state which authorizes its spatial units on the basis of sovereignty which are required for their efficient functioning and their ability to resolve common tasks within international frameworks. The scope of action of the spatial units of the nation state is determined by the national legislation, the amplitude of activity of a given city or city region cannot extend beyond the public law quality and competence fixed by the regulatory norm which cannot be modified either by the frameworks provided by international cooperations or new institutions.

As concerns the framework conditions of the functioning of Győr, the institutional reform of the Hungarian public administration reveals the traits of an etatist state. Within its frameworks, government tools of local governments present an explicit public lawcharacter, moving them closer towards classical government and distancing them from governance. The circle of available institutions of cooperation is quite limited and interfaces for cooperation and interaction with higher governmental levels and other sectoral (economic, non-profit) stakeholders are extremely narrow.

The emergence of new types of cooperative structures (network governance) justifies that the concentration of forces and collaboration are of key importance even in the most competitve economies resulting in the evasion of competition and the coordination of diverse interests in view of achieving an economic goal (Joye – Leresche 2004).

Main Relationships between Town Structures, Economic Growth and Automotive Industry in Central and Eastern Europe

ZOLTÁN EGRI

> We need to see that cities are in the focal point of development "since in this territorial unit spatial processes are concentrated, on the one hand their character and the specificities of their functions determine the development of their regions, on the other hand they stimulate and hallmark competitiveness."
> (Rechnitzer 2006, 105.)

> "Cities are vibrating impulses of our society."
> (Hahn 2010, 2.)

KEYWORDS: city/urbanization, competitiveness, automotive industry

ABSTRACT: Today see we the renewal of urban researches: cities, where spatial processes are rather concentrated, became focal points of both regional and national economic development and competitiveness. Based on this statement the goal of our paper is complex. On the one hand we intend to present the special territorial inequalities of the Central and Eastern European region, which can be still characterized as "in transition", as well as cities and urban areas. We incorporated the results of our typifying into convergence analyses, which showed the economic catalyzing impact of the delineated urban areas. As a further goal we identified links between different types of urbanized areas, automotive centers and economic growth. Another convergence analysis has shown it clearly that automotive centers do contribute to economic and regional dynamics in Central and Eastern Europe. Last, but not least we analyzed and positioned Hungarian counties in the light of urbanization, macro regional centers and in automotive context. In our view, macro regional structure and location are the key factors in the success of automotive centers: the counties of Győr, Esztergom, Szentgotthárd and Kecskemét benefit from these features.

Foreword, Main Goals

From the beginning of the new millennium we live the renaissance of urban research. The European Spatial Development Perspective (ESDP), adopted in 1999, attributes a renewed regional role to cities. Articles 6778 state that "the concept of polycentric development has to be pursued to ensure regionally balanced development, [...] the economic potentials of all regions of the EU can only be utilized through the further development of a more polycentric European settlement structure." Beyond this, the document notes that "spatial development perspective restricted to a polycentric development of individual metropolitan regions is not in line with the tradition of maintaining the urban and rural diversity of the EU. For this reason a polycentric settlement structure across the whole territory of the EU [...] must be the goal.[1] " According to the Study the establishment of a multi-center network is important, because dynamic regions, appropriately integrated into the world economy, consisting of the network of international metropolises and their hinterlands, play a key role in the improvement of the territorial balance in Europe, and, eventually, the development of rural regions will fallow too. (After this long preface we need to note that our goal is not the research of the polycentric spatial structure, we quote the above articles as basic principles, to strengthen the emphasis on the developmental role of cities).

The current situation, which is not very favorable from the viewpoint of territorial inequalities, has been analyzed by several documents. Cities are the engines of the European economic growth; in the EU they act as catalysts of innovation. According to the Fifth Cohesion Report (EC 2010b) 60 per cent of the EU population lives in urban areas and they supply 68 per cent of the gross regional product. Another significant statistic data set shows that in the so called "Pentagon area"[2] , which is the most urbanized region of the EU, lives approximately one third of the EU's population, half of the GDP is produced and three fourth of the R&D expenses are located here. However, we need to consider that these territorial concentrations, agglomerations have to face other problems beyond welfare, industrial branches working with high added value and workplaces. (Such as e.g. the risks[3] of poverty and social discrimination or the questions of environmental sustainability.)

1 Kunzmann's (1992) blue grape model is based on a similar idea. The main European cities form grapes (along with their catchment areas and they form a bunch in Europe. Gorzelak (1997) elaborated his famous model on spatial structures, the Central European Banana on the basis of cities as well.

2 This is a region delimited by the cities of London–Paris– Milan–Munich–Hamburg.

3 In the Fifth Cohesion Report (EC 2010b) a rather meaningful context was published again: the proportion of poor and very poor population is higher in the more urbanized regions of the more urbanized Western Europe, than int he less urbanized regions.

In our paper we focus on the Central and Easter European (CEE) region, still in the state of transformation, our main goal is to give an insight on the specificities of the local towns and urban areas, as well as their connections to economic growth and automotive industry.

We are looking for the answer to the following questions:

- Based on what criteria are cities/urban areas defined today?
- On which level is it worth/necessary to do research? How can we measure cities and urban areas? Which methods facilitate the typifying? What are the indicators of urban performance?
- How does CEE's urban network, "city map" look?
- What connections can be discovered between urban spatial structures, automotive industry and the economic growth? Do main automotive centers really increase the economic dynamism in their region? (If they do, how do they affect regional economy?)
- How can Hungarian regional and automotive centers be positioned according to their level of urbanization?

The scope of this research covers Central and Eastern Europe, as follows: the Visegrad Group, Eastern Germany, Slovenia, Romania and Bulgaria. Throughout the presentation of the literature we highlight the cities and urban areas of these countries (wherever it is possible) we intend to present their roles both in European and Central and Eastern European context. In the second part of this paper, to contribute to the presentation and illustration of the differences in regional specificities, we conduct a mathematical-statistical city typifying based on the main city forming factors and functions. After all this, we are going to present the role of cities in development: we are going to demonstrate the main connections between economic growth and the automotive industry, which is the main engine of regional development.

Summarizing the Literature

Throughout the presentation of the related literature we summarize the current different city and urban area interpretations and their methodological specificities. The related papers and project reports of ESPON, Eurostat and other important publications form the basis of this work. (ESPON 2005; ESPON 2007; Kezán 2006; Bretagnolle et al. 2011; EC 2010a; EC 2010b; EC 2011; Bengs – Schmidt-Thomé 2006; INTERACT-ESPON 2007; ESPON 2006; EC 2013; Dijkstra 2009; Eurostat 2013; BBR-IRS 2006; ESPON 2012; EUROREG 2010; European Institute for Urban Affairs et al. 2012; OFTK 2014; Tóth 2003; Radvánszky 2007; Büdde et al. 2010; NFGM-VÁTI 2010; Tu WIEN et al. 2012; UMR 2006; Annoni – Dijkstra 2013; Illés 2005)

- Urban researches can be basically summarized based on the territorial level, the mainly cities and urbanization are approached from the aspect of administrative levels and regions (areas). In some cases mixed approaches occur as well[4]
- On the whole we can say that "cities are not always cities", since their broader-narrower catchment area/hinterland appear quasi always in the spatial analyses of different social-economic factors. After studying the main European empirics we can ascertain that typifying cities and urban areas can be considered at least as diverse as in case of rural spaces.
- At the same time, we need to approach the majority of researches with reservations. In case of city level researches (specifically in case of Urban Audit) several factors aggravate the coherent interpretation, e.g. the availability and reliability of the data base, the territorial aggregation cannot be considered as dependable either. Due to the importance of cities' radiating, development generating role we need to highlight the significance of the delineation of catchment areas by using a uniform methodology.
- One of the main questions of the interpretation of territorial researches is the methodology of delineation, its specificities and its methodological consequences. As a solution for the problem of frequently occurring modifiable territorial units could be that they should be always referred to along with their catchment areas, or researches should be conducted with consideration of the specificities of settlement morphology. Certainly none of these solutions can be considered perfect, in latter case for example the consequences of the pretended regionalization make interpretations difficult. Therefore the profound knowledge of the researched area is indispensible to be able to conduct accurate and factual researches.
- Based on above designing the urban map of Central and Eastern Europe is not an easy task. We find as many typifying as cities and urban areas, and coherent approach is made difficult by the fact that there are only a few researches aimed at the whole region. Of course, the primacy of Vienna, Berlin and the "new" capital cities in the region is beyond question, whereas the complex discovery of the small and medium cities may be expected in the future. We intend to fulfill this task (too) in the next chapter.Evaluation of urban dimensions is facilitated by several indicators, mainly dealing with land use, economic output, innovation, knowledge and info communication and demography. Beside these the different urban functions have important role; we speak mainly of the national and international decision making and settlement morphological specificities, depending on the given regional level.
- From the viewpoint of methodology we need to face a mixed picture as well, besides the one dimensional (Benett method, ranking etc.) tools the use of multivariable tools is also widespread. (However, the use of this latter one is rare.)

4 Among others, in case of the frequently referenced MEGA (Metropolitan Economic Growth Areas) as well. (ESPON 2007).

Methodology of the Research

In this part of our paper we intend to draw the map of the urban network and urban structures in Central and Easter Europe and present their connections with the economic development and the automotive industry.

Territorial Delineations

The "macro" framework of our research is the so-called CEE region. This region consists of eight countries and one part of a country: Poland, Czech Republic, Slovakia, Hungary, Slovenia, Austria, Romania, Bulgaria and Eastern Germany. We held it important to include the regions of the former GDR into the scope of our analysis, since these regions were also affected by the socialist regime[5] , some factors of their social-economic (but mainly the economic) structure, situations are in worse condition than in the other countries and regions forming part of the research. We wanted to include Croatia, a new EU-member, and other Balkan states as well into the research, however, because of the lack of data they had to be omitted.

The "mezo-level" spatial scope was approached from the following aspect. In our research we choose the NUTS3 level. (NUTS2006 classification, see the main characteristics in Table 1) In our opinion the NUTS3 level is closer to the cities. We definitely do not mean that the NUTS3 level would be perfect; still we (can) get more favorable results despite the fact that we need to deal with a poor data base. In the research area there are many (328) NUTS3 level territorial units, these may lead to significant results. The NUTS2 level may be more favorable from the aspect that it would bypass the loss of information originating in aggregations. Besides this, of course, there are several weaknesses linked to this territorial level, e.g. the problem of the reliability of the gross regional product or the significant size dispersion[6] (in this latter case).

5 This is, of course, obvious, however, not in the everyday life. Moreover, the economic sector does not consider Eastern Germany a post-socialist country (country part) either. However, e.g. the long term unemployment rate is rather high in the nine Eastern German regions. Berlin's is as high as in the Central and Easter Slovak regions, while the NUTS2 regions of Dresden and NE Brandenburg compete with Northern Hungary from this perspective. The unemployment dateline is even more informative: Frankfurt (Oder) and the cities of Brandenburg fallow a similar path as the Bulgarian Smolyan, Sliven and the Slovak Presov and Zilina regions. (They started at 20 per cent, by 2001 the rate of unemployed persons is still at 13–15 per cent.) In 2001 Demmin was the German NUTS3 region with the highest unemployment rate (25.1 per cent), by 2009 this value sank to 18.9 per cent. At the same time the Polish Elcki decreased its unemployment rate from 28.8 per cent to 6.9 per cent.

6 The relative dispersion of the population in the research area is 90 per cent, in case of the Hungarian micro regions it is 226 per cent, without Budapest it is 85 per cent. Thus, we agreed to the use of this territorial level.

Databases

The databases were made available by Eurostat, ESPON and Urban Audit. To the analyses we intended to collect the widest and most varied databases possible, which are relatively more up-to-date as well. Our database has the main and additional factors of urban performance, namely the indicators of economic output, economic structure, availability, demography, innovational performance, info communication and land use.
We had to face a rather poor data base. Throughout the first – NUTS3 level– researches we collected 50 types of data. The main indicators are the following:

- *Landuse*: Corine land cover data are provided by the ESPON database, CLC[7] 1st level, and artificial surfaces 3rd level indices were incorporated into the analysis;
- *Economic development*: Gross domestic product per capita, its growth rate, GDP and the indicators of employment concentration; (ESPON, Eurostat)
- *Economic structure:* agriculture, industry, services, within this latter trade and commerce, short-stay accommodation, transport, financial intermediation and real estate affairs (hereinafter business GVA) and the gross value added (per cent) by administrative, community services and household activities; (Eurostat)
- *Accessibility*: accessibility on roads, railroads and by air; (ESPON)
- *Tourism:* proportion of commercial accommodations; (Eurostat)
- *Demography*: population density, net migration, aging index, population available within the radius of 50 km[8] , size of the population, population per 1 km^2 artificial surface[9] ; (ESPON, Eurostat)
- *Info communication*: IP addresses per 1 km^2; (ESPON)
- *Innovation*: ratio of patent applications (per million people) and their concentration (ESPON).

The time frame of the research in this case is the period between 2006 and 2008. Several indices have been presented in logarithmic form as well (population density, GDP and other concentration indices.)

Factor Analysis

To the city typifying we applied multivariable analysis conducted by the software SPSS for Windows 20.0. "It was not least due to and based on the multidimensional and multivariable character of development (among other complex features) that by the sixties-seventies mathematical-statistical methods of complex character, but above all the factor analysis, aiming at the analysis of hidden multidimensional and multivariable concepts, became analysis tools of daily use. (Nemes Nagy 2005) Factor analysis concentrates information originating in a given multitude into some hypothetical vari-

7 Corine Land Cover.
8 This index is also known as population potential, and stands for the demand for public services, market opportunities and polycentrism.
9 This is an index, which is mainly linked to the quality of the environment and natural values. In case of urban areas it is the index for the "condensation" of the population, and in this case this is the point of focus.

ables. The direct goal of the method is to expressing the observed variables as a linear combination of common factor variables, which explain the main part of the original variables' dispersion. (Szelényi 2004) At the same time factor analyses is a structure exploration method as well, which means that there are no predetermined dependent and independent variables, but we need to explore the connections between the variables. (Sajtos – Mitev 2007) Regarding this method we need to note that the by using the resulting defined factors we can conduct further multivariable analyses. Factors can be incorporated in cluster analyses, multidimensional scale techniques, discriminant analysis etc. (Ritter 2008).

Among others, one of the main advantages of the method is the objectivity of weighting. In this case we intend to present and interpret the connections between the main indicators of urban performance.

Cluster Analysis

Cluster analysis is a method facilitating typifying and classification; it is basically a dimension reduction technique. The variables ordered to the single research units stand for the original dimensions, by which we intend to classify the observed units in a way that the ones belonging to one group shall be close to each other and they shall be far from every other group and cluster. *In our paper the single variables are represented by latent variables expressing urban character – created by factor analysis.* From the definition follows that the main feature of cluster analysis is distance. The similarity or distance matrixes form the starting point for cluster algorithms. Cluster procedures might be hierarchical (tree-like structure) or non-hierarchical (K-means) (Székelyi – Barna 2005). The choice of used method depends mainly on the research problem or given situation. While throughout the past years hierarchical methods were popular, by now, the acceptance and prevalence of non-hierarchical methods is increasing. The utilization of non-hierarchical methods is favorable if the number of sampling units is high. First, by using a hierarchical method we need to determine the ideal number of clusters, the centers and detect the outliers. After screening for outliers, the remaining observation units shall be classified – based on the cluster centers originating in the hierarchical method – by using non-hierarchical methods. Afterwards, the non-hierarchical method does the "fine-tuning", making possible the changes in the cluster membership (Sajtos – Mitev 2007).

Regression Analysis, the Method of Path Coefficients

Regression analysis is a method where connections between one metric dependent and one or more independent variables are analyzed. Throughout the regression analysis (just like in case of correlation calculation) we are looking for an answer considering the existence, direction and strength of the relationship between variables. The questions posed in case of regression analysis and correlation calculations differ from one another inasmuch as in the first case we are looking for an estimated value. Estimation can only be successful if we can create an appropriate link between the explaining (independent) and dependent data. In case of correlation calculation we do not know the relationship between the

variables (which one is dependent or independent), in case of regression analysis we need to define the dependent or independent parameters. (Sajtos – Mitev 2007) The method of path coefficients (Galó – Kvancz 2007), also known as path analysis can be applied in order to decompose the effects of the explaining factors in the regression model. Wee need to see the direct and indirect effects of the single variables since the separation of the single factor effects is not always unambiguous. This is made extremely clear when comparing the values of the same variable's total and partial derivatives. Beyond the fact that numerically they do not equal, their signs (positive or negative) might differ as well. This can be attributed to the fact that only a part of the factor's total effect is direct, the remaining part is affected by other - correlating - factors' indirect or joint effects. *By using the above techniques we intended to establish the causal model of regional economic growth, our main goal was to identify the connections between the key indicators.*

Mapping

And last but not least we attribute an important role to maps, on which method I would like to cite the conclusions of Tóth (2005). The map is mainly an illustrative tool; however, it can be used as a tool of analysis also. Maps play an important role in discovering the specificities, general rules and mutual context of phenomena, processes and single objects. By comparing maps, displaying diverse factors or showing multiple factors on one single map territorial aspects of phenomena can be studies in an efficient manner. Mapping was conducted by ArcGIS 10.1 spatial analysis software.

Main Results

Studying urban/urbanized areas on NUTS3 level

First we conducted the factor analysis. The factor analysis we run contains 21 indicators; the main results are presented in Table 1.[10]

10 KMO index is 0.824, significance of the Bartlett test is 0,000.

Table 1: Main characteristics of the research area's NUTS3 regions

Country	NUTS3	Name	Average population (1000 persons)	Average area (km^2)
Bulgaria	28	Oblasti	273.6	3964.4
Czech Republic	14	Kraje	738.1	5516.6
Eastern Germany	103	Kreise	161.2	1054.2
Hungary	20	Megyék + Budapest	502.8	4652.4
Austria	35	Gruppen von Politischen Bezirken	279.6	2316.7
Poland	66	Podregiony	577.6	4731.4
Romania	42	Judet + Bucuresti	513.0	5475.7
Slovenia	12	Statisticne regije	168.2	1678.2
Slovakia	8	Kraje	674.7	6128.2

Source: Author's own edition based on Eurostat (2013).

The main connections were the following: In the factor called Concentration contains approximately 32 per cent of the information, its eigenvalue is rather high (6.69.) Indicators of concentration are to be found here. The concentration of employees, population, IP addresses, the proportion of artificial surfaces and the economic concentration all move in the same direction. The proportion of primary gross added value and the non-coherent settlement structure, the proportion of urban texture show in the same direction as well, however, their sign is reversed (+/-) in contrast to the first group of indicators. The factor structure shows a dual spatial structure: higher and more concentrated coverage of built-up areas sign higher economic output, employment, ICT and population concentration and lower level of agricultural activities. The opposite is true for the less concentrated artificial areas. The economic proportion of business activities and the proportion of the built in areas per capita are "attached" to the factor, they strengthen it. The first one has the same sign as the concentration indicators (i.e. in the urban areas the proportion of financial and real estate activates is higher), while the latter one in rather characteristic for more rural spaces.

Table 2: Main connections of urban performance on NUTS3 level

	Factors			
	Concen-tration	Globali-zation	Population potential	Closeness to nature
Employment- Concentration	**.939**			
Population density	**.934**			
Proportion of artificial surfaces	**.932**			
Economic density	**.868**	*.452*		
Primary GVA	**-.811**	*-.496*		
ICT Concentration	**.810**			
Non coherent settlement structure	**-.716**			
Urban texture	**-.563**			
Accessibility (road)		**.879**		
Accessibility (rail road)		**.863**		
GDP/capita (PPS)		**.790**		
Accessibility (air)		**.747**		
Proportion of patents		**.707**		
Business GVA	*.449*	**.564**		
Accessibility (population)		**.429**		
Net migration			**.791**	
Aging index		*.485*	**-.743**	
Population		*-.443*	**.715**	
Artificial surface/capita	*-.413*		**-.526**	
Proportion of natural territories/areas				**-.913**
Proportion of agricultural land				**.888**

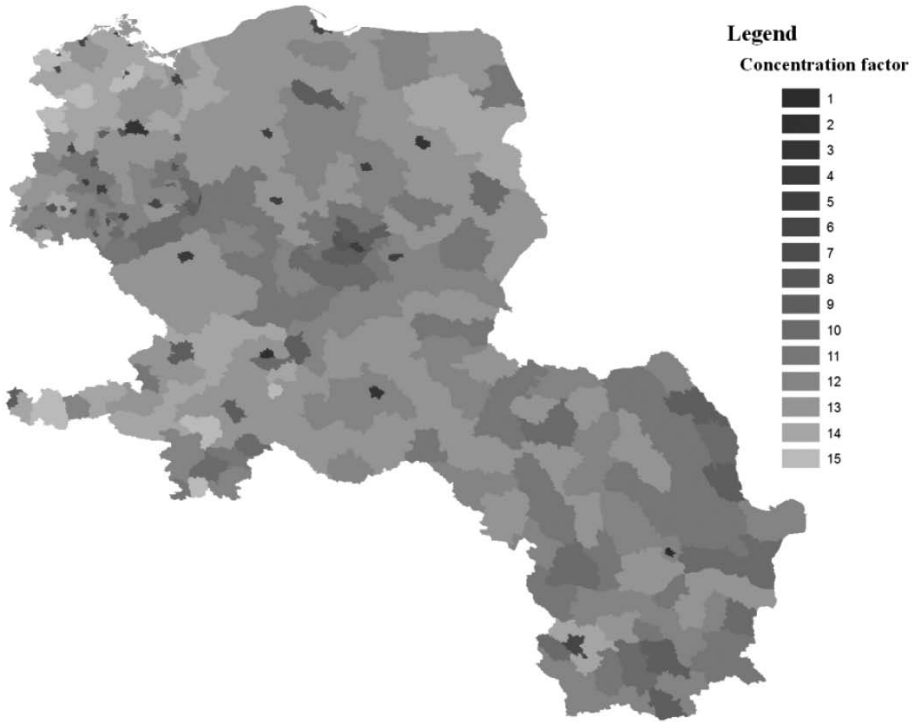
Varimax rotation, displaying only the factor weights above 0.4.
Italics for the illustration of the indicators connected to the factor from the outside.

Source: Baseline data– Eurostat, ESPON, author's own calculation, composition (based on SPSS).

The second factor is called the *Factor of globalization* by reason of the different phenomena contained within. All indicators bear a positive sign, meaning the connections have the same direction. Several accessibility indicators (road, rail road, air) are to be found here, but the indicators of GDP per capita, innovational performance, relationship between business activities and gross value added and accessibility of population (within 50 km) also ended up in this factor. In case of this factor we find "external forces" as well: economic density is higher in regions with better globalization values, the role of primary sector is rather insignificant and the population is not high either. (Later we get back to this regional specificity in detail). The eigenvalue of the factor is outstanding (4.87), preserved content of information is 23.17 per cent.

We called the third factor – because of the demographic indicators within - *Population potential factor.* Net migration and population move together: the higher is the population of a given region the higher is the migration towards this region. At the same time the aging index and the built in area per capita are present in the factor as well, however, with a negative sign. Where the population migrates from the more mature aging structure becomes characteristic, the population decreases and the built-in area per capita increases. This phenomenon is a specificity of this region; we shall get back to it later as well. The eigenvalue of the factor is high (2.68), the proportion of information contained in it is 12.77 per cent.

Figure 1: „Hotspots" in Central and Eastern Europe



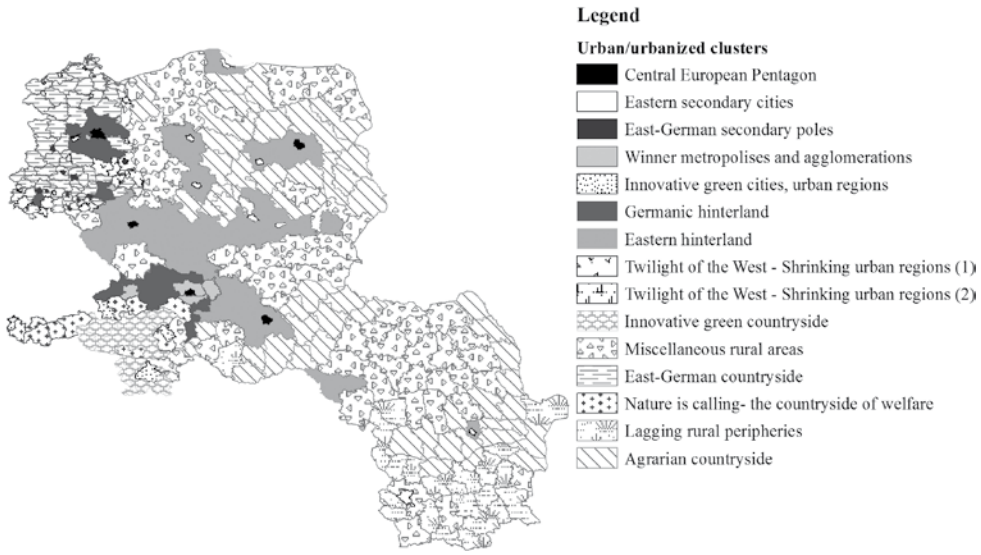
Source: Author's own calculation, edition.

In the last factor the proportion of natural (and semi-natural[11]) territories and proportion of agricultural area have approximately the same weight, however, with opposite signs. Thus, according to these space use relationships- in regions, where agricultural land use is more significant the proportion of natural territories is rather low. The eigenvalue of the factor *Closeness to nature* is also high (2.18), while the content of information is 10.37 per cent.

Before taking a look at the typifying we present the geographical location of the Concentration factor. Figure 1 shows the hotspots, the focal points, of the region. The territorial delineation facilitates the excellent ranking of cities, excelling at the Concentration factor. Despite their higher population, it is due to the territorial delineation that Debrecen, Pécs and Szeged are not able to overshoot cities of smaller population, e.g. Potsdam, Jena, Cottbus. Of course, where there is a larger city or a significant catchment area in the NUTS3 region, the higher value of the factor is present as well, however, these regions cannot "compete" with cities. (E.g. Baranya county, Csongrád county or the Silesian region surrounding Katowice.) Therefore we rather call this analysis an urban/urbanized typifying.

To be able to typify the single NUTS3 regions, we run a cluster analysis. To screen for outliers we applied the hierarchical form, then after the screening we applied the K-mean method. Our input was 15 initial clusters, in order to create and interpret the appropriate typology. However, Lukovics-Kovács (2011) points out some risks of this method, therefore we applied the cluster analysis of SPSS Two-step, accordingly with 15 groups defined. The average Silhouette-value indicating the level of statistical interpretation is 0.4, meaning that we achieved a sufficient grouping. The clusters are presented in Figure 2.

Figure 2: Urban/urbanized clusters in CEE



Source: Author's own calculation, edition.

11 This thought in brackets was omitted from the table; we did not want to trespass the boundaries of out table. In this category are the forests and semi-natural territories, the wetland and the water surfaces (FÖMI-CORINE Land Cover 2013).

On the top of the urban/urbanized hierarchy stand the corner cities of the so-called "*Central European Pentagon*"[12] : Berlin, Prague, Vienna and Warsaw form this framework. When looking at these cities (since all capital cities are NUTS3 units at the same time) in sense of the concentration factor we see the highest values. Especially the economic output per unit area, population density, proportion of artificial surfaces and the ICT concentration are outstanding in the corner cities. In case of the globalization factor it is not as unambiguous: here the GDP per capita, air accessibility, GVA of business activities and accessibility of the population are above average. However, road and railroad accessibility, and especially the average of innovative strength are well below under the other clusters. In case of the factor of demographic character, although the migration balance is positive it is not outstanding. (The value of Budapest is negative). Aging is present, however, not in an outstanding manner; the proportion of artificial areas per capita is the lowest in the research area. (Meaning that the population is getting "condensed".)

We called the next city cluster is "Eastern secondary cities", a denomination meaning a separation the more Western-lying areas (Eastern Germany, Austria, Slovenia). The Polish gate cities to the region are to be found here (Katowice, Krakow, Lódz, Poznan, Szczecin, Wroclaw, the Tri-city [Gdansk, Sopot, Gdynia]), as well as two capital cities (Bucharest and Sofia). Considering the concentration these cities all stand in second line, by/in terms of all indices they are far behind the first group. The globalization factor shows a similar pattern: just like in the first group the accessibility indices are lagging behind, only the air accessibility emerges. Another outstanding feature- however, in negative sense- is the innovational potential. The cities of the region show one-tenth of the value of the previous cluster. Net migration is negative with two exceptions (Sofia, Bucharest). The catchment area of every single Polish city, however, can be characterized with a positive migration balance. In case of Sofia the interpretation of migration cannot be complete, since the area was delineated along with its catchment area (as the only one from among the NUTS3 units so far). Aging is more favorable than in the previous group and the level of congestion is similar too. The percentage of natural and agricultural areas is higher than in the first group.

The members of the next group have also a secondary role (partly due to their geographical delineation), however, they lie in the East-German region (*East-German secondary poles*): Leipzig, Halle, Magdeburg, Erfurt, Zwickau, Weimar, Gera, Görlitz etc. The economic, population and ICT concentration is high in these cities. The main dividing factors are the second and the third. Indicators of road and railroad accessibility are the best (!) in Central and Eastern Europe, the innovative strength is higher (!) than in the corner cities of the Central and Eastern European pentagon. The second dividing feature is the scope of aging. In this cluster the average aging index 230, while the average of the first two groups lies at 133.

The next group is the "*Winner metropolises and agglomerations*". "Mixed" delineation characterizes the groups: there are cities in it, there are such NUTS 3 units which contain

12 LEIBENATH et al. (2006) defined according to the Western model a specific macroregion, which is characteristic for the region: the Central European Pentagon. Personally, we do not agree with the comparison, because in our opinion the Western Pentagon is a more organic unit, which can be characterized with a considerably higher level of cooperation. However, the figures make it very clear: this macroregion covers 16 per cent of the research area. 31 per cent of the population lives here, while 41 per cent of the GDP is produced here.

only one city along with its agglomeration, and there are purely agglomerations as well. In the South we find the agglomeration of Vienna "intertwined" with Bratislava and its catchment area[13] . The area with the capital of Oberösterreich (Linz) is also in this cluster. Potsdam, the capital city of the German federal state Brandenburg is here as well, as a member of the Berlin metropolitan area. And last the city of Dresden is to be found here. The main characteristics of the group are: accessibility above average (especially air), outstanding number of patents (the highest – so far), and the net migration scores here the highest in the whole research area.

Innovative green cities, urban regions: Salzburg, Graz, Ljubljana, the Austrian region of the Bodensee and the city of Jena got into this group. The green character is due to the highest proportion of natural and semi-natural spaces. The innovative character is a result of the excelling amount of patents: 422 registered patents per one million people. The most were registered in Jena (the double), the least in Ljubljana. (However, even this was more than in the capital city group without Berlin and Vienna.[14]) These are very attractive regions, with outstanding road accessibility and economic performance (from this point of view they are not far short of the average of the Central European pentagon), the migration balance is positive.

The following two groups have broader catchment areas, and here too, a strict boundary can be drawn between the Germanic (German and Austrian) and the other regions. The "*Germanic hinterland*" stands for the hinterland of Berlin, Vienna and Linz, while the "*Eastern hinterland*" cluster covers the catchment areas of Bucharest, Budapest, Katowice, Krakow, Wroclaw, Poznan, Lodz, Warsaw and Tri-city. To this later group are attached the regions along the Prague–Brno–Bratislava–Győr–Budapest axis[15] , Silesia, and Temes county too. Both hinterlands can be characterized by good accessibility (due to the proximity of the large cities with central role); in case of the Germanic region the road and railroad accessibility is better than the air accessibility, while to opposite is true for the Eastern hinterland. Beyond this, the higher proportion of non coherent settlement structure and the higher percentage of the population accessible within 50 km are two features very characteristic for this region. Innovational strength, age structure and economic performance are the boundaries between the two regions: with the exception of the aging structure the values are higher in the German region than in the Eastern hinterland and vice versa.

The next two clusters can also be described by similar terms: we called them "*Twilight of the West-Shrinking urban regions"1 and 2*. The common feature of the two groups is the outstanding presence of aging and migration. In the Central and Easter European research area these two regions have the highest respective values. The second group's aging index is more unfavorable (2.6 times more seniors per minor on an average); while in the first group the migration is the worse feature. Hoyerswerda is an outstanding city – both in the second cluster and the research area –, since the aging index reaches 345 per cent. Both clusters are especially characterized by a population in extreme decline (the 2nd cluster is outlier

13 The two capital cities, located in close proximity are called twin cities as well (www.wieninternational.at).

14 Budapest has the best values, in the region of Ljubljana 2.4 times more patents are lodged (per million people). The least patents are lodged in Bucharest, the Slovenian capital's performance is 18 times higher.

15 At the same time a significant part of Pan-European Corridor nr. VI.

here as well): 22–42 per cent of the population has disappeared since 1990. (Hoyerswerda's value is an outlier again) In case of shrinking urban areas the main characteristics are the following: the 2nd cluster is more urbanized (we can find only cities here, while in cluster Nr. 1 the non urbanized areas are dominant), the economic performance per capita is higher; however, the innovative strength is lower here. There is not much of a difference considering their accessibility, the urban-rural character can be perceived in their use of space as well. More or less their geographical location is a feature that makes a difference: the first one is located rather in the south, while the second in the northern regions.

The "*Innovative green countryside*" cluster can be also clearly delineated: contiguous Austrian and Slovenian NUTS 3 units in the Western part of the research area are to be found here. They cover the major part of the Eastern-Alps in both countries; this type of space is characterized by the lowest population concentration. Road accessibility is on the level of the EU average, but the others are below it. The green character is due to the highest proportion of natural and semi-natural areas (average 80 per cent) in the Eastern and Central European region Innovation is also a significant feature of this areas.

The group "*miscellaneous rural areas*" does not have an unambiguous territorial character. In general we can say that the accessibility and innovational strength are low, however, the aging structure is excellent and the proportion of agrarian and natural use of land is relatively high. The group can be characterized by many other dimensions (not forming part of the research): past and actual industrial regions (e.g. the Central and Eastern part of Slovakia), touristic regions (the Polish–Slovakian border region, Varna), spaces including cities too (e.g. the Polish Bydgoszcz, the agglomeration of Szczecin) belong to this group.

The next type of rural clusters is the "*East-German countryside*". The SEGIRA project (2010) classified the major part of the cluster as "Rural Regions with significant Industry". Although in our research the industrial character is not a differentiation factor[16] the mainly agricultural use of space is the main characteristic of the cluster. Similarly unfavorable migration features can be seen here as in case of the Shrinking urban areas, but the aging features are more favorable here. Accessibility in these rural areas is very good.

The next rural type of space is called "*Nature is calling- the countryside of welfare*". At least 65 per cent is the proportion of natural and semi-natural spaces in each of the Austrian subregions forming this cluster. Basically we speak about rural spaces, but due to the delineation a few cities (Innsbruck, Klagenfurt) along with their catchment areas can be found here. These NUTS3 regions can be described by high quality of life, innovational strength and positive migration balance.

"Lagging rural peripheries": the population and employment density is similarly high as in case of the Innovative green countryside (moreover, even a little higher), but in terms of the other dimensions we speak about the weakest cluster. Road accessibility scores at scarcely more than one third of the EU27 average (negative extreme is the Romanian Tulcea country, which scarcely reaches 15 per cent of the average), while in case of railroad accessibility is barely one-fifth. Relatively strong is the role of the agrarian sector (considering both the added value and the use of space), in the research area migration is

16 Did not get into the final factor structure.

the highest in these Romanian and Bulgarian subregions. Kardzhali Bulgarian subregion is an outlier in both cases (both in the group and in CEE): primary GVA is 24.2 per cent, while the migration index lies at 38 per thousand persons.

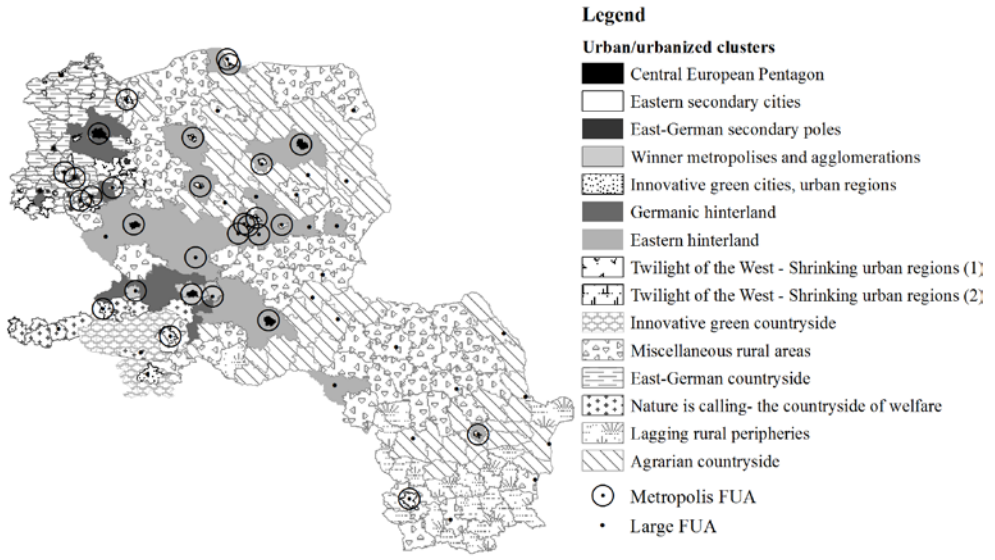
The last cluster is the "*Agrarian countryside*". The agricultural use of land is the highest in this cluster: on an average 72 per cent, the Wallachian Teleorman country gives the maximal value (86 per cent). The accessibility of these subregions is slightly better and with four exceptions the migration balance is negative (with the exception of Csongrád, Dolj, Buzau, Pleven counties).

In our opinion through our researches we could recognize how diverse the urban/urbanized spatial structure really is in CEE region. In our view, by the delineation of the urban/urbanized areas a strict boundary can only be seen between the East-German and other regions, however, the Austrian and Slovenian regions are also distinct from the others.

Main connections Between the NUTS3 Based Urbanization, Economic Growth and Specificities of the Automotive Industry

In the next step we compared the typology of urbanized areas with the functional urban areas' categorization based on the number of population. (Figure 3) Accordingly, we can say that we can give a good estimate for the location and delineation of the metropolitan regions. The main features of spatial structure can be determined. It is the already mentioned Prague-Bratislava-Vienna-Budapest axis or just its components (Capital cities, narrow or broader catchment areas). However, in case of large functional urban spaces – above 250,000 people – the specificity of delineation forms a serious boundary.

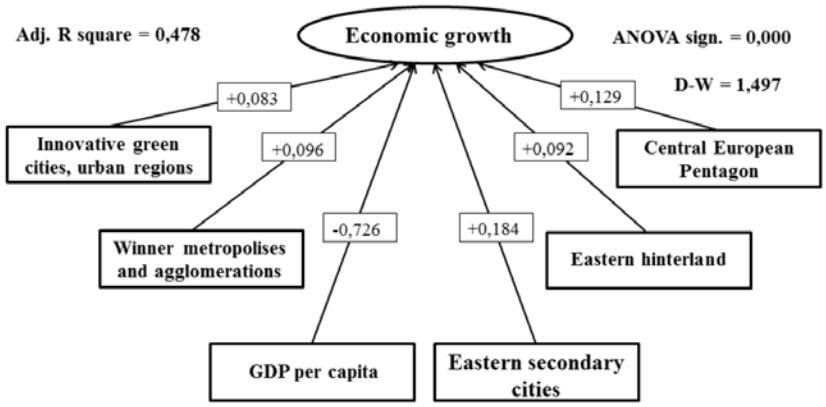
Figure 3: City typology depending on the functional urban spaces



Source: Author's own calculation, edition.

Since cities are the central actors of regional development, we intended to present the connections between this typology of cities and the economic growth. To reach this goal we applied a multivariable regression analysis, where we set the pace of economic extension (growth rate) (1999–2008) as dependent variable and the independent variables were dummies for the single urban/urbanized types of area. As control variable we chose the GDP per capita of the baseline year (1999). The main results are presented in Figure 4.

Figure 4: Role of cities in the economic growth of the CEE region



Source: Author's own calculation, edition.

Our results are statistically acceptable; the determination is on medium level (47.8 per cent). The convergence of economic performance is clear in the region; this seems to be confirmed by the high and negative standardized beta coefficient at the baseline year's GDP per capita. The so-called Eastern secondary cities have contributed the most to the region's economic growth; Bucharest and Sofia were outstanding, followed by the Polish cities. Then, in terms of economic development, the corner points of the Central European Pentagon follow, however, only Budapest, Prague and Warsaw excel from this group, Berlin and Vienna are well behind them. The effects of the Eastern hinterland and the Winner cities, the impact of agglomeration is almost at the same level, then, in case of the Innovative green cities the urban regions – to an extent a little below the former ones, but – contributed to the growth. It is important to mention that the urban role of the East German regions – with a couple of exceptions (Dresden, Potsdam, Jena) – is not significant. Especially not in case of e.g. the city of Eisenach – a member of the Shrinking urban areas group –, where the GDP per capita increased by 2 cumulative percentage points between 1999 and 2008. *The overall result is that macroregional centers substantially explain the economic extension in the Central and Easter European research region*. While analyzing the error term, we found a medium positive spatial autocorrelation[17] : in case of economic growth/reces-

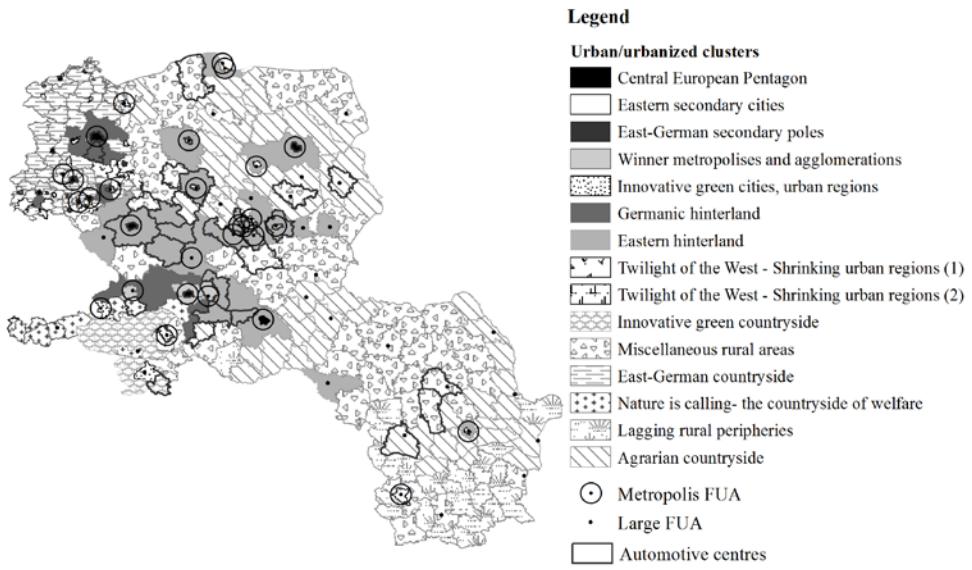
17 We used Moran's I value (0,40) and Pearson's correlation (0,47) coefficient.

sion the neighborly relations significantly influence territorial disparities. In our opinion this can be (partly) attributed to the dividing lines on national level (i.e. effects of single national policies) in the research area: in case of regression analyses with dummies[18] only Romania explains 44.4 per cent of the growth, the extension is significant in Slovakia, Bulgaria and Poland, it is lower in Austria and it hits its lowest level in East Germany. (The latter two countries have a negative sign in the regression equation, while in case of the other countries it is positive.)

In our following analysis we need to highlight the connections between the different types of areas, automotive centers and economic growth. In the first step, we completed Figure 3 with the NUTS3 areas containing automotive centers. In Figure 5 it is clearly shown that quasi all centers and significant actors of the automotive industry are located in the large cities, their urban areas and agglomerations[19] as well as their hinterland in broader sense.

Where the specificities of spatial delineation impeded the interpretation in terms of the above categories (e.g. in case of Lublin, Starachowice, Brasov and Craiova), the settlement morphological "analysis" facilitates the identification. Table 3 assists the understanding as well.

Figure 5: Urban/urbanized types of areas and active automotive centers in CEE



Source: Author's own calculation, edition.

18 We are not going into details considering this research, R2 is more favorable than above. (0.667). With the application of the above mentioned country dummies the initial GDP/capita index dropped out from the equation.

19 Nearly 70 percent of the production centers was located in this areas.

These spatial specificities underline the importance of the advantages originating in agglomerations. Dusek (2012) mentions the scarcely populated Czech town Nosovice, where 994 inhabitants lived in 2010; however, the Hyundai automotive factory is located here. In our view, it is our town typological analysis that puts the situation e.g. of this town in a broader context. According to this Nosovice belongs to the hinterland of the Eastern secondary cities, and forms part of the cross-border Silesian agglomeration.

The object of our next research is the synthesis and analysis of automotive industry, urbanism and the economic growth. Our goal is to explore how the performance of automotive centers determines the local economic growth. The methodology is similar to the former ones: here too, we run a convergence analysis by a multivariable regression analysis and a path analysis. Among the explaining variables besides the initial level of development (GDP/capita, 1999) the following variables are present: specificities of local spatial structure (contiguity values of the GDP growth), settlement density[20] , the index of attraction (net migration between 2001–2007) and the industrial performance indexes. The automotive industrial performance indicator is another dummy, depending on the fact whether there is a significant automotive center[21] in the given region. These considerations were facilitated by the researches made by Ernst & Young (2010), Dusek (2012) and Hardi (2012).

Table 3: Connections between the Central and Easter European city typifying and the automotive centers

Name of the cluster	Number of automotive centers
Agrarian countryside	4
Germanic hinterland	1
Nature is calling – countryside of welfare	1
Innovative green cities, Urban regions	1
Innovative green countryside	1
Eastern hinterland	13
Eastern secondary cities	2
Eastern German secondary poles	5
Central European pentagon	3
Winner metropolises, agglomerations	2
Miscellaneous rural areas	7
Shrinking cities (1)	1

Sources: Author's own calculation, edition.

20 The determination of settlement density was facilitated by the data of land use. It means the per capita value of artificial and agricultural surfaces.

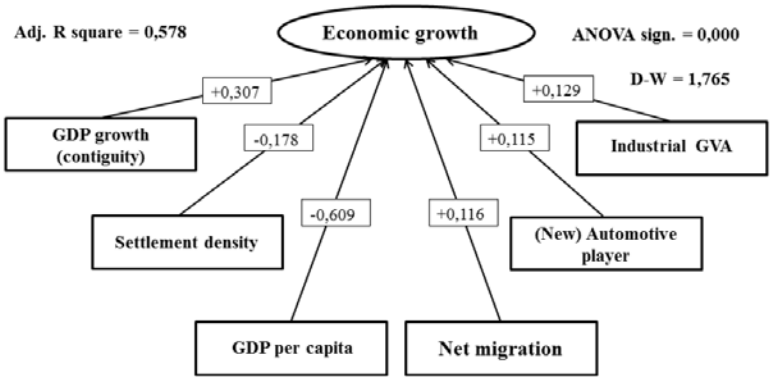
21 Called an "Automotive player" by Ernst & Young (2010).

We need to mention that we run several preliminary researches and as a result of these the automotive dummy did not appear, or if it did its impacts were rather contradictory. Thus, we had to identify the so-called "new" players of the automotive industry that settled in the research area after the socio-economic transition, both in form of green or brown field developments. These actors are to be found in Poland, Slovakia, Slovenia, Hungary and Romania. (See more in detail Dusek 2012; Ernst & Young 2010.) The automotive industry appears only in this case as a positive actor in the explication of the economic output's extension in the region. (See earlier the East German city of Eisenach, which had been stagnating in the research period.) The indicator of the industry's output is the proportion of the gross value added by the industry from the total added value considering the year 2000. We did not apply city typifying factors here, since we intended to analyze the catch-up, and to do so we needed the data of the baseline year. The major results are presented in Figure 6.

The new model brought better determination; the value of the adjusted R^2 is 10 percentage points better. Therefore the initial level of economic development, specificities of spatial structure, net migration and the industry based variables explain 57.8 per cent of the economic growth's deviation. The applied independent variables "behave" according to the appropriate signs. Convergence and catching-up can be seen, the negative impact of the initial GDP/capita index refers again to this. Neighborly effects are significant, differences in growth lead to interconnected fields. (By involving this index the territorial autocorrelation decreased significantly, there is only a slight positive connection.) According to the negative sign of the settlement density the path of growth is higher in regions where the built-in and agricultural land per capita is the lower (i.e. in cities and urban areas). According to the positive beta coefficient of net migration growth potentials attract human capital. Last, but not least the presence of automotive industry and the performance of the industry also form favorable economic dynamics. The role of the latter three indicators seems slight, however, we need to see that there is not much "space left" beside the initial level of development. (The indicators GDP/capita and the neighborly relationships together determine 51.2 per cent of the growth, signalizing the enormous role of spatial dimension. Thus, these indicators need to be handled as "added values".)

As a whole we can say that the role of cities and urban areas, actors of the automotive industry is significant in the economic development of the Eastern and Central European region, the industrial output is a positive predictor as well and also the migration of human capital is an important factor.

Figure 6: Regression results of economic growth, urbanization and automotive industrial performance in Central and Eastern Europe



Source: Author's own calculation, edition.

These factors by themselves are important explaining factors. However, we intended to make a step forward and detect the relationship between the actors of automotive industry and the other explaining variables. Although the multicollinearity cannot be considered high (the variance inflation factor does not exceed 2.5 even once), the explaining variables are not completely independent from each other. The interpretation of the connections between the actors of automotive industry and the other indicators was made by using the path analysis. This method is able to detect the indirect effects. Table 4 makes an attempt to do so. The table presents how Pearson's correlation coefficient between economic growth and the ("new") automotive actors is "being transformed to standardized regression beta", i.e. what interactions take place between the other explaining variables and the automotive dummy in the regression equation.[22]

Table 4: Relationship between the ("NEW") actor of the automotive industry index explaining the economic growth and the other factors

12 ("New") Player of the automotive industry **r = 0,154[23] pi = 0,115[24]**	
GDP/capita	+0.0286
Growth (contiguity)	-0.0052
Settlement density	-0.0233
Industrial GVA	-0.0202
Net migration	-0.0182

Source: Author's own calculation, edition.

22 Of course, we ran the interactions for each indicator involved. But since we analyze the context of the automotive industry, we publish only the results of this indicator.

23 The value of the (Pearson's) correlation coefficient between the dependent variable and the automotive dummy.

24 Standardized regression Beta value in the regression equation.

The interpretation of the table is the following: there is a week link between the dummy and the growth, however, there is a significant correlation relationship (+0.154)[25] , which decreases in the regression equation to a regression beta of +0.115. (If, in the regression equation, only the presence of the automotive industry determined the level of economic dynamics, the regression beta would equal the correlation coefficient.) However, as the table shows, growth, neighborly relationships, settlement density, industrial GVA and net migration reduce the correlation coefficient, while the GDP/capita of 1999 increases it. What does it mean? It means that the indices, which reduce the correlation coefficient, can explain a part of it, i.e. there is a connection between them. The neighborhood of the growth signs that automotive centers not only have direct spatial impacts in the given region, but they act as economic catalysts in the immediate vicinity as well. (E.g. intensification of supplier relations, migration of highly skilled human resources into the urban area, growth of housing investments etc, further spill-over effects.) The relationship with settlement density shows agglomeration benefits as well: where benefits originating from economic density are present, there are also significant automotive players. (See Figure 5 again). The connection with industrial gross added value shows unambiguously that these manufacturing facilities are naturally and strongly rooted in the local industry. Net migration explains also a part of the correlation coefficient of the economic growth and the dummy. This shows the automotive industry's need for and its direct impact on human resources, which find employment and higher remuneration in these cities. *Thus, it can be noted generally that the presence of automotive centers is not only apt to facilitate economic expansion, but beyond this, numerous complex indirect impacts have been proven to have happened*, e.g. the economic catalyst role, enhancement of industrial performance, attraction of highly skilled manpower and the impacts on settlement structure all indicate important features in the Central and Easter European research area.

Interpretation of the Hungarian automotive and other regional centers in the Central and Easter European space

The Hungarian centers were to be found in three different counties at the time period of the research. (At this time, the production at the Kecskemét based Mercedes facility has not started yet; however, we included it into our analysis.) Győr-Moson-Sopron and Komárom–Esztergom counties are members of the "Easter hinterland" cluster; the other two belong to the group "Agrarian countryside". A general feature of the counties of Győr and Esztergom is the good approachability, as well as the importance of the population potential factor. (Especially in the latter case, the county can be characterized by available workforce and good age structure.) At the same time Figure 5 shows that Vas and Bács-Kiskun counties are direct neighbors to the "Eastern hinterland", i. e. in their case

25 We have to make another methodological note. According to the statistical literature, Pearson's correlation coefficient, which was used here, can only be applied in case of proportion or interval indicators. One indicator here (the automotive dummy) was a nominal variable, thus, it did not fulfill the above criteria. In our opinion, since the dummy acts as a kind of "screening indicator" here, it is not really its strength that matters, but its presence in the explanatory model, (which is underlined by several eliminations).

the geographic vicinity is the determining factor. In these counties a certain "spill-over" from the nearby urban areas, cities and agglomerations can be perceived. In the case of Kecskemét the role of Budapest is decisive, while in Szentgotthárd the Austrian and Slovak agglomerations play a key role. Győr and Esztergom form an integral part of the Bratislava–Vienna[26] –Budapest triangle, thus, in our opinion it does not need any further explanation.

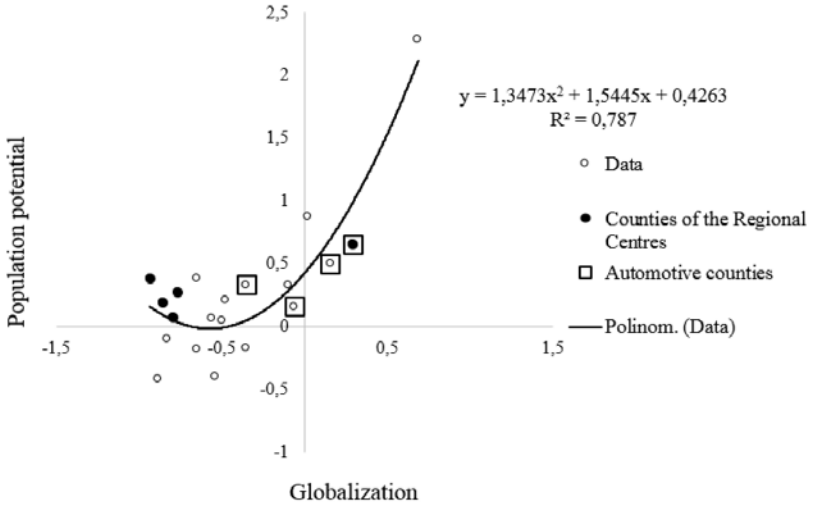
At the same time, in case of other Hungarian cities we need to draw the attention to certain specificities of the spatial structure. Miskolc and Debrecen are categorized as large cities[27] by the ESPON study of urban functions (ESPON 2007), however, their counties are not present in the urban typology as outliers within the country. (Hereby, we suggest the review of Figures 1 and 2. In Figure 1 we can see that the values of the concentration factor are outstanding in Borsod-Abaúj-Zemplén, Csongrád and Baranya counties, however in Figure 3 they "disappear" and they are integrated into their surroundings). A reason for this emerges, in our view (leaving the specificities of delineation behind) from the macroregional structure: the role of spatiality (re)enters and it is getting more significant. Despite higher population concentration, the role of the cities of Győr, Esztergom, Kecskemét and the town of Szentgotthárd (with low population), which did not form part of the ESPON (2007) categorization, is getting unambiguously more significant due to their location in their vicinity of the Western core and agglomerations. However, in the proximity of Miskolc, Debrecen and Pécs of 200,000 inhabitants, Nyíregyháza and Szeged there is still no cross-border/border generated economic potential (this was noted by Gorzelak in 1997) and the infrastructural developments (highway) have not impeded the increasing migration effects and the peripherization within the country.

According to our research the lag and the increasing importance of the above regional centers is due to two factors. In Borsod-Abaúj-Zemplén, Csongrád, Baranya, Szabolcs-Szatmár-Bereg and Hajdú-Bihar counties we can experience a large scale backwardness relating to the indicators of globalization indices. More precisely, the South-Eastern and North-Western parts of theese countries are divided by the following factors: GDP per capita and the population available within the radius of 50 km (i.e. in this case: market opportunities). To lesser extent, however, the population potential factor is a differentiation feature in these countries as well: mainly the above average net migration and the built-in area per capita are the factors distinguishing the North-Western County comprising the city of Győr. Figure 7 interprets the Hungarian counties in the light of two factors: macroregional centers and automotive industry.

26 The first two cities as referred to by ESPON as cross-border, transnational functional urban regions (2007). In the delineation Mosonmagyaróvár is considered to be a part of the agglomeration as well.

27 This means that the population with the catchment area exceeds 250,000 people.

Figure 7: Hungarian counties in the light of the Globalization and Population potential factors



Source: Author's own calculation, edition.

The relationship between the two factors can be described with a quadratic polynomial function, which means that these phenomena are strictly intertwined in Hungary.[28] Beyond this, the location of the featured counties underlines the above specificities. Automotive centers are at the top of the list from both aspects, and the ranking is clear as well: Győr-Moson-Sopron, Komárom-Esztergom, Vas, and a little behind Bács-Kiskun county.

Summary

In our study we intended to provide an overview on the special spatial inequalities in the Central and Eastern European region: the dimensions of urbanization/urbaneness. Besides, we aimed to find connections between economic growth and the automotive industry.

In the first part of our paper we summarized the main results of the published literature: how to measure urbanization/urbaneness, specificities of the methodology and the indicators of urban performance.

– Based on the reviewed empirical studies we can conclude that "a city is not always a city", its broader-narrower catchment area/hinterland is almost always present in the different spatial analyses of socio-economic content. After studying the main

28 This is interesting also because we speak of factors resulting from a research. Considering a whole region there is no (there cannot be) relationship between the resulting factors.

European empirical researches we can say that the typifying of urban-urbanized areas can be considered at least as diverse as the one of rural areas.
- However, we need to look at the researches with reservations, since uniform interpretation is complicated by several features (territorial levels, delineations, methodology etc.).

Then, we attempted to detect the Central and Eastern European city-map, the structure of cities and the connection between economic growth and the automotive industry.

- By using 21 indices describing land use, economic development, economic structure, accessibility, demographic specificities, infocommunication and innovation, we were summing up the factors expressing urbanization, then, by cluster analysis we typified the 328 NUTS3 territorial unites involved in our research. In our opinion we got closer to the real organization of space (see: E.g. the delineation of catchment areas broader agglomerations), however, on this level only a rough analysis can be concluded, concerning mainly the spatial structures. Fine tuning and correction are needed because of the different spatial problems; this has been remedied by the detection of the settlement morphological specificities.
- The results of the urban/urbanized typology were incorporated into our further analyses explaining economic development. Our convergence researches unambiguously showed the economic catalyst role of the delineated urban areas, however, we need to note that the national specificities (e.g. economic policies) do significantly differentiate the space from the aspect of economic growth.
- In our following research we intended to highlight the connections between the different urbanized types of areas, automotive centers and economic growth. Based on the established typifying and the specificities of settlement morphology we can conclude that agglomeration benefits unambiguously influence the location of automotive centers.
- Our next convergence analysis clearly demonstrated that all new automotive centers in the region (beside other features) contribute to regional growth. Beyond this- by using the path analysis- we verified the direct impacts of automotive industry. According to this the automotive industry in Central and Eastern Europe (in the new member states) is not only apt to intensify the economic growth, but it has an impact on economic dynamism of the neighboring regions as well, increases the industrial performance, influences the migration of manpower and affects the settlement structure.
- Last but not least the situation of the Hungarian counties can be interpreted in the light of the connections between urbanization, macroregional centers and automotive industry. In our opinion mainly the macroregional structure and the increasing appreciation of locations determine the success of the counties comprising macoregional centers. This assumption was supported by the results of a former cluster analysis. Although the population potential is more or less appropriate in the counties of both (Eastern and Western Hungarian) macroregional centers, the globalization phenomena (mainly accessibility and market opportunities) are the features that grant unambiguous benefits to the counties of Győr, Esztergom, Szentgotthárd and Kecskemét.

The Evolution of Passenger Car Production and its Impact on Urban Development in South-Eastern Europe

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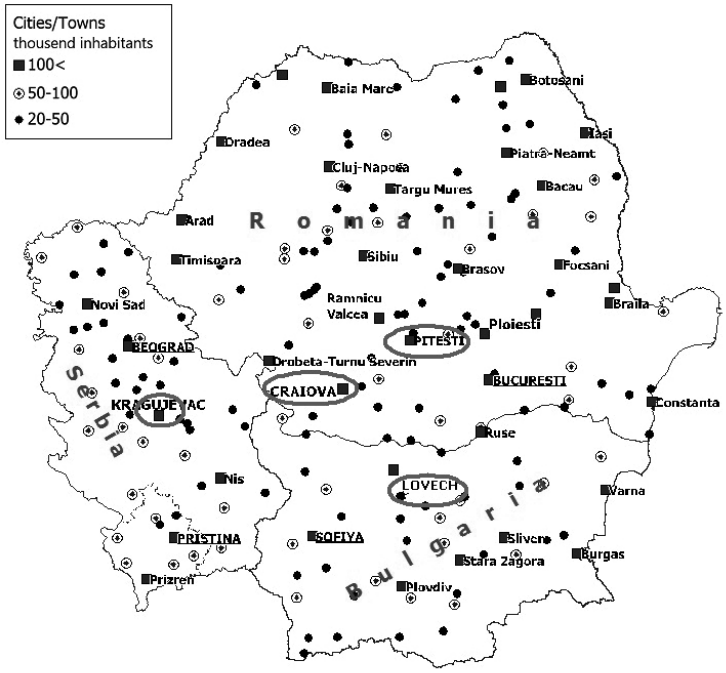
KEYWORDS: Automotive cities, passenger car manufacturing, South-eastern Europe

ABSTRACT: The current study investigates the vehicle industry of former South-eastern European socialist states (Serbia, Romania and Bulgaria) in order to determine the role of this sector in the evolution of industrial areas of the macro-region before and following the regime change. For the purpose of this objective, the study seeks to detect where and under what circumstances the vehicle industry emerged and where its main centres are located. These centres can be called traditional in certain cases as their establishment dates back to the beginning of the 20th century, in other cases they were created to ensure motor vehicle supply during the second half of the 20th century. The various development paths of passenger car manufacturing will be compared in the three countries along with the specifics of cities hosting this industry.

Introduction

The objective of the current study is to present the evolution of passenger car manufacturing in three South-eastern European countries, Romania, Bulgaria and Serbia and the impact of vehicle industrial development on the development of the specific cities. For this purpose, we included the most prominent automotive cities in our case studies which are currently (2014) hosting car assembling facilities. These are the cities of Pitesti and Craiova in Romania, Kragujevac in Serbia and Lovech in Bulgaria (Figure 1).

Figure 1: The four automotive industrial clusters included in the case study



Source: Edited by Tamás Hardi.

The choice of our topic is justified by the scarcity of successful rural centres in Central and South-eastern European countries outside the capital cities. And even among these, the number of cities where settlement success is based on the productive industrial sector is very low. The automotive industry is among the most prominent sectors and is typically the leading sector which determines the spectacular development of rural centers. The common feature of the examined cities is their relative distance (120 to 200 kms) from the capital cities and a relatively good accessibility despite being situated in rural areas. Their development has been closely intertwined with this sector and currently, the transformation of the structure of production is giving these towns a new dynamism. This new dynamism does not only impact the respective town but its immediate environment as well, raising it beyond the general development level of the region, and placing these towns among the top migration destinations of their countries. The nature of production is obviously an important differentiating factor since there is a variety of development levels ranging from the simple assembling plant to areas integrating research and development as well, which determines these towns' capacity of integration into national, European or global networks.

It is evident that various car-manufacturing plants found these cities immediately after the construction of the initial industrial capacities during the first half of the 20th century or the 1950s. A part of their investments proved to be viable even amidst socialist conditions, and apart from Chinese Great Wall Motors or the South-Korean Daewoo company, the same plants returned to invest in areas post-regime change where they had

already achieved a certain success. Their main objectives are obviously quite different in the present era. During the sixties–nineties, cars were manufactured in small series to serve the needs of national markets in the framework of a "shortage economy" and strict customs borders (and for export to a smaller extent), while currently, the greater share serves mostly export purposes. This shift can only partially be attributed to the regime change and the economic restructuring processes occurring in the respective countries. The general transformation of the geographical characteristics of the automotive industry figures also among the explanatory factors behind this change (Lung 2004).

The Past Politico-Economic Orientation of the Examined States

Bulgaria, Romania and Serbia are listed among those countries which belong to the group of former Central and South-eastern European socialist states. Besides their numerous economic similarities, several disparities can also be detected among the group of Central European states (GDR, Poland, Czech Republic and Hungary) and the three South-eastern states. In addition, the latter three are also quite heterogenous from multiple aspects.

If we examine the economic development of the three designated states, we must not neglect mentioning their historical past which was highly responsible for their backwardness compared with the rest of the Central European states. All of the three countries were submitted to the Ottoman Empire during the 19th century as a part of the empire, (the territory of Serbia and Bulgaria) and as feudal areas (Romanian principalities). After having experienced various levels of autonomy, Romania and Serbia finally became acknowledged sovereign states in 1878 and Bulgaria in 1908. Industrial development emerged in the territories submitted to the Ottoman Empire only belatedly and in small scales. In the case of each Central and South-eastern European state, industry and mining had hardly more than eight mln employees in 1889, and 85 per cent of them were concentrated in three northern states, the territory of the future GDR, the Czech Republic and Poland (Enyedi 1978). Apart from the GDR, these territories once constituted the core industrial areas of the Austro-Hungarian Monarchy which produced 2/3 of the industrial output of the Empire of the period. In contrast, the remaining territories of the Monarchy and the areas belonging to the Ottoman Empire until the 19th century were predominantly rural, making agriculture the prominent sector (Berend – Ránki 1983).

In South-eastern Europe during the Socialist era, post-World War II, the rate of industrial employment was still increasing. Heavy industry played a dominant role in this, which, particularly in the countries of the Balkans and Romania, contributed greatly to massive industrial decentralization, a large number of industrial centres were created, the majority of which were lacking economic foundations. Industrialisation achieved significant results in the area of employment, since a growing proportion of employees became industrial employees in previously predominantly agricultural areas as well, and during the regime change, in the bulk of the Romanian counties, industry concentrated over 50 per cent of the employees, while in poorer areas of Yugoslavia, the weight of the secondary sector was equally significant (Lux 2010). In certain cases, particularly since the end of the 1960s, governments have

been making efforts to decentralise industry and locate it outside large centres, which they were able to accomplish in the area of the manufacturing of consumption goods par excellence.

Growth was primarily based on the development of heavy industrial sectors, mining, construction and textile industry, and not so much on the extension of machinery industry. Machinery industry tended to demonstrate growth in traditional regions, with 1 million employees in the 1970s in the GDR, Poland and the Czech Republic, respectively, half a million in Hungary and Romania, and 350–400 thousand in Bulgaria and Yugoslavia (Enyedi 1978).

The geopolitical and the resulting geoeconomic orientation of the three examined states was quite heterogeneous and differed from that of Central European states as well. Romania had constructed a strongly nationalistic/chauvinistic socialist system by the seventies with a solid one-person tyranny which had maintained its power until the regime change. Ceaușescu's regime distanced itself to a certain degree from the Soviet Union through pursuing nonaligned politics, and the necessity of economic self-sustainment was also a priority. Despite its socialist system, the geopolitical orientation of Yugoslavia was not Soviet-friendly either, constituting an intermediate structure between the two great world orders. Western relations, licences soon emerged in its economy, and besides showing a general openness towards western cooperations, it cultivated vigorous relationships with the developing world as well, being a leader of the movement of "non-committed countries". The economy and politics of Bulgaria were attached with a thousand ties to the Soviet Union, its relationships were oriented dominantly towards this direction. Romania and Bulgaria were members of Comecon, while the unique position of Yugoslavia was expressed by its status of observer state in this economic cooperation, and later on, it joined the organisation, though not as a full member. The economies of socialist states would theoretically have been integrated by Comecon, however, economic cooperation among individual countries remained quite modest. Belonging to the common economic space meant primarily a radial, Soviet-oriented foreign economic policy, commerce within members was meagre. Specialisation began at the level of Comecon, the production of certain products was assigned to individual member states, however, the member states accepted these tasks only in certain cases. Comecon did not become a supra-national organisation, member states adopted and implemented only consensus-based decisions (Honvári 2005).

The Emergence of Car-Manufacturing in South-Eastern European States

The Beginning

The history of car manufacturing in the three countries can be divided into four distinct periods. The beginnings date back to the period between the two World Wars, when the young states established motor assembly plants primarily to serve the needs of the army, producing aircraft engines, aircrafts, and lorries in some cases. A peculiarity is that

cooperation emerged even within the macro-region, since lorry licences originated from the Czech Republic, while airplane models came from Poland. Romania and Yugoslavia, counted among the winners of World War I, were already able to start manufacturing in the twenties. Another peculiarity is that the first Eastern European car assembly production line was established in Romania. Firstly, Ford Motor Company opened a sales company in Romania in 1931, and later, in collaboration with the Romanian government, it constructed a modern plant in the Floreasca district of Bucharest in 1935 employing a hundred workers and suitable for the assembly of 2,500 cars and trucks annually (Istoria Ford... n.d.).

In Yugoslavia, the first engine factory was established in 1927 in Rakovica. Engines were produced based on the English (Bristol) licence. Road motor vehicle production was launched on the eve of World War II. The production of a 2.5-ton truck named Praga RN8 began in 1938. Its licence was purchased from the Czech Republic, and initially, the components produced there were transported to Yugoslavia where they were assembled. In-house production began already in the 1940s. Under German occupation, war production became the main profile, aircraft engines were produced for the most part. During the post-war period, production was re-launched in 1947, but later on, production was transferred to Priboj, while production began in Slovenia on the basis of this licence where TAM factory in Maribor became the primary producer of trucks and buses in Yugoslavia (Benedek – Dudás 1989). Passenger car production was launched in Kragujevac, where Vojnotehnički zavod represented the military industry of Serbia prior to the eruption of World War II. The first cars were produced in the city in 1939.

Bulgaria as a defeated state of the World War I, was able to establish an airplane engine production base only in 1941, after a 20-year prohibition declared by the 1919 Neuilly Treaty. The Bulgarian air force command made a decision of launching a center for design and production of airplanes, away from the capital Sofia, matching the highest European standards of that time. Thus, during the course of World War II, the State Airplane Factory was opened in 1941 in the town of Lovech. The buildings of the factory were designed and constructed by Polish engineers from the then existing Polish aerospace manufacturer PZL. Between 1941 and 1954 when the production of airplanes in the State Airplane Factory in Lovech was terminated, more than 450 airplanes were made there (Karlov 2008). (The manufacturing of buses could be initiated as early as 1927 in Botvegrad. The production continued in small series even following nationalisation until the closing of the factory in 1999.)

The Production of Passenger Cars During the Socialist Era

The second long era is associated with the generalisation of the Socialist politico-economic system in the 1950s. As we have already mentioned, there have been massive developments in heavy industry and machine-building, driven by an unconcealed motive of self-reliance. Car production occupies a modest place within the machine building industry. Car production was commenced primarily by traditional manufacturers during the beginning of the 1950s. Only five types of passenger vehicles existed during that time, three German, one Polish, one Czech, while in South-eastern European countries, their popularity remained low. The reason behind the relatively low significance of the automotive industry might

also be that in a socialist system of society, the spatial distribution and development of jobs and housing units was less dependent on individual mobility and showed a higher preference towards more efficient means of public transportation, and all this, combined with an economic structure based on large companies, meant that railway, railway vehicle production, lorry and bus manufacturing were prioritised. Even though the major share of the passenger car market was dominated by Soviet producers, the demands of industry and the mobility demands of citizens could not be satisfied by Soviet export alone, since not only the economy, but citizens were also lacking these instruments, and therefore, states strived to create their own production capacities in these segments as well, so from the end of the fifties, production could finally be launched in various countries.

Production was organised on heterogeneous bases in East-Central European and Balkan countries (based on Radosevic – Rozeik 2005 and Tirpak 2006 with some refinements):

- Car manufacturing based on own technology and development, and traditional car manufacturing relying on methods inherited from the era before World War II (Czech Republic, GDR, and to a certain degree, Hungary),
- on the basis of Soviet licences (Poland, Bulgaria),
- production and further development of models based on Western licences (Poland, Yugoslavia, Romania and Bulgaria),
- auto parts production without passenger car assembly capacity (Hungary, Albania).

The table below illustrates the evolution of passenger car manufacturing in Central and South-eastern European countries during the second half of the 20th century.

The number of the produced passenger cars in the states of Central and South-Eastern Europe, 1950–1990

Year	Poland	East-Germany	Yugoslavia	Romania	Bulgaria	Czechoslo-vakia
1950	0	7,165	0	0	0	24,463
1955	4,015	22,247	760	0	0	12,530
1960	12,863	64,071	10,461	1,200	0	56,211
1965	24,800	102,877	35,880	3,653	N/A	77,705
1970	64,200	126,611	110,709	23,604	N/A	142,856
1975	164,000	159,147	183,000	68,013	N/A	175,411
1980	351,000	176,761	255,000	88,232	15,401	183,745
1985	283,000	210,370	228,000	134,000	15,000	183,701
1990	266,000	145,000	291,724	100,000	14,641	191,233

Source: Pavlínek 2008.

We can observe that among the three examined countries, Romania and Yugoslavia could boast with remarkable passenger car manufacturing volumes that were outstanding during that era, the emphasis was on production for the domestic market, and slowly, later on, a part was reserved for export purposes a well, particularly from the Romanian production. Both states launched production with the aid of Western licences and/or investments. Bulgaria, in contrast, produced a small volume of passenger cars. Initially, it manufactured Western models in very small series, and later on, it built Moskvich cars based on Soviet licence on a permanent basis.

In Yugoslavia, passenger car manufacturing was launched in Kragujevac during the post-war period. In 1946, the name of the factory was changed to Crvena Zastava (Red Flag), and until the middle of century, the main profile was the investigation and reparation of firearms. In 1952, the decentralization of the military industry occurred in harmony with the current economic and military policy, the manufacturing of ammunition was totally terminated in Kragujevac. Consequently, for the first time in the history of the factory, its capacities were not exploited to the full and the majority of the available labour force became redundant. In 1953, the emplyees voted on a referendum to consecrate the largest part of the company's revenues to the development of car manufacturing. The assembly of American Jeep vehicles was launched during the very same year.

For the sake of the further development of the car factory, they selected a strategic partner, Fiat factory of Turin, and a contract was signed on the purchase of the licence in 1954. The production of Fiat models was launched following the signature of the contract partially under the Fiat trademark, and partially that of Zastava. During this period, the technological development and productivity of the Zastava factory was approximately equivalent to that of the Fiat. In 1965, the factory's capacities were enlarged to 50 000. During the same year, the foreign export of the first Zastava cars began.

(In the area of Yugoslavia, manufacturing commenced in 1954 in Slovenia, Novo Mesto, and in Bosnia and Sarajevo in 1969 in collaboration with Volkswagen. Our study, however, is concentrated on manufacturing in Serbia.)

In Romania, passenger car manufacturing began during the 1960s. In 1967, the production of Dacia passenger cars was launched under the French Renault licence in the company named Uzina de Autoturisme in Pitești-Colibași. In a similar way to the rest of the socialist companies, they manufactured the purchased models, which they further developed slightly until the regime change. The other Romanian passenger car model, Oltcit, emerged in the 1980s. In this case, the French Citroen targeted the Comecon countries' market, for this purpose it entered a joint project with the Romanian government and built a car factory in Craiova where production began in 1980.

In Bulgaria, Lovech and Plovdiv were the centres of passenger car manufacturing. Passenger cars were assembled in small volumes on the basis of Western and Soviet licences. Moskvich models were assembled in the greatest number for domestic markets and the socialist countries in Lovech. Their production lasted between 1966 and 1989. In the meantime, Moskvich 408–412 models were produced. Western models were produced in smaller volumes and for a shorter period of time. In Lovech, Fiat 850 and Fiat 127 models were also constructed for a while between 1967 and 1971, in a series of a few hundred units. Passenger

car industry was established in Plovdiv as well. A peculiar feature of the Bulgarian automotive industry is that the French Alpine company producing sport cars began production in small series in 1966 in Plovdiv under the name of Bulgaralpine. Production was pursued until the end of the 1970s. The plant in Plovdiv assembled a circa 10 thousand Renault cars between 1966 and 1970 with the Bulgarrenault brand. We found that Renault outsourced production to Yugoslavia afterwards. The Bulgarian industry, in the long run and in terms of its volume, was apparently attached to the Soviet economy. Western licences played a modest role, and were present during a relatively short period of time. We believe that the main objective of Western investors, i.e. satisfying the demands of countries of the Balkans and the Near East from this area was achieved in a more flexible way through supplying them with models produced in Yugoslavian plants. The fact that following the termination of their production, models manufactured in Bulgaria appeared in Yugoslavia and were manufactured there in large volume clearly indicates this.

The Era of the Socialist Crisis and the Efforts Towards Autonomy During the Nineties

The eighties of the past century and the first half of the nineties can be classified as the third era. By this time, the drawbacks of foreign investments had become visible. The first half of this period can be described as the crisis of the socialist economy, while the first years of the nineties brought about a severe economic recession, which was aggravated by the war and civil war situation in former Yugoslavia. There has been a significant decline in the living standards of the population and the economic performance of the three countries. Either the cars produced on the basis of licences were already too expensive, or production was no longer rentable in Bulgaria due to the small series, therefore, production, and consequently, foreign licences and the produced models were not renewed and the initial relationships were terminated. States launched their indigenous passenger car development relying on former technological bases. These models were not successful, since despite their low price, they remained so-called "wildings", destined to be sold on internal markets. (Such were the Romanian Olda, Oltena models, which "originated" from the highly unsuccessful Oltcit model, since no resources were available for the procurement of French components. The Bulgarian Aleko, Tavrija models were destined to be modernised versions of Moskvich, achieving a limited success, while they attempted to penetrate U.S. markets with the Yugoslavian Yugo model and its versions, nevertheless, the major share of production remained on the domestic market). These efforts to achieve autonomous automotive production and conserve existing capacities continued during the nineties, post-regime change as well, however, they did not provide export opportunities, only fulfilled domestic demand for a while (e.g. Dacia Nova), with increasing losses.

During the nineties, the total disappearance of the manufactured models was envisaged in the examined towns. Factories decreased their capacities, staff and produced significant losses. In Bulgaria, passenger car manufacturing ceased in 1989. In Serbia, the production of the Zastava factory of Kragujevac was reduced to one-tenth of its original size, and during the NATO bombardments of 1999, 160,000 m^2 of assembly lines were destroyed, and production was terminated.

The Era of Foreign Investments – the "Transition" in Automotive Industry

In addition to production based on licences, foreign investment and ownership were witnessed in some cases (Citroen in Craiova), yet they were never generalised nor particularly successful. The economic recession of the nineties and the unprofitable production of automotive factories necessitated the modernisation of production. The shrinking economies, the poor internal market did not constitute an attractive force for investors in automotive factories, therefore, only the experimental production of the cheapest models was undertaken initially, with considerable state ownership and public support (special exemption from duties, exemption from corporate tax), which the economic regulation under transformation could still provide, but later on, during the preparations for EU membership, these benefits were no longer applicable. In reality, the massive inflow of capital, privatisation and the manufacturing of new models could begin during the first decade of the new milleneum. This is partially due to economic development, the invigoration of the market, and the EU membership Romania and Bulgaria were non-negligible factors either as attractive forces of investment. It is particularly tempting for investors outside the EU to penetrate the European market.

a) Romania

Out of the three countries, the pioneering investment originated from Deawoo in Romania, which purchased the already mentioned unsuccessful Citroen investment. The South-Korean firm acquired majority ownership of the Oltcit company in 1994, which was the first East Central European investment on behalf of Daewoo. The Rodae Automobile S.A. joint venture was established through the investment in Craiova, in which S.C. Automobile Craiova S.A. became proprietor of 49 per cent of the shares. Later on, the company was named S.C. Daewoo Automobile România S.A. (DWAR). Daewoo was the chief foreign investor in Romania in 1994, and in exchange, Daewoo was granted exemption from duties for seven years and from paying corporate tax for a duration of five years. The assembly line built in Craoiva had a capacity for producing 100,000 annually.

Problems with Daewoo in Craoiva emerged when the company went bankrupt in August 1999 due to the South-Korean crisis (Artner et al. 2002). Daewoo was taken over by General Motors in 2002, which latter was not interested in maintaining the operation of the Romanian plant (Egeresi 2008). Eventually, S.C. Automobile Craiova S.A. purchased the 51-percent block of shares of Daewoo Motors Co. in 2006, thus it gained ownership of the entire plant in Craiova, and Daewoo models were produced until 2008 in Romania.

S.C. Automobile Craiova S.A., in which the state had a 70 per cent ownership was sold to the Ford Group, which, from among several potential acquisitors, was able to purchase the factory. As a result, the factory became a member of the widespread European network of Ford, which, beforehand, had disposed of 7 assembly and 13 components manufacturing plants. One of the objectives of Ford was to construct a factory with a capacity to produce new generation cars and which is internationally competitive at the same time. The implantation of the Ford launched a process in the world of global automotive

industrial companies due to which several global companies appeared in the area as members of the network of subcontractors of Ford. Six out of the world's 50 most prominent car parts manufacturing companies established themselves in the region.

The Automotive South West Competitiveness Pole was created in 2012. The contract was signed by the founding members, *South-West Oltenia* Regional *Development Agency*, the Faculty of Mechanics of the University of Craiova, Ford factory and the Municipality of Craiova. During the following months, an additional 32 potential partners signalled their desire to join the pole.

Dacia factory operating in Pitesti experienced a crisis during the nineties due to which it seeked a foreign partner, however, it was unable to establish an agreement with them since none of the foreign factories wished to keep the Dacia brand or the employees of Dacia. Finally, it was able to conclude an agreement with Renault in 1999. Renault gained a 51 per cent ownership in Dacia and invested 1.5 bln euros in the Romanian company (Market of... 2012). Initially the previous Dacia models were "upgraded", but later on, activities extended to the design and production of new models. The year 2004 became a milestone with the launching of the Dacia Logan model, which reformed indigenous production and achieved record sales. Several new models have been implemented since that time. Their common feature is the outstandingly advantegous price, as a result of which the brand maintained its competitiveness even amidst the economic crisis.

Approximately 60 percent of the vehicle components for Dacia models are manufactured in Romania, and five of the subcontractors are located in the Industrial Zone of Subcontractors (Zona Industrialã Furnizori).

Several plants of Renault/Dacia company are located in the municipality of Mioveni in the vicinity of Pitesti as well as the logistic center of Dacia. The significance of Renault Technologie Roumanie (Romanian automotive engineering center) is outstanding, since it is the unique engineering and design center of Central Eastern Europe and the largest of its genre outside the territory of France. RTR with its circa 2,500 engineers performs mainly engineering tasks related to design and testing in Bucharest, Mioveni and Titu (Dâmbovița county).

The reemergence of Renault in Romania in 1999 initiated a clusterisation process within the automotive sector in the region. Government also contributed to this process with the launching of the CURAS program in 2003. CURAS is the abbreviated form of Clustering and Upgrading Romanian Automotive Suppliers and refers to the Romanian-Flemish cooperation which was consecrated by the partnership agreement between the Romanian Government and the Flemish CKZ Limburg (ALLANTA). The objective of the program was to establish a NGO in the proximity of Dacia-Renault factory near Pitești, which constituted the first step towards the creation of an automotive cluster in the area. Professional literature refers to Dacia Renault Cluster as a cluster characterised with the most advanced structure and most successful operation in 2011, which includs small and large firms, counselling and research companies, financial institutions and universities in its operation (Furre 2007; Guth – Cosnița 2010; Dudian 2011).

The organisation of a competitiveness pole in 2012 ensures the full exploitation of Dacia Renault Cluster. The name of the newly formed cluster is Auto Muntenia Competitiveness Pole (Act de... 2012).

b) Serbia

Within the factory of Kragujevac in Serbia, Zastava Group was restructured in 2001 in the aftermath of the 1999 bombardements, the various divisions were separated and the manufacturing of passenger car and lorries remained in the Zastava Group.

Prior to the bombardments, the automotive factory had had 11 364 employees, however, the number of employees fell to 4 242 following restructuring. At the end of the decade, Fiat reinvigorated production. Fiat Automobili Srbija (hereinafter FAS) was established by Fiat Group Automobiles and the Serbian Government in 2008 with a 67 per cent–33 per cent ownership share, respectively. In light of a subsequent contract of 2009, the area of Zastava factory and a building in Belgrade were transferred to the ownership of FAS. The Serbian Government and the Municipality of Kragujevac contributed to the green-field investments by the development of railways and roads, and is going to effectuate additional tax and economic alleviations.

The factory was opened in 2009, and the export of Punto Classic vehicles began in 2010, primarily to the North-African region, the Ukraine and CEFTA member states. The new factory producing Fiat 500L cars was opened in 2012 even though the number of exported cars was lagging behind the planned rate. The export of cars is realized through the Bar Harbor (Montenegro).

c) Bulgaria

The regeneration of the production of Bulgarian passenger cars, similarly to previous eras, was characterized by testing and small-series trial production. Permanent production was started at the end of the first decade with the investment of the Chinese Great Wall Motors in Lovech. A peculiar feature is that in the meantime, several car part suppliers/subcontractors which export to foreign countries established their plants in Bulgaria, while the Chinese company only procures accumulators and lubricants from domestic producers.

The first attempts of reviving the automotive industry in Bulgaria after the fall of communism in 1989 were made in the beginning of the 1990s with the opening of a car-assembling plant in the seaside city of Varna, where the British Rover cars were to be assembled. (The British company had decided to outsource some of their production abroad and eventually they chose Bulgaria – a deal originally initiated by the Bulgarian government. The investment was the largest up till then in post-communist Bulgaria. The new plant was expected to reach an annual assembling of some 10,000 cars. The newly built plant was completed in 1995 and was named "Rodacar". Despite the good quality of the assembled cars and the good cooperation between the local engineers and the British experts, this first attempt of reviving the automotive industry in Bulgaria eventually failed for various reasons and mostly because of a negative combination of factors such as poor marketing strategy, uncompetitive price and strong competition in the face of Škoda Felicia – imported in Bulgaria at low duty, unlike the imported British car-elements needed for the assembling or Rover Maestro. The assembling process was stopped after 2,200 cars had been assembled in the plant.

Before the opening of Rodacar assembly plant in Varna, there actually was another attempt for car-making in Bulgaria - in the Southwestern town of Dupnitsa, where only several vehicles "Namco Pony" were actually made. The vehicle was based on Ford Fiesta under the license of the Swiss company Farmobil AG. The town of Dupnitsa is known for being the largest second-hand car market in Bulgaria, but it did not evolve into a car-manufacturing center.

In the autumn of 2009 a contract was signed between the private Chinese car-manufacturer Great Wall Motors Company Limited and the newly established Bulgarian Litex Motors company for building a new plant for car-assembling in Bulgaria. It is expected that by 2015 Great Wall Motors will reach a total output capacity of 2,000,000 cars per year, while by 2020 the company aims at becoming the best-selling economic SUVs and pick-up trucks company in the world. As of 2012, the Chinese company holds the 1st position in export among all Chinese car-makers and 6th position in total output. Great Wall Motors is also the

first independent private Chinese car-manufacturer to obtain approval for selling its production across the European Union and as of today – the only private Chinese car-maker to have assembling capacities in a EU country (Bulgaria) (http://greatwall.bg/).

Litex Motors Company is a newly-founded (2008) company and is a part of a larger one – Litex Commerce JSC – a major shareholder and co-founder of Litex Motors, conducting trade and investment activities in a variety of fields such as sugar trade, energetics, fuel trades, construction, agriculture etc (www.litexjsc.com). The joint Bulgarian-Chinese venture is 90 per cent financed by the Bulgarian company and only 10 per cent by the Chinese one (http://sofiaecho.com). A planned investment of around € 97 mln was declared for the first years, possibly to be increased to € 300 mln later. Litex Motors would be responsible for both – manufacturing and marketing (sales) of the cars.

The contract signing ended Great Wall's long searching for the best partner in its foray into European markets, with Russia, Slovakia and Belgium among other possible locations. The main reason behind choosing Bulgaria is the unique combination of several factors: cheap and qualified labor force, low (flat) corporate taxes, financial stability (the Bulgarian currency is pegged to the euro), EU membership and an attractive market for low-cost Chinese cars. Of course, a strong motive for choosing Bulgaria should be considered the fact that by assembling cars in the poorest EU country, the Chinese company would be able to ensure a ready and cheap labor supply, while in the same time avoiding EU import taxes for its cars. Choosing Lovech municipality and Bahovitsa village in particular, is a result of the more complex factors influence. The location is far from being convenient in almost any geographical aspect – no major transport arteries pass nearby, while the proximity of Lovech – a city with long car-assembling history is hardly a factor, since the newly hired Bulgarian staff consists mainly of graduates and students from the technical universities in Sofia and Gabrovo (Litex Motors works in cooperation with those institutions), and not from experienced engineers from Lovech, with working background in "Balkan" automotive plant for example.

Works to build the factory buildings commenced in February 2011 and by November 2011, a first test batch of 150 cars rolled out from the assembly line. In December 2012 authorities in Sofia recognized Litex Motors' investment as a key project for the country's development and promised to allocate around 1.2 million euro for building a road to the factory.

The factory is expected to achieve in the future a capacity of 50,000 or 70,000 cars per year and to employ 1,800–2,000 workers. The new plant near Lovech can therefore be considered one of the most modern in Europe.

So far, the employed personnel are only around 220 people – mainly Bulgarians, who have passed several training courses in Bulgaria and abroad. The average age of the engineers and the managing staff is 25 years, while that of the assembly-line operators – just 19. The managing body, however, consists of engineers with long experience of working for some of the world's most prominent car-manufacturing companies such as Nissan, MAN, FIAT etc.. The Bulgarian plant Director for example – Mr. Alexander Cramb – has worked for 20 years in the South African plant of "Nissan".

As planned, initially all components would be imported from China. According to the initial investor's declaration, however, the production of around 40 per cent of the components and parts used in cars assembled in the Bulgarian factory will be outsourced in Bulgaria, including components made in Bulgaria and supplied by local manufacturers. Therefore, along with the car-assembling factory near Bahovitsa village, a whole industrial zone is envisioned, where factories for producing car parts will be built. As of 2013, according to official information, it is only the batteries and the engine oils and lubricants used in the cars assembled in Bulgaria, which are made in Bulgaria (http://dnevnik.bg/). To the authors' opinion, most likely the batteries are supplied by the Bulgarian "Monbat" Company (which production facilities are based in the Northwestern city of Montana), while the engine oils and lubricants - by the "Prista Oil" Company located in the Danubian city of Ruse. Those are, however, most probable suppliers, but unconfirmed officially by Litex Motors representatives.

What has been officially confirmed is that along with the Chinese-imported car components (shipped to the Bulgarian seaport of Varna), that all of the car models assembled in Bahovitsa village would be (optionally) equipped with a gas-injection system (the so-called liquid propane injection system) provided by the Dutch "Vialle" Company (Official letter... 2013). Great Wall Motors also signed a contract with another Dutch company which to inspect the production of the Bulgarian plant – mostly its safety performance.

During the first couple of years, the Bulgarian plant was expected to reach an annual output of some 2,000 to 8,000 cars of three main types.

According to the official letter provided for the current study along with the already existing representative in the FYR of Macedonia (Toltu Company), in 2013, representative offices of Litex Motors are expected to open doors in other neighboring countries (Serbia, Romania, Greece) and also in Albania, Montenegro, Bosnia and Herzegovina, Slovenia, Hungary, Slovakia, Czech Republic, Italy and the U.K. The U.K. market is going to be targeted. Along with the Balkan states and the U.K., other EU markets are also targeted.

As mentioned above, the initial idea of the building a Bulgarian car-assembling plant, provides that in the near future more and more components will be supplied by local manufacturers. During the last decade, Bulgaria turned into a very attractive location for outsourcing the manufacturing of a variety of car parts and components, replacing the most preferred until recently Central European countries such as Slovakia, the Czech Republic, Poland and Hungary for example, where the production expenses grew

for the last 10-15 years. In the Balkan region, Serbia and the FYR of Macedonia offer similar investment conditions, but they're both not in the EU which is basically considered a "disadvantage" compared to the Bulgarian EU membership.

The reasons for which Bulgaria is considered attractive for investment in relatively small-scale car-related production are various – low taxes and relative financial stability in combination with the existence of qualified and well-experienced labor force which comes at a very cheap price compared to the rest of the countries in the region and in Europe as a whole. Another positive factor is the proximity of the Bulgarian car-components factories to the already existing car-manufacturing plants in Turkey, Romania (Renault) and Serbia (FIAT). In addition, Bulgaria has several technical universities providing higher training to tens of thousands of students. Those universities are distributed mostly in the Northern part of the country.

As a result of all the above-mentioned factors, as of 2013 there are more some 40 to 50 enterprises across the country which production is used in car-manufacturing across Europe in many European and some Asian automotive companies. Many of those local manufacturers could be regarded as potential (and even current) suppliers of car components to the Great Wall plant near Lovech (unfortunately, no official information is available due to trade secret reasons). Currently the sector employs over 15,000 workers and its production constitutes some 4 per cent of the Bulgarian export which makes it one of the best developing industrial sectors in Bulgaria defying the spreading economic crisis in Europe.

All the above proves that Bulgaria has recently turned into a regional center of car-related industries, despite the fact that there is only one car-assembling plant in the country, which hardly makes it an automotive country. As a result of the growing importance of the car-related industries in Bulgaria, an organization was founded in July 2012, named "Automotive Cluster Bulgaria" (ACB) - a non-profit organization which represents the interests of automotive manufacturers, suppliers and organizations providing services for the

automotive industry. The organization fosters synergies between the cluster members and supports their business growth and competitiveness through participation in international joint projects, case studies and professional automotive qualification programs. The ACB currently boasts 22 nationally and internationally renowned member companies. Litex Motors Company joined the organization in the beginning of 2013 becoming its newest member (http://abclusters.org).

The Cities

Pitești

Pitești city with county status and the seat of Argeș county is one of the oldest towns of Wallachia. Due to its favourable geographic position, it has been functioning as a major commercial center of the area. The development of the city was uninterrupted even during the 20th century, due to which it has been able to preserve its central position.

In 1968, Pitești obtained county status during the construction of the Romanian system of counties, as a result of which each of its functions – economic, social and cultural – have gained a new dimension.

The city serves as a major national communication hub and due to its adequate transportation infrastructure, the city also has an economic polarizer role. In this context, the role of the railway must also be mentioned, which connects the city with the western country parts through Craiova, and the motorway connecting it with the capital city and which is the junction of major national and international highways (Plan de... 2013).

The city and agglomeration of Pitești have played a significant role in the Romanian automotive industry for several decades. Dacia factory has been a major national industrial stakeholder since the end of the 1960s, it has been able to maintain its leadership position thanks to a foreign investor, Renault. The new collaboration has initiated major modernisation and innovation processes, which has enabled Dacia Renault factory to become one of the most prosperous companies of Romania. This dynamism affects the city and the agglomeration alike, since the company is one of the major employers in the area recruiting workers from the agglomeration. The training and retraining programmes have contributed to raising the level of qualification of employees. Due to the social responsibility of the firm, several institutions have obtained grants and financial support. The evolution of the cluster is among the most crucial processes, as well as the creation of the labelized Auto Muntenia Competitiveness Pole which might broaden the core functions of the city of Pitești and ensure a higher level of integration of the city with its surrounding area.

Post-1990, the demographic trend of the city of Pitești showed a rapid period of growth, its population number exceeded 187 thousand, stagnated until the end of the decade and started to decline during the new milleneum (Nedelea – Puncioiu 2011) and based on data from the 2011 Population Census, the number of inhabitants of the city was 155,383. While the city's population declined, the entire agglomeration increased in size.

Local industry was fundamentally based on traditional sectors such as food industry, furniture industry, textile industry, the manufacture of metal products and the highly technology-intensive rubber and plastic industry. A small number of large firms are engaged in the production of vehicle parts.

The Spatial Development Act creates the opportunity for settlements to form associations around cities with county status, forming so-called metropolitan areas (Csák 2011). In the case of the Metropolitan Area of Pitești, outside Pitești, eight additional settlements constitute the metropolitan area. Mioveni is an outstanding city of the agglomeration of Pitești, playing a crucial role from the aspect of the automitve industry as well. During the planning phase of the metropolitan area, Mioveni was included among the

potential members of the association, however, during the phase of implementation, it was excluded from the metropolitan area (Strategia post-aderare... 2008).

In Mioveni, currently an industrial, technological and science park is being planned which would serve as supplement to the automotive industrial activities in the city. The envisaged industrial, technological and science park will boost the city's automotive industry, while it also seeks to counterbalance the mono-industrial nature of Mioveni (as mentioned among the targets) due to which the city is heavily dependent upon the automotive industry.

Craiova

The city of Craiova is the most significant city of county status of the South Western Region, situated at a distance of 227 kms from Bucharest. The city had developed into a commercial centre by the end of the 15th century with a great economic power. It was the second largest city after Bucharest in 1910. The city underwent a spectacular development post-World War II. In 1948, one of the largest university centres of the country was established, the Craiova University Centre, as result of which the scientific performance of the city started to evolve. Craiova has developed into an industrial centre from the 1960s. The county's features characterise the demographic trends of Craiova: until the regime change, the number of the city's inhabitants had showed a dynamic increase, and later on, due to the coming changes, it lost a significant part of its population. In 1992, it had 309 thousand inhabitants, and in 2011, only 270 thousand. The National Development of Romania listed Craiova among the ten most prominent cities of the country. In addition to the city, nine further settlements constitute the Metropolitan Area of Craiova (Zona Metropolitanã Craiova) which was formed in 2009 (Planul național... 2005). The strategic document of spatial development until 2030 classifies Craiova as a national pole which has the potential to become a real metropolitan area (Pol Național cu Potențial Metropolitan), and the catchment area of the development pole has a radius of 30 kms and comprises of 19 settlements.

In each city where it has a plant, Ford establishes strategic partnership with the higher education institution of the given settlement. This tradition was upheld in the city of Craiova, too, with the hope that engineers trained in local universities would become employees of Ford in the future.

Craiova has a fulfilled a central function for centuries in the area, and automotive industry present in the city for many decades has contributed greatly to maintaining its outstanding position, even if the city's automotive sector had to endure several crisis periods. The presence of Ford in recent years has fostered the creation of the automotive cluster and the competiteveness pole later on, in which the role of Craiova has become increasingly upgraded, and due to which a paradigm change has occurred in the cooperation between the firms and institutions of the area.

Kragujevac

Kragujevac is the economic, cultural, educational and health center of the Šumadija region and the Morava-Šumadija macro-region. It is situated at the central area of Serbia and Šumadija, at a distance of 140 kms to the south of Belgrade. From World War II until the 1991 Population Census, the growth of the population number of the city and the municipality[1] was uninterrupted. The highest population was registered in 1991, when the number of its inhabitants was 180,084 and the core city had 144,608 inhabitants. The population of the city has been increasing since that year, in 2011 it was 150,835, while the total number of inhabitants of the municipality decreased to 174,100.

1 A municipality is a local governmental unit comprising of the city and the surrounding settlements.

Since the natural growth rate was negative, the increase is due to the inflow of migrants. On the basis of data from the 2011 Population Census, a total number of 79,235 newcomers live in the area of the municipality, out of whom 70,000 were emigrants from various regions of Serbia and 9072 changed their dwelling-place within the municipality. The rate of the working age population was 70.45 per cent according to 2011 Population Census data, which exceeds the national average as well as the number of working age inhabitants of most Serbian towns.

During the more than half a century long development and operation of the Zastava car factory, it has established cooperation with various subcontractors in the region's area. The majority of inhabitants from the surrounding areas were employed by these firms, therefore the region's development and economic situation were both directly and indirectly linked to car-manufacturing. Consequently, the decline of the Zastava factory had a negative impact on the economic situation of the entire region. During this period, subcontractors went totally bankrupt due to the obsolete facilities and poor privatisation methods.

The most severe economic recession occurred between 1991 and 2000, with the collapse of FSRY, international embargo was introduced against the FRY and the factory was destroying during the NATO bombardments. The export-oriented industry of Kragujevac lost almost its entire market at that period.

Until 1990, car-manufacturing had a 65 per cent share in industrial production, making up for 90 per cent of the metal processing industry. During the subsequent years, manufacturing was reduced to one-tenth, the rate of exploitation of the existing production capacity fell below 10 per cent.

The opening of the Fiat factory did not only breathe a new life into the automotive industry, but contributed to the development of other sectors as well. Since the opening of the car factory by FIAT, an additional 30 companies established their plants in Kragujevac, which meant an extra 5,000 new jobs for the city. Two-thirds of these jobs were provided by Fiat, while the rest were created by Norwegian, German, Slovenian, Austrian, Israeli and Croatian firms.

In order to satisfy the needs of the Fiat factory, the existing roads and railways were modernised, and a new motorway is being constructed between Kragujevac-Batočina in light of the contract.

In addition to serving as the site of Serbia's automotive industry, Kragujevac is slowly but gradually becoming its commercial center as well. Consequently, other sectors are also developing, and new investors arrive unceasingly, which contributes to urban development. All this has brought about a change in the city's image and urban structure, launching the urbanisation of rural areas in the proximity of the city at the same time.

The current urban development declares that in addition to the development of the traditional automotive industry and arms industry other industrial sectors must also be welcomed in Kragujevac. The current mono-structural image of the city will possibly be transformed with the help of the Innovation Office and the construction of the Technological Park.

Economic development has largely contributed to the development of higher educational institutions as well. The University of Kragujevac has been operating since 1976

with its 11 faculties, out of which six have their seats in Kragujevac, including those of engineering faculties as well.

The Polytechnical School of Kragujevac is one of the first schools which cooperates with the FAS factory. The factory has made possible intra-muros practical training for the students, and it has donated modern equipment and a Punto in pieces to the school in order to contribute to the modernisation of practical training.

In addition to the above mentioned, training for the factory's new and current employees was organised in the school, and the teachers of the school were also able to participate in the courses held in the factory, in the framework of which they were able to become acquainted with the most up-to-date technologies of car-manufacturing.

The University of Kragujevac signed a contract with the FAS Foundation in 2011 about the cooperation between the two organisations. FAS is responsible for the organisation and conduction of practical training for students of the University of Kragujevac, the employment of graduate students, the provision of grants for the most outstanding students and the financial support of scientific research. In addition, FAS provides assistance to the University of Kragujevac in establishing an international cooperation with an Italian university. In light of the contract, the University of Kragujevac establishes an Italian language department and organises Italian language courses for the employees of FAS factory.

Lovech

Lovech is a city in North-Central Bulgaria, located at approximately equal distances from the Bulgarian capital Sofia and the largest Bulgarian Danubian city - Ruse (150 km from each). However, the city is not located on any of the main transport arteries of Bulgaria – it is 40 km to the Southwest from the main Northern railroad of the country and some 15 km to the North of one of the two main roads connecting Sofia to Russe and Varna. However, it is expected that the continuation of "Hemus" motorway will pass some 10–15 km to the north of the city, which would significantly improve the city's transport accessibility.

According to the last census of 2011 the population of Lovech municipality was 62 165 people, and that of the city itself – 36,600. The dynamic trends of the population in the city and its municipality, basically follow those of the country as a whole – until 1975 the population of the municipality increased (the city – until the end of the 1980s). The population growth of Lovech municipality was mostly due to natural increase, while the migration rate was negative due to insufficient economic development. Therefore, for the last three decades the population of Lovech municipality dropped by more than 1/3 as a result of the combined influence of natural and migration decrease. The population decrease of Lovech and its district is twice higher than the national average for the same period. That defines clearly the Lovech region as a depressive region. The city and its municipality are expected to maintain their negative migration rates in the near future. The share of agriculture in the GVA in Lovech district is 10,1 per cent, which is lower than the Northwestern region of the country, but yet higher than the national average share. Also compared to the country as a whole, the service sector here is less developed (57,7 per cent of GVA) at the expense of the share of industry in the GVA (32,2 per cent).

Today, Lovech is still considered an important center of leather and food-processing industry, together with the manufacturing of power tools, cast iron, furniture etc. Traditionally, the production of cereals, meat, milk and vegetables is also developed in the vicinity of the city. The main industrial enterprises in Lovech and its municipality, some of which were mentioned in the previous section, operate mainly in the field of machine-building and metal-processing, electrotechnical industry, wood-processing and furniture-making, textile and apparel industry, fur and leather-processing, food-processing and fodder production. Since the beginning of 2012 however, the municipality of Lovech reemerged as home of the only car-assembling plant in Bulgaria, built in the village of Bahovitsa – some 5 km to the North of the city of Lovech.

Conclusions

The three examined countries resemble each other from various aspects, yet they have embarked on a different growth path during the recent decades. None of them can be classified as a superpower in automotive industry, however, it is an obvious fact that the sector has occupied an increasingly important role in the economy of the recent years. It is a peculiar feature that outside the economically prosperous capital cities, each automotive city is located in rural areas, inducing economic growth in these areas, functioning almost as cathedrals in the desert.

A common feature of the examined cities is that car-manufacturing was already part of their local economy several decades ago, primarily satisfying internal demand and moderating the shortage. Following a shorter or longer period of decline, the "transition" in automotive industry has occurred during the past one and a half decades, this has been the period of large-scale, export-oriented investments which have boosted the industrial development of these cities. These investments qualify as the most significant foreign investments in the economic life of the respective countries, which, surprisingly, have not targeted the capital city. The basis of the location choice of investments was mostly the historical past of automotive industry, but in reality, it is apparent that this meant the availability of the concrete site. The geographical location of the area was also an important factor (its position within the EU, the accessibility of Eastern markets, etc.), as well as the availability of cheap labour force.

Disparities can naturally be found among the respective centers. We found that the development level of the given centres was quite heterogeneous. Production was almost uninterrupted in Romania, and the level of organisation of the automotive industry in the two cities was perhaps the most advanced among the examined cities. The development of a significant agglomeration and a broad network of suppliers could be witnessed in the case of both towns. In the case of Pitești and the Dacia factory, we can already talk about the existence of development centers. Therefore, the industry has become highly integrated into the urban network and the economy as well. The company has achieved a large market share with its own brand. The other Romanian city, Craiova, and Kragujevac

in Serbia have also experienced a significant upturn due to their assembly plants, and have contributed to the spectacular dynamisation of their region as well. In contrast, the Bulgarian example reproduces the previous specifics of the Bulgarian automotive industry. Up until now, only a relatively small-scale trial production has been realised. If we consider the number of employees or integration in the life of the city or the area, we can declare that their level is quite low. The share of Bulgarian subcontractors is also minimal. (It is true, however, that we are talking about an investment in its initial phase which is expected to increase and the share of Bulgarian subcontractors must also be enhanced in order to be able to qualify the product as being of EU origin.)

Therefore, albeit in a different structure, the automotive industry "replays" the development trends characteristic of the previous decades in the area. The geographical locations have remained the same, and they have become integrated into those production trends which currently characterise the automotive industry in the entire world.

Stability and Changes of the Hungarian City-Network

JÁNOS RECHNITZER – ÁDÁM PÁTHY – JUDIT BERKES

KEYWORDS: innovation, competitiveness, city-network, spatial structure

ABSTRACT: Several Hungarian studies have dealt with the examination of settlements' innovation capability in the past twenty years, among which we can barely find a complex examination that would embrace the entire Hungarian city-network. We can not set aside the importance of this, since the situation exposed and the results revealed during the examination could serve as bases for evolving different strategies defined by the peculiar features of the city-network.

The basis for our study is an analysis of innovation potential carried out in 2005. Sticking to its methodological structure, we made an attempt to reveal the dispersion of Hungarian city-networks by organizing the unique variables into five dimensions. The five dimensions are economic, education and management, social activity, human resources and innovation.

The method made it possible to explore the differences within the city-networks, as well as to shed light on the degree of innovational capabilities of the methodologically well-confinable groups of city-networks. The dimensions were formed considering data of 327 cities. The sample does not include the indicators of Budapest and other 18 cities that gained urban status in July 2013.

The results also prove that regional inequalities are constantly increasing. Differences between cities decreased slightly, however, the gap between the dimensions became even wider. The economic and innovation potential do not necessarily meet in the case of well-performing cities.

Introduction

One of the cross cutting fields of the Hungarian regional researches is the settlement network, in particular the analysis of urban systems. Cities have always had a determining role in territorial development, since they have concentrated resources, combinations of these and consequently they become the drivers of the spatial structure formation. Our research program is intending to explore what development specificities can be identified in an urban space formed by one or more dominant economic factors, how these economic

concentrations and activities, functions and institutions strictly linked to them can form, shape and design the elements, subsystems, spatial manifestation and scope of the urban system.

One aspect from the several dimensions of the program is to review the changing directions of the Hungarian city-network. On one hand, we are looking for the determining factors of networking; and on the other, we analyze the cohesive groups bearing the same specificities, and eventually position single cities, considering their drifting apart from the other units. We also intend to follow a chronological order, since we kept on repeating our analyses from the time of the millennium (Grosz - Rechnitzer 2005, Horváth 2006), only with the minimal necessary updates. We describe partially those factors, which have been moving the whole of the Hungarian city-network, especially the large cities, spatial organizing centers and illustrate the modifications in the weight and structure of the single driving factors. Furthermore, by determining the spatial location and members - i.e. the major characteristics - we identify groups and conglomerates following the same development path.

Major Directions of the Hungarian Urban Research: a Brief Overview

The Hungarian regional science has been dealing with the city, as a determining spatial unit, and the urban systems and networks on several levels and dimensions. Presumably, as a result of these researches territorial policies and its major documents have attributed a growing emphasis to the development of cities, definition of their functions and the designation of their strategic orientation.

In our brief overview we place emphasis on the major directions of urban researches, we intend to highlight especially those analyses, which are linked to *networking*, i.e. they could provide such guidance and they can be linked to the large city structure as a whole, to its single groups or individual members.

In the first category, we have to mention the works on the establishment and development of cities and the different elements and forms of the urbanization process. A new classical work is the monograph of *György Enyedi* (2012), which gives an exciting description of the worldwide phenomenon of urbanization in different macroregions, thus, in different development patterns. It adds weight to city-networks, their establishment and development specificities; however, it does not go into details considering the specificities of the Hungarian city-network. Historical prospective of this latter one along with its development are provided in the book *Pál Beluszky* (1999), which also can be considered as a classic. It describes in detail the network of cities with regional functions and the historic and economic factors bringing about its changes. It has to be noted that there are relatively few analyses on the comparison of Hungarian and European, Central European large cities and the definition of their positions in the networks. (Horváth 1998, Enyedi 2010, Tagai 2010).

While the development directions of Central and Eastern Europe have been disregarded in the Hungarian scientific literature, the questions of the control and organization of urban society and structures have been overrepresented. Especially those analyses excel, which give an overview of the transformation of the society in large cities, with regard to its most important drivers (Szirmai 2004, 2013). The governance of urban systems (Pálné Kovács 2010), proceedings of the urban-rural agglomerations' cooperation, the institutionalization of spatial organization had shown worthwhile results (Somlyódyné Pfeil 2012a). There was an interesting debate on the formation of cities, at the same time on the factors determining urban systems too (Tóth 2008; Csapó - Kocsis 2008; Kulcsár 2008; Dövényi 2009; Pirisi - Trócsányi 2009; Pirisi 2009). The lesson this block teaches us is that on the one hand we need to strive for the possibly most precise description of urban society; the character of the institutional framework is not sufficient for the comparison of networks or single groups of these. We also incorporated into our research the fact that in urban spaces there is an increasing number of new features beyond the standard, traditional elements of urban functions, however, their exact description faces a number of obstacles. And finally we have been given an explanation to the question why the great majority of the Hungarian city-network is composed of small towns with functional deficit, which were mainly proclaimed towns after the transition period and from among which only a very few have excelled.

Analyzing researches providing profound *methodological* knowledge on urban functions (resources, institutions, structures) and their spatial impacts (Bajmócy – Kiss 1999; Szigeti 2002; Nagy 2011; Tóth 2011) have contributed to the unambiguous delineation of regional roles and the selection and strengthening of the functions, which reflect the most the cities' spatial impacts.

In our last block contains the literature and analyses on city-networks. Within the network analysis further topics can be categorized. The first one is the development strategy block, where the crucial questions are what structures need to be established in the network in the future, what roles and functions need to be attributed to the nodes in the network (regional centers) and how their relationship with the other European macro centers and Hungarian cities shall be (Faragó 2006; Faragó 2008; Faragó 2009; Barta 2009). A related question is the interpretation and definition of regional centers, description of spatial growth poles, understanding their functions and the determination of the related developments (Rechnitzer 2007; Horváth 2007; Lengyel 2007). Analysis of the city-network's spatial specificities is the next important field of research, and here we can distinguish between two major directions: the first one is a general structural analysis, where the evaluation of the main development directions shall facilitate the planning (Salamin – Radvánszki – Nagy 2008), while the second one is the research of the structure forming large cities' and centers' different functions and, based on this, classification of networking's directions (Csomós 2013; Tóth – Nagy 2013).

Last, but not least the most important questions related to our topic follow: role of innovations in the formation of the city-network, the relationship and interdependence between their characteristics and further structure determining factors (economy, society, population, institutions) (Rechnitzer 1993; Lengyel – Rechnitzer 2000; Rechnitzer – Csizmadia – Grosz 2004; Grosz – Rechnitzer 2005). The link analysis facilitates the delineation of types, looking for those connected cities, which follow the same develop-

ment pattern and where the multitude of researched factors show some level of consistency, thus, they might have a similar role in the formation of the whole network, however, they might contribute to the shaping of the spatial structures as well.

The goal of this analysis is the registration of chronology and not only the presentation of the whole network, description of a given moment's picture, but the registration of the changes and shifts: presentation of the city-network's changes of the transition period (1991–1992), at the time before the millennium (1997–1998), at the beginning of the first decade of the new millennium (2002–2003), and eventually in the first years of the actual decade (2011–2012).

This time frame is presumably too short, since the city-network has been broadened with many new entrants, however, it only changes very slowly and the stable members gradually form new functions, so their impacts can be perceived belatedly - sometimes directly. The databases strongly influence the development of the rankings, joint groups and positions – even if we strive towards chronological and content focused unification –, they can be produced with improved new elements and the old ones with changing content. Thus, our analyses give a picture of a given situation, another moment of the network of centers determining spatial structures. Referrals, chronological comparison gives us the directions of the potential patterns and – of course – the factors or set of factors forming them. In any case, we have taken into account the driving forces of the network's evolution in our study and we are going to present connections, which can be interpreted from Hungarian aspects as well.

The Database

In the first place, our study makes an attempt to present -by using the reproduction of the innovation potential research published by *Grosz – Rechnitzer* (2005)[1] - the structure of the Hungarian city-network based on competitiveness and innovation potential, while having regard at the last decade's change tendencies as well. Moreover, we held it also important throughout the analyses that – by further, more detailed explorations- we should give starting points considering both the used indicators and the applied methods. We have been seeking opportunities, to define different types of cities more precisely and in a more sensitive manner and to highlight more strongly the relationships (or the lack of relationship) between knowledge creation and exploitation.

In the light of this we kept the former *structure* and within this the single variables in *five thematic principal components.* The structure of the set of indicators equals the one of the former analysis, the content of the variables and the method of generating specific indicators follows - with some exceptions - the same idea. One variable – proportion of the employment in services – was omitted from the repeated research, since there were

1 In the mentioned research Zoltán Csizmadia conducted the analyses on the urban network as a whole, while Márta Nárai carried out researches considering the cities with county rights.

no available data on local level and there are no such indicators that could have replaced it. Furthermore, the content of one variable was substantially modified: in case of the economic principal component we held it justified to change the number of telephone main lines to the more up-to-date and relevant number of broadband internet subscribers. It can be considered a slight change that in the social activity principal component we used the participation rate in the parliamentary elections instead of the participation rate of a referendum (EU accession).

In some cases there are terminological changes, which slightly influence the content; in case of college and university faculties the data of off-site programs situated at locations which cannot be considered faculties are not present among the data any longer; in case of the number of businesses which constitute legal entities our starting point was the number of registered businesses, not the operating ones. Indicators of employment positions were made based by the FEOR classification (Hungarian Standard Classification of Occupations), since at the time of the compilation of the database and elaboration of this study we did not have the detailed occupation data of the 2011 census. The list of the indicators used sorted by principal components is presented in Table 1.

Method of the Analysis and the Evaluation of the Variables

In the first step of the analysis, we created principal components from variables sorted in thematic dimensions. Keeping the principal components did not occur with the application of a predicted eigenvalue threshold, but we kept one variable in each case (in case of two principal components – economy, HR – two principal components remained whose eigenvalues were above 1, however, in both cases we kept the one with the higher ratio of explained variance as characteristic indicator).

When creating the principal components we used the data of 327 *cities*, however, the data of Budapest, and the 18 towns, which were proclaimed cities in July 2013 are not present. Among the variables forming principal components there are both specific and absolute indicators. The scores of the principal components are such standardized indicators, which facilitate the joint typifying and classification of different dimensions.

When forming the principal components we have become convinced that the s*et of indicators applied* throughout the former analysis applies for the current state of the city-network as well and it provides a usable picture. Each variable "works" at the elaboration of the actual principal components. In case of the percentage of the total variance explained by the principal components the results are similar to the ones in the former research in case social activity, human resources and the innovation principal component. The explained variance of the economic principal component is significantly lower when using the new data (it decreased from 62 per cent to 53 per cent), while it increased in the case of the principal component education and management (88 per cent, in contrast to the former 79 per cent, however, this is mainly due to the variables missing from the new model).

Table 1: Indicators used in the analysis sorted by principal components

Variables	**Communality**	**Weight**
Economic principal component (integration of 53%)		
Employment to the population (%), 2011	0.77	0.86
Motor vehicles (per 1,000 people), 2011	0.77	0.78
Taxpayers to population (%), 2011	0.67	0.77
Personal Income Tax base per capita (1,000 Ft/capita), 2011	0.90	0.93
Broadband internet subscriptions (per 1,000 people), 2011	0.80	0.90
Operating businesses with legal entity (per 1,000 people), 2011	0.55	0.74
Ratio of unemployment to population (%), 2011	0.66	0.80
Ratio of inactivity to population (%), 2011	0.56	0.56
Local business tax per capita (1,000 Ft/capita), 2011	0.42	0.62
Attorneys (per 10,000 people), 2011	0.42	0.48
Registered sole traders (per 1,000 people), 2011	0.80	0.20
Education and management principal component (integration of 88%)		
Managers and professionals to total employment (%), 2011	0.90	0.95
University and college graduate employment to total employment (%), 2011	0.93	0.96
Other intellectual professionals to total employment (%), 2011	0.82	0.90
Social activity principal component (integration of 56%)		
Participation rate at the first round of the 2010 parliamentary elections (%)	0.50	0.71
Personal income tax 1% offered for the nonprofit sector per capita (HUF), 2011	0.53	0.73
Nonprofit organization per 1,000 people (units), 2011	0.62	0.79
Complexity of local public forums	0.60	0.78

Variables	Communality	Weight
Human resources principal component (integration of 56%)		
Proportion of leading professors to the total number of professors (%), 2010	0.70	0.76
Number of college/university faculties	0.80	0.86
Number of secondary schools	0.84	0.83
University students per 1,000 people, 2011	0.69	0.82
Members of the public body of the Hungarian Academy of Sciences per 10,000 people, 2013	0.96	0.75
Percentage of university graduates among the population above the age of 25 (%), 2011	0.48	0.66
Adult education centers per 10,000 people, 2013	0.33	0.44
Innovation principal component (integration of 77%)		
Innovative initiatives between 2003-2013 (units)	0.87	0.93
Registered domain servers (units), 2012	0.79	0.89
R&D businesses (units), 2012	0.87	0.93
Complexity of the innovation and R&D institution network	0.56	0.75

Source: Authors.

When analyzing the basic data of the principal components we can see that the range of the scales and their distribution show certain differences in the single dimensions. We see a distribution, which, in the case of the economic and education principal components, approximates the normal – and to a certain extent the social activity as well-, while in contrast to this, in the dimension of human resources, and above all in case of the innovation principal component significant distortions can be seen. In case of the innovation principal component the large extent and the high peakedness – features experienced in the former research as well – show an even more uneven distribution in the light of the actual data.

Table 2: Dispersion indicators of principal components

	Economy	Education	Social activity	Human resources	Innovation
Median	0.04	-0.15	-0.11	-0.30	-0.29
Skewness	0.10	0.52	0.61	3.72	5.44
Kurtosis	-0.30	-0.13	0.30	16.02	40.15
Minimum	-2.38	-2.15	-2.07	-0.66	-0.50
Maximum	2.93	3.25	4.32	6.40	10.09
Extent	5.31	5.40	6.39	7.05	10.59
Above average	169.00	150.00	151.00	75.00	86.00
Cities located beyond deviation distance					
Below	53	50	58	0	0
Above	52	58	54	30	24

Source: Authors.

In case of the *economic* principal component we see that along the average score – which is zero based on the characteristics of the principal component – the city-network is divided into two equal halves, and the number of cities beyond deviation distance can be considered equal in both positive and negative directions. The situation is similar in the case of the education and social activity principal components as well. Thus, we can conclude that these dimensions behave in an "appropriate manner" considering the ranking of cities.

In case of the above already identified *human resources* and above all, concerning the innovation principal component there are several reasons for the distributions to differ significantly from normal, however, the two most important ones are the following:

- *The character of indicators used in the creation of principal components*: while the variables forming the first three principal components -with the exception of one - were specific indicators, in case of the human resources principal component we used two absolute indicators as well and the innovation principal component contains only such indicators.
- *The content of the indicators*: in case of two principal components a significant part of the indicators of which they are composed is strongly polarized. Generally, such are the data on higher education institutions, which mutatis mutandis take the value of

zero in the case of the cities, which do not have such institutions. In case of innovation indicators a significant concentration can be seen, which clearly delineates an elite category within the city-network, moreover, within this group there is another small circle of cities, which has an outstanding position, mainly due to its innovation supporting institutional background.

As a consequence of these factors only the scores of a small circle of cities – approximately one fourth – got above average, while the ones lagging behind form a relatively homogenous block, with scores a little below average. In case of two principal components the minimum scores do not reach one deviation negative distance, which is mainly due to the many variables with zero values. In the background of the fact that in case of both HR and innovation principal components the kurtosis of the distribution is significantly higher than in case of the former research stands that the actual research covers a wider scope; the broad majority of the after 2004 "new entrants" of the city-network does not show any relevant performance in these two dimensions. However, the number of research units had been significantly increased – from 251 to 327 – and as a consequence of this several indicators entered the model with a zero value.

As a whole we can say that considering the basic social-economic indicators we identified an easy to handle *developed-underdeveloped hierarchy*, however, the special distribution formed in case of competitiveness and innovation indicators became imbalanced. Due to this and the number of cities on moderate innovation level, we cannot make well-founded statements at this stage of our research on the mutually positive relationship between R&D&I potential and economic developments.

If we want to carry out some kind of classification by using thematic principal components, we need to examine the relationship between the dimensions. Bivariate correlations of the principal components are significant in all cases; however, the strength of relationships may vary (Table 3).

Table 3: Bivariate correlation coefficients between principal components

	Economy	**Education**	**Social activity**	**Human resources**
Economy				
Education	0.748			
Social activity	0.704	0.754		
Human resources	0.418	0.569	0.592	
Innovation	0.375	0.483	0.516	0.830

Source: Authors.

Coefficients of bivariate *correlations* of the first three principal components, which show a distribution that approximates normal, are high; however, their relationships with human resources and the innovation principal component can be considered only moderately strong. From this follows that we can not only differentiate the two groups of principal components based on their different distribution features, but along a – to certain extent different – i*nternal hierarchy* as well. This is even more supported by the fact that the highest correlation coefficient is among the principal components of *human resources* and *innovation*. Maintaining and considering the fact of such a division, based on the presence of significant relationships we can still conclude that we speak of a basically consistent set of indicators, which facilitates the classification of the city-network's elements through the social-economic and innovation indicators.

Networking of Principal Components

The distribution based on the scores of the *economic* principal component can be considered even, 169 cities have above average, 158 have below average scores. The distribution of units beyond deviation distance is even, there are 52 cities above one deviation distance, while 53 cities below, in case of two deviation distances the respective values are 8 and 6. If we examine the indicators of economic performance based on size and legal status, we can say that the average score belonging to a principal component increases along with the number of population. Whereas the average population of the cities in the lowest quintile is 6,253, the average population in the highest one is 28,337. The situation is similar if we examine the population of cities above and below average score.

Based on the functions we say that among 23 cities of county rights two cities (Hódmezővásárhely, Salgótarján) score below average, while the other 21 cities not only score above the total average, but they are in one of the two upper quintiles, and there are 11 cities among them above one positive deviation distance.

In case of economic development, among the 8 cities – within two positive deviation distances- which form the small elite circle, there are no cities with county rights. Besides the four cities belonging to the Budapest agglomeration (Budaörs, Százhalombatta, Törökbálint, Szentendre) two such industrial centers (Paks, Tiszaújváros) got here, whose economy has been determined by a dominant factory. Furthermore, two towns under the population of 5,000 reached this outstanding position (Répcelak, Bábolna) where employment data are specifically favorable. The majority of the 52 cities beyond one positive deviation distance are located in the Budapest agglomeration or in Transdanubia, the only exceptions – besides the above mentioned Tiszaújváros – are formed by a couple of cities with county rights (Kecskemét, Eger, Szolnok) and Hatvan and Rétság located in the relative vicinity of the capital city. From among 13 Transdanubian cities with county rights 8 belong to this group.

The scope of cities scoring below average can be rather well delineated by spatial and population features. Besides the above mentioned two cities with county rights

(Hódmezővásárhely, Salgótarján) only two cities (Hajdúböszörmény, Ózd) with a population above 25,000 got into this group. The average population of the cities scoring below average is 22,908. Relatively few Transdanubian cities are present among the ones with below average economic performance, and the majority of these are located in the SouthernTransdanubian region. From among 53 cities with weak economic performance beyond one deviation distance there are only three Transdanubian towns wit low population (Gyönk, Nagybajom, Kadarkút), located in disadvantaged regions. From the lowest ranked 6 cities beyond double negative deviation distance five are located in Szabolcs-Szatmár-Bereg county.

In case of the *education and management* principal components we face a quasi normal distribution with 150 cities above and 177 cities below average. In case of the scores and categories of the principal component, the polarization in sense of population and function is slightly more dominant than in case of the economy. Average population of the cities scoring below average is 7,979, while of the cities above average is 25,247. These are the values in case of the lowest and highest quintiles: 5,923, and 38,908 respectively. At the same time we can see, that there is no city with county rights, which would score below average and there are only five cities above 25,000 inhabitants (Ajka, Hajdúböszörmény, Komló, Ózd, Szentes) in this category. There are 17 cities with county rights among the 58 cities forming the "elite", the ones within the positive deviation distance, meaning that only six cities with county rights (Sopron, Salgótarján, Dunaújváros, Nagykanizsa, Tatabánya, Hódmezővásárhely) got outside this circle.

Regional distribution is more nuanced than in case of the economy principal component. The majority of the cities with county rights eastwards from the Danube got into the elite group, however, besides these only three cities (Baja, Felsőzsolca, Gyula) fall into this category from the Great Plain and NorthernHungary. Seven cities from the narrowest elite group of nine cities scoring above double positive deviation distance belong to the Budapest agglomeration; the only exceptions are Hévíz and Balatonföldvár. Generally speaking we can say that the towns around the Lake Balaton perform significantly better here, than in case of economy principal component. Besides Balatonföldvár Balatonalmádi, Balatonfüred, Keszthely, Siófok and Zamárdi are among the first 50 cities in this dimension, while the same could not have been said from economic aspect. Similar tendencies can be perceived in other cities, where the role of tourism is dominant (Harkány, Velence, Zalakaros).

The group of cities performing weakly is somewhat more balanced regionally than from the viewpoint of the economic principal component. Seven from among the 50 cities beyond negative deviation distance (Ács, Beled, Berhida, Devecser, Enying, Jánossomorja, Pusztaszabolcs) are located in the Transdanubia, and it might be surprising, but none of them is in the Southern Transdanubia. The majority of the cities with the weakest performance are located in the NorthernGreat Plain (14 of the 20 cities with the lowest scores are to be found in this region) and only one town (Cigánd) got beyond the double deviation distance.

We did not face any extremities in case of the *social activity* principal component either. Here too, the distribution approximates normal, and a relative larger extent is

due to one city's (Kiskőrös) outstanding scores. As we could see it in case of the first two principal components, the population and functions of a city can be considered to the same extent as influencing factors. Average population of the towns scoring below average is under 8,000, while it is above 25,000 in case of cities scoring above average; the average population of the 54 cities beyond positive deviation distance is above 43,000. As in case of the education principal component there are no such cities with county rights that would performed below average, and it can only be said about two cities with a population above 25,000 people (Ózd, Hajdúböszörmény). From among the cities with county rights only three (Tatabánya, Hódmezővásárhely, Érd) were omitted from the elite group of the principal component formed by 54 cities beyond positive deviation distance.

When examining the *regional distribution* we can say that the dominance of Transdanubian cities and cities belonging to the Budapest agglomeration can be seen in the group of the cities with high performance, however, the picture might be a little bit more nuanced, than in case of the first two principal components. A city on the Great Plain, Kiskőrös has outstandingly high scores, and besides this there are three more cities among the ones above positive deviation distance, which are not located in the Transdanubian region or in the Budapest agglomeration, and which are not cities with county rights (Gyöngyös, Balassagyarmat, Tiszaújváros). In case of the weakly performing cities the regional distribution is more balanced, stronger determinants are the size of the settlement and the date of the proclamation to town. The population of the weakest 58 towns barely exceeds 6,000 and there are only a few among them, which were granted the town title before the millennium.

In case of the *human resources* principal component the distribution we face is uneven; a prioritized group of the city-network delivers high performance considering the variables constituting the principal component, while the majority of cities became concentrated in each other's proximity, with scores a little below average. This is partly due to the above mentioned circumstance that on one hand, in the principal component there are variables containing absolute indicators; on the other hand in case of no higher education institutions present there are many zero (negative) values in case of many variables of the principal component. Nevertheless, the picture can be considered real, if we consider the impacts of higher education's and R&D&I infrastructure's presence on competitiveness as given. Consequently we see a peaked distribution of large extent, which is determined by the upwards outlier cities.

There are only 75 cities with above average scores, the university centers' performances are the highest, consequently got smaller towns into the elite group, where- in comparison with their size and economic weight- the presence of higher education is very important (Gödöllő, Keszthely). Among the towns with high scores Martonvásár is atypical, and among the cities with no higher education the economically stronger towns of the Budapest agglomeration are in a more favorable situation. Based on the population the distribution is more polarized, than in case of the first three principal components: The largest cities form the elite, from the eight cities with above 100,000 inhabitants

Kecskemét delivers the weakest performance and it is 17th in the ranking. Since the deviation of below average scores is relatively low, the East-West difference is not pronounced on the negative side of the ranking; the impacts of the settlement's population can be traced better.

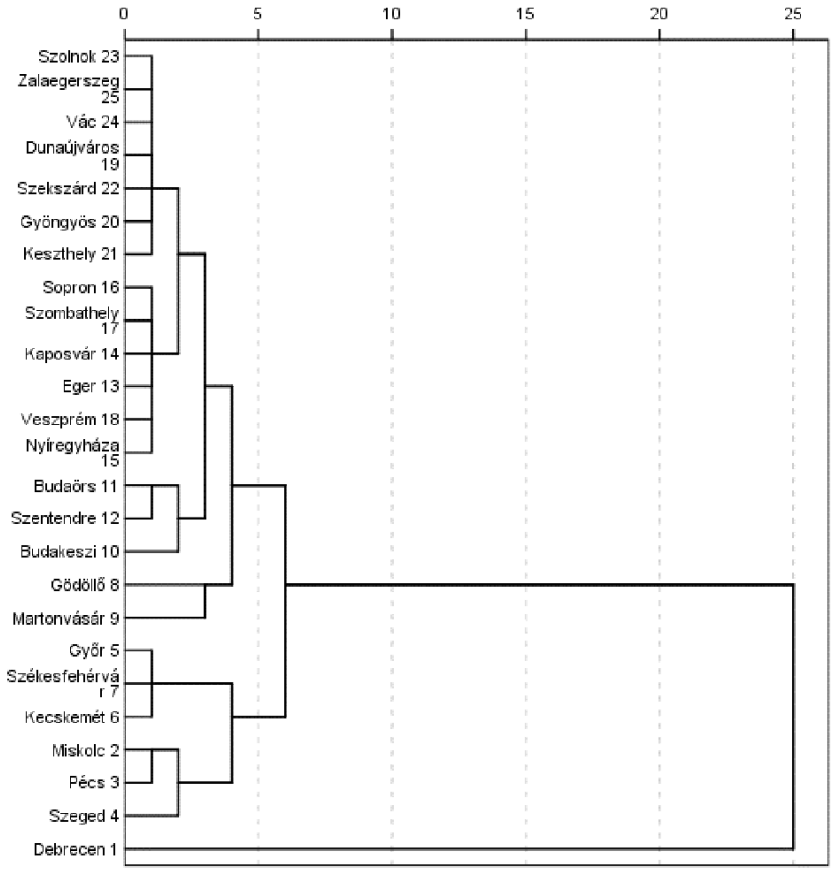
In case of the *innovation* principal component we have to speak of an even more uneven distribution, the university centers are even more prominent. Although the number of cities scoring above average is higher than in case of the human resources principal component, the narrow elite circle seems more distinct and both the range and the kurtosis have considerably high values. Just like in case of the human resources principal component, distribution specifics are determined by the significant number of "empty" indicators: cities, which -due the used indicators- cannot be evaluated or the range of their evaluation is very limited.

In case of this principal component the extent of polarization based on settlement size is the highest among all dimensions: the average population of the 24 cities beyond deviation distance exceeds 85,000, the average is 47,000 in the highest quintile. The correlation between the population and the factor score is outstanding (0.956); in case of the first three principal components this value is below 0.5, however, the relationships are significant for each pair . All of the cities with county rights score above average, and they all belong to the highest quintile. Only four cities with county rights (Hódmezővásárhely, Szekszárd, Nagykanizsa, Salgótarján) did not get into the elite group of 25 cities. All five cities, which made it into the elite group not as cities with county rights, belong to the Budapest agglomeration (Budaörs, Dunakeszi, Gödöllő, Szentendre, Szigetszentmiklós). From among the cities scoring below average only three (Ajka, Várpalota, Vecsés) city's population exceeds 20,000, and from the group above average there are only two towns with population below 10,000 (Kunszentmiklós, Szeghalom).

Innovation Clusters

In the first step we conducted a k-means cluster analysis on the basis of development indicators based on the principal component scores, as a result of which we delineated the "elite group" of our research, which needs to be given special priority. After the identification of four clusters by using principal components we were able to separate two groups with outstanding indicators, containing 25 cities. For these cities we conducted a hierarchical cluster analysis in order to identify different types, innovation clusters within the group of the best performing cities. The dendrogram of the procedure can be seen in Figure 1, which demonstrates the steps of agglomeration and the internal structure as well.

Figure 1: Hierarchical cluster structure of prominent cities based on principal components



Source: Authors.

From the 23 *cities with county rights* 17 are present in this category: Békéscsaba, Érd, Hódmezővásárhely, Nagykanizsa, Salgótarján and Tatabánya are left out (in the 2005 research similarly 17 cities with county rights got into the elite group of 23, the dropouts are the same with only one exception: instead of Békéscsaba Dunaújváros got included in the new model). Among the eight cities, which are not *cities with county rights* university centers (Gödöllő, Keszthely, Gyöngyös), and economically well performing towns of the Budapest agglomeration (Budakeszi, Budaörs, Szentendre, Vác) were present. The eighth town is Martonvásár hosting a research center of the Hungarian Academy of Sciences. In comparison to the former research conducted in 2004 there have not been any significant changes, it was just the fact that Vác and Martonvásár joined the group of six towns already participated among the elite.

The character and ranking of the *groups* formed of cities with outstanding features are determined by the differences of the factor groups, which explain the developmental differences and their content (Table 4).

Table 4: Innovation clusters in 25 prominent cities
Potential innovation clusters among the 25 prominent cities

	1. Cluster	**2. Cluster**	**3. Cluster**	**4. Cluster**	**5. Cluster**	**6. Cluster**
	Debrecen	Győr	Gödöllő	Budakeszi	Eger	Vác
	Pécs	Székesfehérvár	Martonvásár	Budaörs	Veszprém	Szolnok
	Szeged	Kecskemét		Szentendre	Sopron	Szekszárd
	Miskolc				Nyíregyháza	Keszthely
					Szombathely	Dunaújváros
					Kaposvár	Gyöngyös
						Zalaegerszeg
	Principal component averages					
Economy	0.69	1.59	1.37	2.18	1.14	1.12
Education	1.67	1.55	1.70	3.02	1.40	1.34
Social activity	1.92	1.70	1.17	1.90	1.95	1.63
Human resources	5.34	2.67	4.81	1.29	2.93	1.78
Innovation	6.47	4.02	0.55	1.28	1.98	0.94

Source: Authors.

Regional centers of complex structure belong into the first *cluster* formed by four prominent large centers primarily separated by their outstanding potential and performance in human resources and innovation. As a change in contrast to the 2005 research, Miskolc has gotten into this group as a new member. These cities are all significant centers of higher education as well, thus, their innovation indicators are favorable. Their economic

performance is relatively weak compared to other clusters of the elite group; Miskolc is even more of an outlier, since it has the weakest economic potential from among 25 prominent cities. A common feature of these cities is that they are all regional centers, network-forming cities , they all show strong innovation potential (institutions of R&D, innovation), high concentration of qualified human capital and favorable employment and education indicators . It is also important to mention that based on our analysis Debrecen is separated from the other three cities and can be even considered as a separate cluster.

Members of the second cluster called *"regional centers of complex structure with strong economic potential"* have also prominent parameters and their economic performance is exceptional. Although the human resources and innovativeness indicators are above average, there is a significant lag in contrast to the first cluster. The human resources data show an improving trend in comparison with 2005.

The third cluster is composed of Gödöllő és Martonvásár, they form the R&D and *higher education focused cluster.* Their indicators are stable, close to the average, only one value is outstanding: the human resources. Mainly the presence of the Martonvásár-based research center of the Academy of Sciences and the Gödöllő-based university are the reasons that they have been included into the elite club and form a separate group within it. Their innovation potential is moderate in comparison with the other prominent cities; however, their research and development activity is outstanding, similar to members of the first cluster. (This statement is validated by the data included in our research, which, however, were not able to consider real research results e.g. publications, patents, new procedures applied. The Martonvásár-based Academy research center is one of the central institutions of the Hungarian and international agrarian research, and the Gödöllő-based Szent István University has significant research records, but these could not have been registered in our analyses.)

The fourth cluster is composed of the sub-centers of the *Budapest agglomeration*: Budakeszi, Budaörs and Szentendre. Their economic potential is very significant, the parameter of the education principal component is outstanding, and they are distinctly different from the other prominent cities. Their favorable features can be explained by the proximity of the capital city; however, their innovation potential is moderate in comparison to the above-mentioned indicators.

The fifth *cluster is formed of cities with significant higher education-human base* (Eger, Veszprém, Sopron, Nyíregyháza, Szombathely, Kaposvár), Eger and Veszprém stand out from these cities, since they followed a sharply increasing pattern of development throughout the past years. These cities are stable, they belong to the middle of the pack, however, considering their innovation and human resources they are not able to fulfill the role of a regional center yet. They have been getting closer to each other from different starting points throughout the past years. The most outstanding parameter of this cluster- due to the presence of higher education institutions- is the human resources principal component. In comparison to the 2005 research their innovation rate has been increasing. The economic role of Szombathely, Nyíregyháza and Sopron has been following a decreasing trend.

The sixth *cluster is the group of local centers with miscellaneous (higher education-economy) orientation;* they have the lowest scores considering the averages of the indicators. The innovation potential is definitely low in comparison to the other members of the group. In case of these mid-size cities (three county seats, three local higher educational centers and one town in the capital city's agglomeration) we can not speak of network forming functions, however, they can be considered as local centers. The outstanding values in these cases are provided by human resources, but generally, this group of cities is characterized by rather average parameters. The number of innovative initiatives is low yet and the innovation potential is weak.

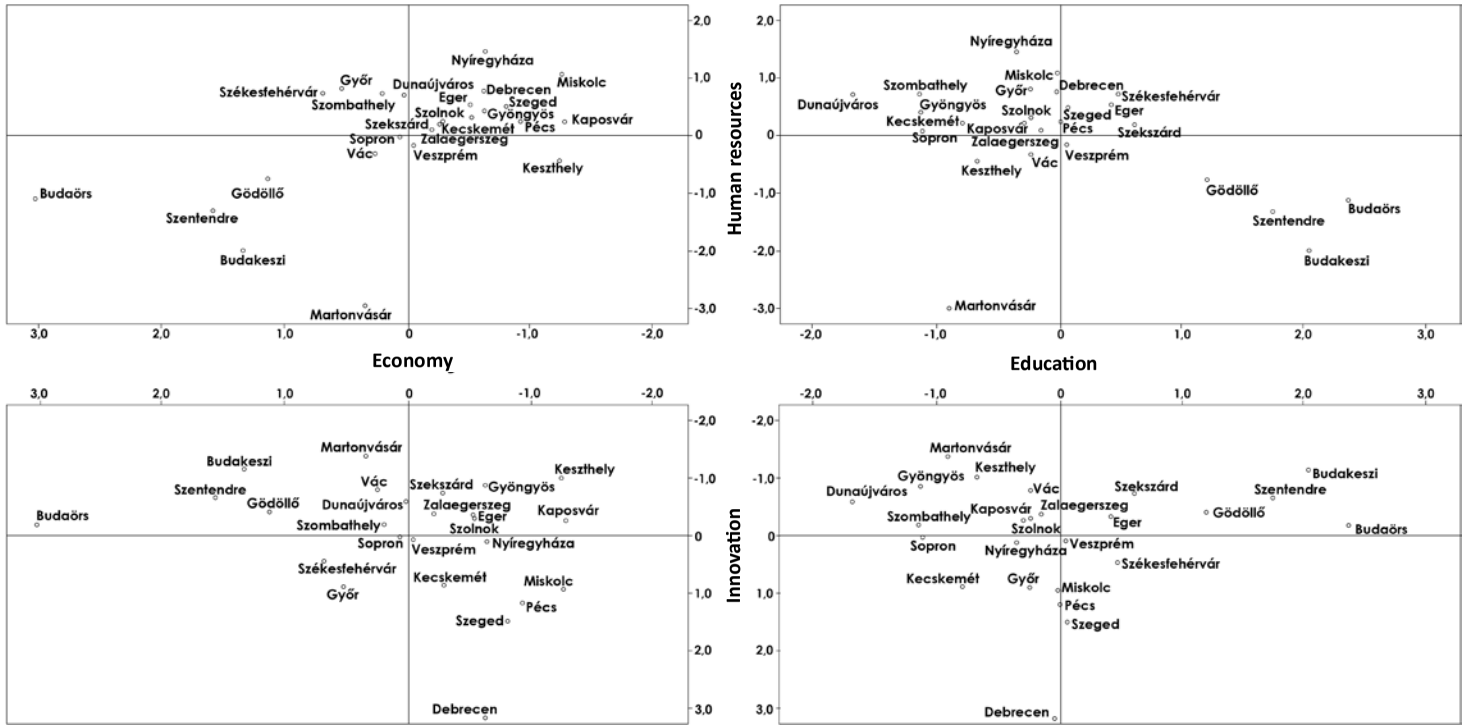
When comparing our research with the 2005 results we can say about the clusters' principal component average scores that economic potential of the first cluster and its education indicators fell back. (In 2005 these figures were respectively 1.01 and 2.02). The main reason behind that is while in 2005 Miskolc belonged to the second cluster, now it emerged into the first one. Social activity and indicators of innovational potential were improved. Within the cluster the human resource potential indicator has the highest value, while in 2005 it was 4.54, it has increased to 5.34 by today.

In the 2005 research the second cluster was formed by the cities of Miskolc and Nyíregyháza and as we mentioned above by now Miskolc belongs in the first, while Nyíregyháza in the fifth cluster. Thus, the elements of the second group have changed, and the average scores of the principal components changed respectively. The group of cities in this cluster is completely identical with the third cluster of the former research, so this is our base of comparison. The economic potential dropped back somewhat (from 1.69 to 1.59), besides this all other indicators moved in the positive direction.

Another well comparable group is the Budapest agglomeration, which forms the fourth cluster in the actual research: Budapest, Budaörs and Szentendre. In the former research Budaörs and Budakeszi formed a separate group; however, Szentendre belonged to the fifth cluster. The economic and educational indicators are extremely high both now and earlier, however, the two average scores dropped a little. Average values of human resources and social activity have significantly increased by now (1.26 and 0.65 respectively), but the innovative strength had been decreasing (in 2005 it was 1.75).

The fifth cluster is currently composed of the following cities: Eger, Veszprém, Sopron, Nyíregyháza, Szombathely and Kaposvár. In contrast to the 2005 research there had been as much of a change that Nyíregyháza got into this group (formerly they formed a group together with Miskolc), and Békéscsaba belonged to this cluster as well, however, in the present research the city does not show any prominent values, so it did not made it into the elite category. The average score of the cluster's economic indicators fell back significantly (in 2005 this figure was 1.40, but now it is only 1.14). The education potential has followed a similar path (0.05 is negligible in terms of the difference between the results of the two researches). Average score of social activity principal component decreased somewhat (from 2.09 to 1.95), however, the average of human resources and innovation within the principal component cluster increased significantly.

Figure 1: Hierarchical cluster structure of prominent cities based on principal components



We can present the situation of the 25 cities considered as elite in two dimensions using the cluster-forming principal components. The vertical and horizontal axes of Figure 2 show the principal components, while the values of the single cities show the distance from the average; the inner lines stand for the averages of the given principal components.

Outside the Elite Club, the Other Cities

The delineation of the clusters for the remaining members of the city-network was prepared by using k-means cluster method , since the high number of units does not make the application of the hierarchic method possible. The results show that – just like in 2005, after screening for the outliers – the role of *economic performance* and the *education indicators has significantly increased*, meaning that innovation and the respective human resources are concentrated in the elite club, and its spill-over into the other units of the city-network is not significant.

A four cluster breakdown gives a realistic picture for the characteristic delineation of the different types within the remaining 302 cities.

The second set of cities following the elite category is formed by 37 transitional cities with innovation potential, where the final cluster centers show above average scores considering five principal components. The set of cities is not consistent, it can be categorized in further subgroups based on the functions and geographical location as follows:

- A group of cities with county rights omitted from the elite (Békéscsaba, Érd, Nagykanizsa, Hódmezővásárhely), and some county level mid-sized cities, where economic potential is stronger and there is higher education (e.g. Baja, Esztergom, Mosonmagyaróvár),
- Mid-sized cities of mainly the Eastern and Southern part of the Budapest agglomeration (e.g. Dunaharaszti, Szigetszentmiklós, Veresegyház),
- Competing centers of the Balaton region (e.g. Siófok, Balatonfüred, Balatonalmádi), and towns with significant touristic potential (e.g. Velence, Visegrád, Zalakaros),
- Mid-sized cities with high economic performance (Paks, Tiszaújváros).

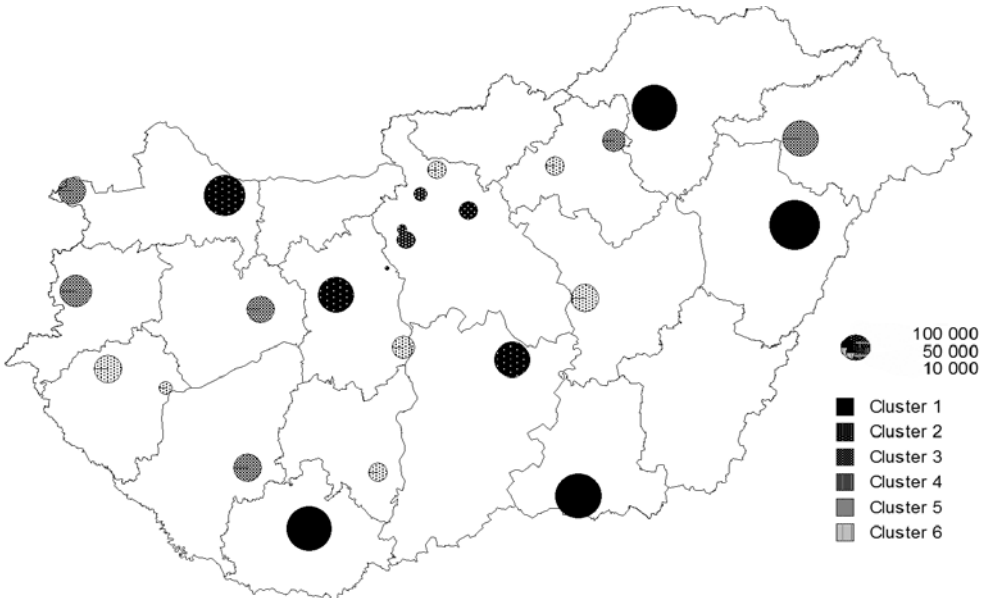
The next, third cluster is composed of 85 cities on *average development level, with rather low human base and innovation potential.* In their case the economic and education indicators are only slightly better than average. When examining the specificities of the cities we see that primarily small towns of Transdanubian regions belong to this group, from the Eastern part of the country only a few mid-sized cities got here, which – based in their economic performance- could not make it to the group of cities in transition (e.g. Gyula, Kiskunfélegyháza, Kazincbarcika). The three weakest performing cities with county rights are also here (Hódmezővásárhely, Salgótarján, Tatabánya). The presence of the Transdanubian industrial towns of the former 'industrial-energetic axis' (Ajka, Dorog, Oroszlány, Várpalota) has to be noted and as well as the fact, that the Eastern and South-

Eastern towns of the Budapest agglomeration with moderate economic potential fell back into this cluster (Gyömrő, Dabas, Vecsés, Maglód).

94 settlements with below average scores in all dimensions got in the fourth cluster: the group of cities with *below average development leve*l. The distinctive presence of cities of the Great Plain characterizes this group, besides, the small towns of the Southern Transdanubian region and centers of inner peripheries with short urban past can be found here (e.g. Adony, Ercsi, Tét). Generally, these towns have low population, the average number of inhabitants barely exceeds 9,000 and only in case of one town is the number of population above 30,000 (Hajdúböszörmény), besides this only four towns' population exceeds 20,000 (Komló, Nagykőrös, Gyál, Törökszentmiklós). In the research published in 2004 we formed two average groups, in one human resources and innovation potential were – on low level - observable, in the other one even these features were not present, thus 118 towns were included in these two groups.

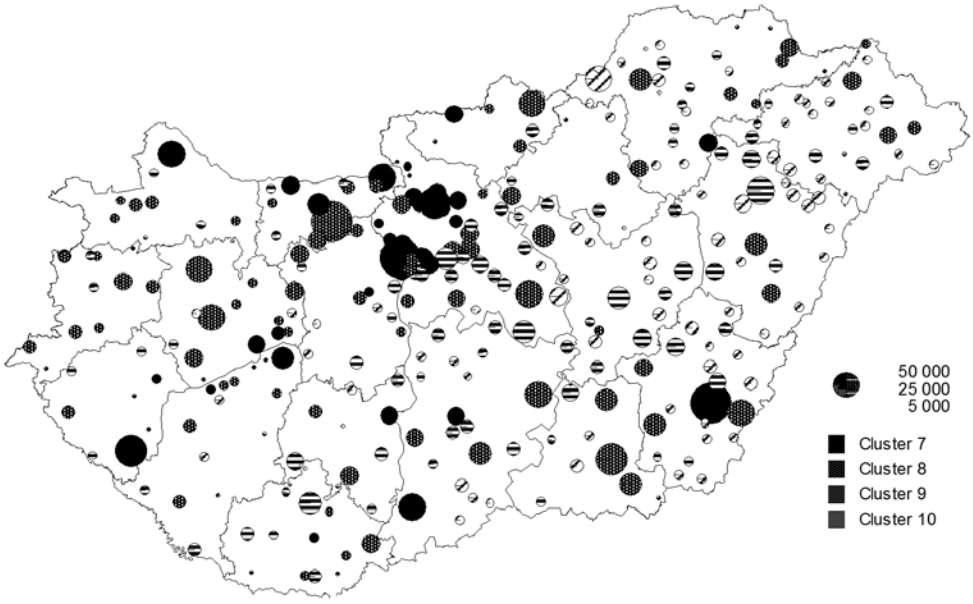
In the fifth cluster, *towns with explicitly unfavorable features*, all parameters are largely below the average. From the 86 towns forming this group only 10 are located westwards from the Danube, the group consists mainly of towns located in the Great Plain and Northern Hungary. Only one town's population (Ózd) exceeds 20,000, the average population of the towns constituting this cluster is 6,290. It has to be noted that there are 34 towns (40 per cent) in this cluster which were proclaimed towns after the year 2001. This ratio is significantly higher than the proportion of new towns in any other cluster.

Figure 3: Geographical position of the prominent cities by clusters



Source: Authors.

Figure 4: Geographical position of non-prominent cities by clusters



Source: Authors.

Trends of the City-Network

The examinations conducted in every decade from the same viewpoint and based on approximately the same database show the stability of the city-network, in which smaller, not essential shifts and moderate rearrangements can be observed.

It is not a simple task to compile a *database*: efficient, in-depth work is needed for detecting information beyond the official statistics. A segment of the data reflects a constant sample, while another set of data, which is mainly based on individual data processing, is only available in larger centers, i.e. in this set we find factors, which can be linked to innovation or the human resources generating it. This is, of course, disrupting the analyses and creating large differences. To eliminate this impact we have been intending to conduct analyses based on variable groups and describe clusters and sets of cities showing convergent development patterns.

From the analyses we can conclude that while *economic potential, education and social activity follow even distribution, the concentration of innovation potential and human resources is strongly asymmetric*. The uneven distribution in case of the latter two principal components leads to the fact that the distinctive segregation was maintained in the network and only slighter shifts were to be registered.

The circle of cities with county rights, on the top of the city-network, is strongly polarized. In the city-network the *traditional cities and regional centers*' (Debrecen, Szeged, Pécs, Miskolc) innovation potential and human resources are prominent, however, their economic

potential is explicitly moderate, they do not excel either in specialization or in concentration. The one-sided peak, where knowledge production can be detected, but economy is weak, thus, the two structures cannot intertwine and the operation of cities is held together by public services and public institutions. In case of large cities with prominent *economic potential* (Győr, Székesfehérvár, Kecskemét) innovation and human potential are both lower than in the former group, however, high level of education and favorable employment situation were established. Throughout the last ten years these cities could not make it to the top, they could not enter the elite group of traditional large cities, although, considering some of their indicators, they have been getting close them (innovation potential, education). If we can speak of a success story it has to be Debrecen: a city able to follow a separate growth pattern and with the impetus of the last 10 years – if it is able to conserve it – the city might excel from this group in the future and present itself as the second large city in Hungary. Miskolc's situation is quite similar, due to its quality human resources and higher education based innovation potential, it has been included into the group of top cities, thus, the city was compensated for the rather weak economic performance.

17 cities with county rights (68 per cent) landed in the 25 member group of prominent cities, among these - beyond the shared regional centers - there were other sub-groups, with human resources dominance and where – due to the presence of higher education – the innovation potential was higher than the average. The agglomeration of Budapest is in a special position in the city-network, two subgroups are formed from the top cities: in the first one the economic potential is the basis of the group, in the second one beside the economic potential the high level of education is the distinctive feature.

In the city-network screened by cluster analysis we could not detect any large shifts in the single groups displaying development, the locations and situation have not changed appreciably. It is observable that the sub-groups, the sets of cities close to one another from developmental aspect, either keep their former character or new ones are formed, which are dominated by one or -in better cases- some more factors. It can be concluded and it underlines the results of the former research, that the resources of development and innovation are concentrated in 50–60 cities, and the half of these are centers, which are able to move, a quarter of this set of cities is a large center, concentrating innovation and human resources.

The set of the dropouts, the ones falling behind, is getting wider in the urban network, and urban policy supporting local functions that was not relying on development features has only diluted the city-network throughout the last 10 years. It gave hope for development; however, it only provided facts about lagging behind, immobility and need.

The chronological and comparative analysis of the Hungarian city-network is necessary and instructive; however, its *methods got exhausted*. In case of 10–12 large cities international analysis is needed, or at least a Central and Eastern European comparison would be necessary, since their real space of competition is in this macroregion, and their development pattern needs to be adjusted to the one of the large cities in the neighboring countries. It would be desirable to analyze the members of this circle one by one and examine all hard and soft factors, institutions, actors and relationships, which are present in the large cities earliest since the change of regime. With these analyses we can describe the Hungarian model and may give an example on shift of the second tier of the network and hope for renewal for the others.

The History of Public Vehicle Production in Győr from 1945 Until 1990

PÁL GERMUSKA – JÁNOS HONVÁRI

KEYWORDS: public vehicle production, armoured vehicles, engine and running gear production

ABSTRACT: Hungarian Railway Carriage and Machine Works Plc. (MVG), founded in 1896, developed its profile related to railway and public vehicle production in parallel. From the beginning of the 20th century, diverse lorries and buses were produced in Győr on the basis of foreign licences (such as Austro-Daimler, Praha, and later Austro-Fiat, Krupp and MAN in the 1920's and 1930's). After the announcement of the munitions industry programme in Győr (in March 1938), the factory started large-scale military developments: the Botond cross-county lorry was produced in individual construction and licence lorries were manufactured in a large number, too. In 1942, MÁVAG established a subsidiary in Győr that fabricated ammunition cases. In 1944, the plants functioning in Győr were also seriously damaged following the allied bombardments. From April 1945 until June, MVG was directed by the Soviet occupying troops, and consecrated a large part of its reconstructed capacities to pay the reparations delivery. In 1946, MVG was taken over by the state, and MÁVAG plant was annexed to it in 1947. In the spring of 1948, the big company, already known as the Hungarian Railway Carriage and Machine Works, was entirely nationalized. In 1949–50, during the "profile arrangement" introduced by the planned economy, several factory units of MVG were detached and organized into separate companies or transformed into subsidiaries of other large companies. At this time, the main profile of MVG was related to railway vehicle production and bridge and steel construction, and from 1953, it was extended by the production of diesel engines, which were installed into engines and motor trains. MVG and the formerly withdrawn Machine-Tool Factory of Győr were assigned with the task of constructing armoured vehicles (FUG) of national design. The difficulties of organizing the production resulted in the collapse of MVG, and in 1963, not only a new director, Ede Horváth was appointed head of the company, but also the Railway Carriage Factory was fused with the Machine-Tool Factory from 1 January 1964. Horváth completely reorganized the large company in the course of a couple of years, modernized the management structure and established a remarkably strict working and technology discipline. Public diesel engine production appeared as a new

profile, for which the motor licence was bought from MAN–Renault–Ferrostaal syndicate at the end of year 1966 subsequently to prolonged preparatory measures, and the motor factory was also built. The development of running-gear production was launched in 1964 by a governmental decision, and from 1967–68, billionaire investments were effected, mainly through purchasing Western machines and technologies. In the first half of the 1970's, the railway profile of MVG became of minor importance, and the engine and running gear factory, which were continuously expanded due to investments, made the large company, under its former name, Rába, become an internationally quoted vehicle producer. The production of the amphibious reconnaissance vehicle (FUG) ceased in 1968, and was replaced by the production of the much more modern armoured transport battle vehicles (PSZH) from 1970 until 1978. Starting from 1970, Rába relaunched the production of trucks in order to maximally utilize its engine and running gear production capacity, and in 1976–77, cooperated with American heavy good producers (Steiger, IHC) in order to produce heavy-duty tractors and power machines. By the 1980's, due to its remarkable Western exports, its production value of multiple billion combined with its circa 23,000 employees, Rába became one of the most dominant companies of the national machine industry.

Introduction

The Hungarian Railway Carriage and Machine Works Plc., founded in 1896, shortly created two of its major profiles, railway rolling stock and public vehicle production. The two fundamental production profiles developed in parallel, however, not at the same rate at all, and from the beginning of the 1900's until the end of the 1940's, production was carried out within the framework of one factory. The circle of owners of MVG changed during the era of the economic world crisis. In 1906, the majority of the factory's shares went over into the proprietorship of Wiener Bankverein, one of the biggest banks of Austria, from the founding Lederer family. However, the bank almost went bankrupt, from which the Rimamurány-Salgótarján (RIMA) Ironworks Plc. bought MVG's controlling packet at the beginning of 1935.[1] MVG broadened its product range with further acquisitions in order to ease the company's "unilateral dependence on contracts" and introduce new, more profitable branches instead of low-profit products.

Until the outbreak of World War II, the main part of the factory's production value came from selling railway products. On the other hand, in the last period of the war, the decisive majority of the production value already derived from military lorries and personnel carriers, jeeps (the famous Botond), tractors, tanks, and later jet fighters produced in

1 Magyar Nemzeti Levéltár [The Hungarian National Archives] (MNL) Győr-Moson-Sopron Megye Győri Levéltára [Győr-Moson-Sopron County Győr Archives] (GyMSMGyL), A Magyar Vagon- és Gépgyár iratai [Proceedings of the Directorate of the Hungarian Railway Carriage and Machine Works Plc.,] XI. 15/487. 19 February 1935. See also Győri Hírlap, 20 January 1935.

German–Hungarian cooperation. The Gun Factory of the Hungarian Artillery Factory Plc. belonging to Škoda syndicate was dismantled by the Romanian occupying troops after World War I. The company seat continued to function under the name Győr Factory under state maintenance, and later, a part of it was transferred to the National Electric Works (OVIRT). In 1942, the Royal Hungarian State Iron, Steel and Engine works (MÁVAG) established a subsidiary at the Artillery Factory seat in order to produce ammunition cases.[2] At the same area, a new metallurgic factory started to be built[3] which, however, was fundamentally destroyed by the bombardments in 1944.

During the war, Győr was struck by 18 major and 17 minor bombardments, the first and the most devastating one was the air assault on 13 April 1944 (Nagy 2007). The Railway Carriage Factory was hit five more times by bombardments, which destroyed once again the factory units renovated in the meantime. In January 1945, the Germans dismantled and confiscated the machines and implements belonging to the Railway Carriage Factory used for aircraft production, whereas the engines of the automobile department were transported to the Czech-Moravian Protectorate of the German Empire during February-March 1945. Finally, all corporate and national efforts failed to reacquire the valuable instruments of production stored in Bavaria and the Czechoslovakia.[4]

From Resumption to Nationalization, 1945–1948

Due to the continuous bombardments, and later during Győr's occupation by the Soviet troops at the end of March 1945, the engines, properties and buildings of the Railway Carriage Factory were damaged at almost a 50-percent rate. The halls of the Automobile and Airplane Departments suffered the most serious damages. Renovation started with the reparation of the less damaged buildings. First, the bridge-, iron structures- and the Railway Carriage Factory were reconstructed. The chief company and the displaced factory units fell under Soviet military control as of 1 April until 30 June. The Railway Carriage Factory worked by far the greatest part for the Red Army during months and renovated bridges for the town (Tabiczky 1972. II. 8–10.). However, after the fights ended, the plundering troops of the Red Army took possession of the raw materials and finished products of MVG that were still disposable (G. Vass 2011).

By April 1946, still only a part of the Railway Carriage Factory could be renovated, for about 300,000 gold Pengő of 1938.[5] During summer and autumn, a considerable part of MVG's commissions consisted of reparation deliveries: the Reparation Office ordered flat-cars for the Soviet Union and fruit carrying wagons for Yugoslav reparation. The narrow-gauge railway and the switch department produced rails and bogie wheels for Yugoslav

2 Honi Ipar, 1 June 1942.; Győri Nemzeti Hírlap, 8 August 1942.
3 Magyar Nemzeti Levéltár Országos Levéltár [The Hungarian National Archives, (MNL OL) 276. fond (f.) 87. csoport (group, cs.) 32. őrzési egység (unit, ő. e.).
4 MNL OL XIX-F-32 143. doboz (box, d.)
5 47. f. 85. ő. e. 30.

reparation. The Bridge and Iron Structures Factory was assigned with the task of producing four unit bridges, each weighing 540 tons, for Russian reparation upon a government directive. Production also restarted in the automobile factory: lorries were produced for MÁVAUT, the Hungarian Post and the Ministry of Transport.[6]

MVG had resort to the intact halls of MÁVAG's establishment in Győr for producing broad gauge flat-cars for reparation.[7] In the meantime, the MÁVAG site got into a difficult position, even a strike broke out on 3 August 1946. Finally, the Central Directorate of MÁVAG deemed the establishment of Győr worthy to be preserved, but was still dissatisfied as far as its performance was concerned. In October, a new director was appointed at the head of the establishment, and the nationalization of the production commenced.[8]

During the period of reparation deliveries, the Hungarian State nationalized the Rimamurány-Salgótarján Ironworks (RIMA) at the same time as the Ganz and the Manfred Weiss Companies, and together with these, all the other companies in which the large companies had at least a fifty percent interest. This is how the Hungarian Railway Carriage and Machine Works were taken over by the state on 1 December 1946 via RIMA.[9]

At the beginning of 1947, the leadership of the Railway Carriage Factory suggested the fusion of the Railway Carriage Factory suffering serious damages during the war, and the MÁVAG units, which suffered only minor damages and were situated on the site of the former Artillery Factory close to each other. In February 1947, Ábrahám Pattantyús, general manager of the Railway Carriage Factory since 1941, suggested the Heavy-Industry Centre (NIK), which was the national organization supervising the MVG, to take advantage of the cooperational opportunities between the establishments of MVG in Győr and MÁVAG, to boost the production in the halls that were in better condition, and to rationalize the manpower of the two sites.[10]

In March 1947, the commissioners of the Economic Supreme Council (GF) visited the two industrial establishments in Győr, and supported the idea of the fusion.[11] On 19 March 1947, the Secretariat of the NIK asked for and was granted authorization from Antal Bán, Minister of Industrial Affairs, to conduct the negotiations concerning the utilization of MÁVAG's establishment in Győr with the concerned parties.[12]

The decree on the fusion of the establishment of MVG and MÁVAG in Győr was signed by Antal Bán, Minister of Industrial Affairs, on 29 July. The two companies were bound by a lease contract as from 1 August 1947, stating that MÁVAG leased its buildings and implements for utilization to the Railway Carriage Factory until the planned completion of the reparations (until 1951), for which a charge of use – 2.5 per cent of the stock value – has to be paid.[13] The lease contract ceased to have effect in the spring of 1948, when every company employing more than 100 people was nationalized.

6 PIL–SZKL 47. f. 85. ő. e. 23–24.
7 MNL OL XIX-F-32 142. d.
8 PIL–SZKL 47. f. 86. ő. e.
9 Decree of the Government of the Hungarian Republic on the privatization of certain heavy-industry companies, No. 23.550/1946. M. E., Magyar Közlöny, 28 November 1946., No. 272.
10 MNL OL XIX-F-32 139. d.
11 MNL OL XIX-F-32 139. d.
12 MNL OL XIX-F-32 144. d.
13 MNL OL XIX-F-32 139. d.

At the beginning of the spring of 1947, the NIK assigned a great role to the production of public vehicles in Győr. Thus, one of the most important duties of the Railway Carriage Factory was the innovation of lorries and buses in the framework of the three-year reconstruction plan coming into force as from 1 August. In actual facts, in the first year of the three-year reconstruction plan, more precisely between 1 August 1947 until 31 July 1948, 294 public vehicles were manufactured in Győr with the value of 22 million HUF, converted into Rába Super lorry units.[14]

Streaming and Partition, 1948–1953

The arrangements for the innovation of public engine production at a larger scale started from 1947. During the spring of 1947, the Heavy–Industry Centre suggested that the manufacturing of diesel engines be reshuffled to Győr in such a way that engine licence would be purchased again from MAN, the Railway Carriage Factory's former licence partner. Due to the lack of foreign currency, this solution was rejected at an early date.[15] In May 1949, the Economic Supreme Council decided that diesel engines and medium-duty lorries would be produced in Hungary following the licence of the Austrian automobile company Steyr: hence Csepel Automotive Works was constructed for this purpose in Szigetszentmiklós, on the site of the bombarded Danubian Aircraft Company.[16]

In 1949–50, numerous products and plant units of the Railway Carriage Factory became victim of the so-called streaming. Lorry and diesel engine production was displaced from the Railway Carriage Factory to Szigetszentmiklós (Csepel Automotive Works), the fabrication of tractors to Kispest (Red Star Tractor Factory) and buses to Mátyásföld (Ikarus). From this moment on until 1960, no finished vehicles were produced in Győr. Instead, automobile main units (front and rear axles, steering devices and gears) were fabricated for the assembling companies on the plants that were either detached from the mother company or were independent or annexed to other large companies (Tabiczky 1972, II. 32–33.). The Automobile Assembly located on the site of the chief company first became a separate factory (Győr Automobile Factory), and later functioned as the Drive Gear Factory of Csepel Automotive Works (the Győr Specialized Machine Factory was separated from it on 1 January 1953). Between 1957 and 1960, it became independent again (Győr Drive Gear Factory), and finally merged with the Győr Machine-Tool Factory also detached from the Railway Carriage Factory. The screw mill operating at the airport continued an independent management between 1951 and 1954 as Győr Screw Mill. From 1954 until 1960, it became the establishment of the Budapest Screw Factory in Győr, and as from 1 July 1960, merged with the Győr Drive Gear Factory and later was annexed to the Győr Machine-Tool Factory.

14 MNL OL XIX-F-32 144. d.
15 MNL OL XIX-F-32 139. d.
16 MNL OL M-KS 276. f. 116. cs. 6. ő. e.

The Győr Machine-Tool Factory was established specifically for manufacturing military products in 1951 from the Industrial Units operating on the site of the former Artillery Factory, where tractor-trailers, trailers and moulds were produced before separating from the Railway Carriage Factory. Its director became the Stakhanovite turner, Ede Horváth. The foundry functioning on the Industrial Units was also annexed to the Machine-Tool Factory during the detachment. (In a short while, the foundry became independent and known as Foundry and Forging Factory, and from 1963, became the No.3 Factory Unit of the National Foundry Company.) As the manufacturer of carriage structures of diverse guns, the Győr Machine-Tool Factory was one of the most important cooperative partners of the Diósgyőr Heavy Tool Factory (the single Hungarian gun factory). That is the reason why it was integrated to the military industry structure in the second half of 1951. During Imre Nagy's first prime minister's office, the production of guns decreased drastically, therefore the manufacturing of tractor trailers gained focus again. As the military orders almost ceased, the Győr Machine-Tool Factory got under the control of the civil section of the Ministry of Metallurgy and Engineering Industries (KGM/A) as from 1 January 1960 (Germuska 2012).

The factories separating at the beginning of the 1950's took 58 per cent of the buildings, equipment parks and production lines of the former chief company and 42 per cent of their production value (Tabiczky 1972, II. 31–32). After the streaming, the most important role of the Hungarian Railway Carriage and Machine Works controlled by the Ministry of Metallurgy and Engineering Industries (KGM) became the production of railway carriages and passenger-carriages, the majority of which were exported until January 1953 for reparation, and after that besides the Soviet Union, also to Romania, Yugoslavia and later to certain developing countries in the framework of bilateral barter agreements. The factory had several decade experience in producing bridge and steel constructions. In the 1950's, the new products consisted mainly of spherical tanks, turrets, railway stream-cranes, platform and fork-lift trucks that were far from being modern. From the middle of the 1950's, the railway stream cranes were not taken over by the Soviet market either due to their completely out-of-date construction, and its production ceased in 1954. As regards the trucks, they were streamed to another company.

The First Dieselization Programme and its Failure

The modernization of the out-of-date constructions of the Hungarian industry was on the agenda from 1953, however, concrete measures were taken only after 1956–57 on this area. As far as machine production is concerned, instead of machines of heavy, material-intensive and out-of-date constructions, the focus moved to the development of less material intensive branches more suitable to Hungarian traditions (telecommunications, precision engineering, machine tool production), as well as to the construction of diesel engines, diesel locomotives and motor trains. The production of public vehicles and agricultural machines disposing of great traditions were also ranked among the branches to be developed of high priority.

The innovation of the Hungarian railway and public vehicle production depended mostly on the construction of a modern, heavy-duty diesel engine family. Hungary disposed of considerable invention and a tradition of successful business of motor train and rail-bus production in this field due to the Ganz-Jendrassik diesel engine. In 1953, the National Planning Office (OT) decided upon developing new types of diesel engines. In the course of the programme, they aimed at producing for the national and socialist markets first, then smaller siding and shunting diesel locomotives, motor trains, and later main line locomotives of 2,–3,000 horsepower for the capital markets. The railway dieselization programme elaborated between 1954 and 1955 was reviewed in 1957. [17]

The innovation flourished during the second three-year plan (1958–1960) when the frame of the diesel programme was raised to 1.1 billion HUF. The companies concerned could spend on 880 million HUF from this sum until the end of year 1960. In 1959, the Ganz and MÁVAG companies were united in order to concentrate the resources, and the production of out-of-date steam-powered locomotives and locomobiles was ceased. Nevertheless, Ganz-MÁVAG could not cope with the orders, therefore, the production of 400–600 HP diesel locomotives remained there, whereas the fabrication of smaller engines, small locomotives and light motor engines was confined to Győr Railway Carriage Factory. The Railway Carriage Factory, named after Wilhelm Pieck eastern German president in the meantime, also had difficulties to cope with the imposed duties: at the end of 1960, the company had a backlog of about 10 per cent compared to its former plan.[18]

The definition of the production profile and further innovation of Ganz-MÁVAG and Wilhelm Pieck Factory (WP) became inevitable in the course of the dieselization programme. In February 1960, the leadership of the KGM decided that Ganz-MÁVAG would continue producing high-efficiency locomotives, whereas WP would be in charge of the fabrication of locomotives utilizing smaller engines. Ganz was still responsible for the production of driving machineries, electric locomotives, and electric motor engines, whereas WP for the manufacturing of the light-construction Rába–Balaton motor train and passenger-carriages. The motor trains prepared for the Soviet Union had to be fabricated in Budapest, whereas the ones produced for Poland in Győr. For this purpose, WP considered that an investment of approximately 171 million HUF was necessary.[19] In April 1960, WP elaborated the investment programme, and then transplanted the Driving Machinery Factory from the mother company's site to the territory of the Machine-Tool Factory in order to free up a production hall for the manufacturing of new products.[20]

In the meanwhile, more and more defaults of the diesel programme came to light: the companies involved achieved more or less the quantitative plans, but serious arrears and defaults were shown in the area of quality, modernity and reliability. Among the 102 pieces of locomotives and motor engines conveyed to MÁV, only 53 were in order at the end of November, the rest – most often due to engine faults – was under reparation. The

17 MNL OL XIX-A-16-i 22. d.
18 MNL OL M-KS 288. f. 25. cs. 1961/33. ő. e.
19 MNL OL XIX-F-6-hb 4. d.
20 MNL OL XIX-F-6-hb 4. d.

situation did not improve later either, at the beginning of 1961, out of the 155 pieces of diesel engine railway vehicles delivered to MÁV only 83 operated, 72 were under reparation, moreover, the majority of these latter ones (64 out of 72) got out of order still under guarantee. Out of the 30 pieces of 130 HP diesel locomotives fabricated in the Győr Railway Carriage Factory only 18 worked, all the 12 others broke down under guarantee.[21] The country faced an even greater loss of prestige and material loss owing to the fact that the motor trains and locomotives exported to Egypt, Yugoslavia and other countries broke down fairly often due to the unsettled engine constructions.[22]

Despite the failures, the preparation of modernizing vehicle production was still in progress, and for this purpose, the long-term profile of the Ganz-MÁVAG and the Győr Wilhelm Pieck had to be defined. The division of production between the two factories was finalized with the knowledge of the dieselization and railway development programme of the COMECON states. According to the decision made by the Ministry of Metallurgy and Engineering Industries in January 1962, Wilhelm Pieck Railway Carriage and Machine Works was in charge of innovating the light-motor engines and motor trains up to 450–500 HP efficiency, whereas Ganz-MÁVAG for the high-efficiency constructions. The manufacturing had to be divided between the two companies depending on the order-book and the available capacities.[23]

New Leader, New Profiles

After the communist takeover, the Railway Carriage Factory was directed by Albert Lakatos, who was condamned to prison twice during the Horthy-regime for his leftist behaviour and opposition trade-union activities. After the ceasing of reparation deliveries in January 1953, the Soviet Union remained the most important market for the Railway Carriage Factory's railway rolling stocks. However, the Soviet market did not lay claim to the increasingly out-of-date products (railway stream-cranes, etc.). The renovation of the railway and bridges was completed more-or-less, hence, the orders also decreased in this field, too. The first dieselization programme, as we have seen, brought quite ambiguous results. High hopes were entertained regarding the production of Rába–Balaton motor trains, low-efficiency, small-gauge and normal gauge diesel shunting engines and dump trucks in Győr. In the course of the elaboration of the long-term investment programme for 1959–1965, the Railway Carriage Factory estimated that with the duplication of the production value and export, the traditional railway carriage production would represent an invariable order of size.[24]

The Railway Carriage Factory got into a final crisis when it had to stop the construction of railway carriages, its traditional product starting from 1962, due to the COMECON

21 MNL OL M-KS 288.f. 25. cs.1961/33. ő. e.
22 MNL OL XIX-A-16-i 22. d.
23 MNL OL XIX-F-6-hb 6. d.
24 MNL GyMSMGyL XXIX. 1. 84. and 87. d.

specialization agreement. The production of these wagons was taken in charge by Poland, but the country could not deliver sufficient number of railway wagons. Hence, from 1964, the fabrication of railway wagons was started again in Győr (with futile expenses).[25]

However, the fate of the factory management was sealed by the faults committed during the launching of a large-scale military project. From the middle of the 1950's, the Győr Machine-Tool Factory produced inboard engines, tractor compressors, transformers, and – in the framework of the first dieselization programme – the driving engines of diesel-electronic locomotives from the second half of 1957.[26] Nevertheless, in 1962, the factory reported to the MSZMP (Hungarian Socialist Workers Party) municipal board that if they could not purchase a considerable volume of orders, thousands of employees would have to be dismissed. The lack of labour was mitigated by the military orders. Initially, complete subassemblies, side and rear bridges for the D-344 all-wheel drive lorries of Csepel Automotive Works (also used for military purposes) were produced here, and from the beginning of the 1960's – in coopeation with the former mother company – the Győr Machine-Tool Factory directed by Ede Horváth became the production centre of armoured personnel carriers.[27]

The specialization recommendations accepted during the Meeting of the Defence Industry Committee of the COMECON during 25–27 July 1961 included that Hungary, Poland, Romania and the Czechoslovakia would produce wheeled armoured personnel carriers for their own purposes (Germuska 2010, 73., 78–79., 81. and 243.). In October 1961, the Győr Machine-Tool Factory was appointed as the the primary contractor of the project instead of Csepel Automotive Works. The production of the D-442 code "amphibious reconnaissance vehicle" (FUG) was first assigned to the Óbuda Shipyard, and later the sample-pieces together with the implements and the moulds were transferred to the WP Railway Carriage and Machine Works on higher instruction (Varga Á. 2008, 405–406.; Varga A. J. 2008, 320.).

In November 1961, the Defence Council, the narrower Cabinet of the Council of Ministers, made the decision that the launching of the production of amphibious reconnaissance vehicles in Győr by the year 1963 had to be financed by an investment of 95 million HUF.[28] By the summer of 1962, the two prototypes of the armoured personnel carriers (FUG) were ready, and the main contractor, the Győr Machine-Tool Factory, undertook that 24 piece of FUG could be demonstrated at the dress parade on 4 April 1963. However, the Wilhelm Pieck Railway Carriage and Machine Works, assigned witht the production of hulls, was in a 3-5 month delay with the investment.[29] By September 1962, numerous new construction faults of the military vehicle were revealed, therefore, the finalized prototype could only be prepared by the end of the year. Despite this fact, the Ministry of Metallurgy and Engineering Industries found it possible to produce 520 pieces of amphibious reconnaissance vehicles in the second half of 1963.[30]

25 MNL OL M-KS 288. f. 5. cs. 361. ő. e.
26 MNL GyMSMGyL XXXV. 415. 1. f. 3. cs. 49. ő. e.
27 MNL GyMSMGyL XXXV. 415. 1. f. 3. cs. 167. ő. e.
28 MNL OL XIX-A-98 83. d. 48.; Hadtörténelmi Levéltár [Archives of Military History] (HL) HB records 1. d.
29 MNL OL XIX-A-98 84. d. 55.
30 MNL OL XIX-A-98 84. d. 60.

However, in January 1963, Albert Lakatos, the general manager of the Railway Carriage Factory, informed the ministry that they would not be able to complete the programme due to the delay of the arrival of the imported machines and the "extremely short time dictated by the KGM".[31] That was the last drop in the glass. The labourer-director leading the company since 1948 was pensioned in the spring of 1963 with the utmost speed "on his own demand in view of his broken health".[32] Gyula Horgos, Minister of the Metal and Engineering Industry, selected Ede Horváth, the accomplished director of the Győr Machine-Tool Factory at the head of the Railway Carriage Factory to lead the two companies at the same time. Horváth was inaugurated on 20 May 1963.[33]

The Production of Armoured Personnel Carriers

The fundamental conception during the development of the D-442 armoured vehicle was that it be constructed of main units produced by the Hungarian automobile industry in standardized production. They departed from the existing aggregator (Csepel engine), hence the innovation seemed to be a quick and profitable solution. While there were plenty of troubles with the samples of FUG, the question rose again whether they should wait with the finalization until a more efficient engine is prepared. However, the deadlines engaged in the COMECON were urging more and more, and finally the existing Csepel engine was mounted in. By June 1963, it became obvious that the previously planned schedule cannot be kept because the designation of the production basis took long, the investment was in a considerable delay at the WP Railway Carriage and Machine Works, and the Institute of Military Engineering continuously demanded new changes on the construction. The innovation had to be ceased in order that the Hungarian and "friendly" armies be able to regularize the vehicle until 1965–66. Therefore, the Defence Committee (successor of the Defence Council) decided that in case the leadership of the Hungarian People's Army approves the pattern by 31 October, then 100 pieces of FUG can be produced until the end of the year.[34] The standardized production was approved on 26 September 1963.[35]

The manufacturing started in the last quarter of 1963, but a part of the safety and quality claims raised by the People's Army and the foreign partners could only be remedied through changes in construction. In the case of the 100 pieces of FUG started in 1963 and at the beginning of 1964, the People's Army demanded 29 reparations, which were agreed upon by the Defence Council and the the Ministry of Metallurgy and Engineering Industries. In spring, the WP offered 5 pieces of standard vehicles for acceptance, upon which all claims for modifications were performed till then. The starting of the actual standardized production and the tenability of the annual plan depended on the Hungarian army's

31 MNL GyMSMGyL XXXV. 415. 1. f. 3. cs. 167. ő. e.
32 Kisalföld, 2 March 1963.
33 Rába, Vol. XV. No. 2., 25 May 1963. 1.
34 MNL OL XIX-A-98 84. d. 69.; HL HB records 1. d.
35 The Defence Committees' decree No. 4/153/1963. HL HB records 2. d.

final approval. In the meanwhile, the NBC (Nuclear, Biological, Chemical) recoinnassance version of FUG should have been completed, however, due to the hermetic closure of the vehicle and other requirements, the factory and the Ministry of Metallurgy and Engineering Industries did not deem it realistic to start the manufacturing of the trial series before the first quarter of 1965.[36]

However, the further production was not approved by the Ministry of Defence as certain claims emerged in connection with the delivered standard vehicles and its main items (steering gear, braking system, crutch wheel drive) during the utilization. Therefore, the entire production programme was in delay in Győr.[37] Finally, the series production could start in the autumn of 1964, and altogether 466 pieces of armoured vehicles were produced in the course of the year. The production of the diverse versions (chemical protection, command, etc.) continued until 1967, and all in all 2,295 FUG items were produced in Győr.

The Reorganization of Vehicle Production – Public Engine Production

Most probably, Ede Horváth had already been given the promise before his assignment that Győr would be the production site of the large series-production of public engines. As a matter of fact, he had stated at the meeting of the factory unit's workers already in June 1963 that "the real engine production is yet to start".[38]

The first results were apparent in Győr after a few months proceeding the overdue reorganizations. The considerable arrears in production were recovered by the end of the year, the Railway Carriage Factory fulfilled its plan for the year 1963, which was well recognized from all sides (by the directing authorities and the party committees, as well as the factory workers). The supreme party leadership and the KGM acknowledged with satisfaction that the Railway Carriage Factory – which caused plenty of headache in the past few years – was finally launched. The county leadership unanimously supported the directing authorities' proposal to fuse the Győr Machine-Tool Factory with the Railway Carriage Factory as from 1 January 1964 under the name of Wilhelm Pieck Works.[39]

By the beginning of the 1960's, it became obvious that the market demand for railway traction engines decreased, and the focus was directed rather to public vehicle production in all areas. Hungary disposed of long tradition, famous innovation offices and factories in the field of lorry-, autobus- and agricultural tractor production. The most critical point of the planned large series-production programme of vehicles was the assurance of the new highperformance diesel engine: will the national innovator manage to construct engines of suitable quality or will they have to purchase the production licence abroad?

36 MNL OL XIX-A-98 87. d. 78.
37 HL HB records 2. d.
38 Rába, XV., 22 June 1963.
39 MNL OL M-KS 288. f. 25/1963. 50. ő. e.

The first struggle interwoven with politics emerged in connection with the designation of the future engine factory. The Csepel Automotive Works had produced diesel engines for one-and-a-half decades on basis of Steyr licence, but by then their output was inferior to the demands. The Csepel Automotive Works wanted to obtain a favourable decision for Szigetszentmiklós, and the MSZMP Pest County Committee lobbied significantly for that purpose. The Ministry of Metallurgy and Engineering Industries had previously observed around half a dozen of potential sites (Szigetszentmiklós, Győr, Baja, Eger, Székesfehérvár) for the new site for public vehicle production, and by May 1963, finally there remained only two alternatives: the Csepel Automotive Works and the Wilhelm Pieck Railway Carriage and Machine Works.[40]

In parallel with the selection of the settlement, another range of the professional and political debate emerged: national or licence engine? The innovation of national diesel engines did not cease despite the failure of motor trains and locomotives at home and abroad. In 1957, the Vehicle Development Institute (JÁFI) was assigned with the task by the Directorate of the Automobile and Tractor Industry to construct an engine family that would meet the long-range demands of the Hungarian automobile industry. With the cooperation of the Csepel Automotive Works, the Vehicle Development Institute developed the 120 and 180 HP 4-6 cylinder, two-cylinder arrangement engine family.[41]

In the debate around the manufacturing of national or foreign engine, Gyula Horgos, Minister of Metallurgy and Engineering Industries, the Department of Industry and Transport of the Central Committee of MSZMP and its leader, István Szurdi, as well as Ede Horváth, the General Superintendent of the Railway Carriage Factory, insisted consequently and energetically on the purchase of the licence of the Western engine and its domestic adaptation.[42] On the contrary, the Vehicle Development Institute, the Csepel Automotive Works and the Directorate of the Automobile and Tractor Industry praised their own innovations, and lobbied for the home made engine. Those arguing for licence purchasing claimed that one year was not sufficient for launching the series production of the Hungarian engine as declared by the Vehicle Development Institute, and that even in the West, 4 or 5 years were required for this, and in that case, the innovation of the Hungarian public vehicle production would be in further delay and other important markets would be lost.

Concerning the two main questions in the field of domestic engine manufacturing, a decision was made at the council of Ministry of Metallurgy and Engineering Industries held on 10 August 1963 as part of the long-term innovation programme of the automobile and tractor industry. According to the long-range plans of the KGM, by 1980, they wanted to arrange for the annual manufacturing of 18,000 autobuses, 19,000 lorries and special purpose vehicles, 10,000 tractors and 100,000 4-clylinder engine units. The following priorities were defined in the course of designating the production bases: the products of automobile and traction engine should be manufactured in specialized factories; the production expansion should be carried out with the modernization of technology; furthermore, the disposable workforce capacities accumulated in Budapest should possibly not increase.

40 MNL OL 288. f. 26/1965/1. ő. e.
41 MNL OL 288. f. 26/1965/8. ő. e.
42 MNL OL 288. f. 26/1964. 1. ő. e.

As far as engine manufacturing was concerned, it was considered to be based on the 4- and 6-cylinder diesel engines developed by the Vehicle Development Institute. However, due to the 180 HP efficiency of the JÁFI engine that was inferior to the expected value, the Department of Long-Term Development and the Directorate of the Automobile and Tractor Industry deemed it necessary to keep the issue of licence engine on the agenda. Concerning the possible site for engine production, there were two rivals: Szigetszentmiklós and Győr. Both factories planned to manufacture engines with broad interenterprise coopearation and to procure production equipments from Western imports. They considered that an investment of about 920 million HUF would be required for engine manufacturing until 1970.

Finally, the Ministerial Council designated Győr as the site of the new engine factory, and ordained that besides developing JÁFI engine, the Ministry of Foreign Trade should gather information "regarding the acquisition of a motor licence fulfilling our needs".[43]

Due to the numerous unsolved issues (the order of size of COMECON needs, the affair of long-term bilateral contracts, the debates around licence purchasing and the lack of economic estimations), it was only at the end of 1964 that the Ministry of Metallurgy and Engineering Industries tabled the long-term programme of public vehicle manufacturing before the Economic Committee, which was the Cabinet responsible for economic issues. By the beginning of 1964, the long-term demands of the Soviet Union considered to be decisive factors from the viewpoint of vehicle export were also precised. As a result of negotiations abroad, the Minister of Metallurgy and Engineering Industries decided on 9 May 1964 that the development of public vehicle engine and automobile industry should be based on licence engine and Western production technology.[44] The Economic Committee (GB) accepted the conception on 28 December 1964, which was raised to Cabinet decision.[45]

On the basis of the decision in August 1963, the Hungarian experts established contact with numerous Western engine manufacturing companies from November 1963 until April 1964. During the negotiations lasting for months it became clear that none of these companies were able to or wanted to fulfill entirely the demands raised by the Hungarians. The West German MAN (Maschinenfabrik Augsburg-Nürnberg) showed considerable interest towards the Hungarian project, but could not undertake the plannification of the engine factory and the transportation of complete equipments by itself either. At this time, MAN belonged to the Gute Hoffnungshütte concern in Oberhausen, and the Ferrostaal company in Essen was the also member of this group. Furthermore, the French Renault was in tight relationship with MAN and manufactured its lorry engines based on its licences. The opportunity was evident: MAN would undertake the transportation of the entire factory in the form on a consortium. The diesel engine manufactured by MAN met the Hungarian requirements regading its efficiency, arrangement, size and weight.[46] During the session of the Inter-Departmental Committee on Public Vehicle Industry on 11 May 1965, two syndicates (MAN–Renault–Ferrostaal and Saurer–Steyr–Otto Wolf) were invited

43 MNL OL XIX-F-6-hb 11. d.
44 MNL OL M-KS 288. f. 24/1967/51. ő. e.
45 See the Economic Committee's decree No. 10 262/1964. (XII. 28.) and the Government's decree No. 4000/1965.
46 MNL OL XIX-F-6-hb 11. d.

to prepare the preliminary plan. The two syndicates sent their proposals in the course of that year, which was evaluted in the beginning of 1966 by three committees, and all of them evaluated the proposal of MAN–Renault–Ferrostahl to be better.[47] Besides the technological parameters of the engine, the delivery period was another important evaluation point since Hungary was urged by the commitment contained in long-term agreements engaged towards the Soviet Union and other COMECON countries.[48]

The already concluded vehicle transportation contracts urged the decision-makers since a significant socialist export could have been lost in case of an eventual failure of the vehicle export due to lack of a convenient engine. Following the decision made on 20 May 1966, the Economic Committee empowered the Minister of Foreign Trade and the Minister of Metallurgy and Engineering Industries to conclude the contract on engine licence and the delivery of production equipment with the partner offering the most favourable conditions. At the same time, it decided also that the engine factory would be constructed in one round (immediately on the planned capacity) instead of the previously planned two phases.[49]

The Interdepartmental Committee negotiated the proposal of MAN and Sauer consortium on 30 September 1966, and MAN was made winner. The leaders of the MAN–Renault–Ferrostaal consortium arrived at Budapest in the beginning of October 1966 in order to finalize the contract this time on ministerial level, which was finally signed in January 1967.[50]

The Manufacturing of Wheeled Armoured Transporter (PSZH)

In October 1965, the Ministry of Metallurgy and Engineering Industries submitted its report on the vehicle demand of the People's Army and the improvement of FUG. The modernization of the vehicle and the manufacturing of the new armoured transporter vehicles (PSZH) were originally planned to be carried out in such a way that the mechanic main units of FUG would not be altered. By 1970, the Ministry of Metallurgy and Engineering Industries found the People's Army's demand to produce 1,000 items possible, but it could only start after the ceasing of the manufacturing of FUG due to the limited capacities.[51] In its decision of 28 October 1965, the Defence Committee ordered the KGM to assure the production of the armoured transport vehicles on its D-442 production basis – with a capacity of 600 items per year in time of peace, furthermore, to start the series production in the first semester of 1969 and that the required 1,000 items be ready by 1970.[52]

47 MNL OL 288. f. 26/1966/3. ő. e.
48 MNL OL XIX-A-16-f 51. d.
49 MNL OL 288. f. 26/1966/3. ő. e.
50 MNL OL 288. f. 24/1967/51. ő. e.
51 MNL OL XIX-A-98 89. d. 93.
52 HL HB records 2. d.

The prototype of the new armoured vehicle was ready by 15 May 1967, but the experts of the People's Army found fault with the form and size of the turret and the arrangement of the built-in weapons. Due to the restucturing, in the course of the finalization of the prototype, the Ministry of Metallurgy and Engineering Industries envisaged a 2-month delay, which was acknowledged by the Defence Committee, but did not authorize the modification of the deadline of the series production fixed in the third five-year plan.[53]

In Győr, the organization of manufacturing came up against serious difficulties. In November 1969, during the approval of the 1970 defence production plan, the Ministry of Metallurgy and Engineering Industries reported of a fallback of plan of 650 million HUF to the Defence Committee, and rendered the production of 100 PSZHs at the most that year. What is more, in 1970, the Ministry of Metallurgy and Engineering Industries envisaged the preparation of only 400 items for MVG in 1970, too. The Defence Committee approved this plan on 20 November 1969 with this condition, but required a detailed report on the production situation of the armoured transport battle vehicle.[54]

The Ministry of Metallurgy and Engineering Industries presented its report on the PSZH on 12 January 1970. It stated that MVG had made numerous efforts to organize the diverse working process in parallel, but the production preparation was still protracted. Namely, even during the production of the trial series, the joining and the putting together of the hull and the turret caused difficulties. In 1970, the Ministry of Metallurgy and Engineering Industries found it possible to produce 340 pieces of armoured transport vehicle. MVG undertook the delivery of 90 vehicles by 15 March (with overtime, rearranging bank holidays, etc.), so that they would be disposable during the parade on 4 April.[55] In its decision of 12 February 1970, the Defence Committee prescribed the manufacturing of 340 armoured transport vehicles by 1970, and ordered the Ministry of Metallurgy and Engineering Industries to assure the construction of a capacity of 600 per year.[56]

The manufacturing of armoured transport vehicles lasted until 1978, and the last PSZHs rolled down the assembly lines in Győr this year. Between 1970 and 1978, altogether 2,846 armoured transport battle vehicles were produced for the Hungarian People's Army and for export.

The Era of Big Investments and Dynamic Development

The Political Committee of MSZMP – together with two other counties – negotiated the situation of Győr-Sopron County and its development tasks on its session on 21 January 1966.[57] The proposal of the Győr-Sopron County Party Committee was sent to the

53 MNL OL XIX-A-98 91. d. 106.; MNL OL XIX-A-16-aa 113. d.
54 MNL OL XIX-A-98 93. d. 125.; MNL OL XIX-A-16-aa 116. d.
55 MNL OL XIX-A-98 94. d. 127.
56 MNL OL XIX-A-16-aa 116. d.
57 MNL OL M-KS 288. f. 5. cs. 385. ő. e.

Department of Industry of the Central Committee of MSZMP on 11 December 1965.[58] The Political Committee agreed with the county's decision, and supported the proposal according to which the Hugarian Railway Carriage and Machine Works in Győr should be the basis of wagon manufacturing in Hungary as well as that the 200 HP vehicular engine factory be settled into the existing buildings of MVG. The Committee also agreed with the fact that a new factory needs to be established in Győr for the construction of the 10-ton rear bridges. The party leaders of the county lobbied strongly in order that besides big series engine production based on COMECON cooperation, Győr also benefit from rear bridge production.

In the first period of the development of public vehicle production between 1966 and 1970, six companies (Csepel Automotive Works, Ikarus, MVG, Drive Gear and Lift Factory, Small Engine and Machine Factory, as well as the Automotive Electrical Equipment Factory) achieved an investment of 12.5 billion HUF or so, which consisted of 9.8 billion HUF investment and 2.7 billion HUF for the expansion of the working capital.[59] Nearly a quarter of this sum, 3 billion HUF or so, was aimed at the development of the Győr factory.

In the third five-year plan (between 1966 and 1970), investments of unparalleled size started in the history of the Railway Carriage Factory. The first significant green field investment, the 28,000 square metre running gear production hall, started in April 1966 on the site of the former airport of Győr, which was filled majoritarily with production lines and machines coming from capital imports from summer 1967. In the first semester of 1968, the production started with 700 people.[60] The construction of the 20,000 square metre hall also started and gave place to maintenance and machine-tool production on the same site of the former airport. The airport complex also hosted a 10-storey office building of 240 workplaces, as well as a social place capable for serving 3,500 people and other serving establishments.[61]

The engine and running gear required a great quantity of moulds. The Railway Carriage Factory had several foundries on the site of the mother company and the former Artillery Factory, but these were obsolete by the end of the 1960's, and their operation became dangerous. Therefore, in the summer of 1968, the Economic Committee contributed to the establishment of a 18,000 ton per year capacity modern, majoritarily automatized steel-works, which was also constructed on the site of the former airport.[62] This was the state's first big investment related to the public road programme, the implementation time of which fell entirely on the era of the new economic mechanism. Thus, state budget occupied only a minor role in the financing of the investment, MVG financed the major part from its own resources or credits.[63]

The topic of the foundry was also covered in May 1968, when the Ministerial Conference of the Ministry of Metallurgy and Engineering Industries discussed the issue of the

58 MNL OL M-KS 288. f. 26/1965. 17. ő. e.
59 MNL OL M-KS 288. f. 15/240. ő. e.
60 MNL GyMSMGyL XXXV. 415. 1. f. 3. fcs. 314. ő. e.
61 Rába, Vol. XIX. 1967. No. 11.
62 MNL OL XIX-A-121-b 10. d.
63 MNL OL XXIX-L-5-r 15. d.

development of MVG. By 1968, the company envisaged a railway vehicle output exceeding the production record till then (470 passenger-carriages, 223 lorries, 30 motor engine frames). The running gear production was already flourishing, however, the final launching of engine production was planned only by 1969. In the framework of the public road programme, a plan was set up to boost the production by 21 per cent the following year, and by 67 per cent in 1970 compared to 1968. As regards the construction of bridges, iron and tank structures, as well as the Metallurgic Department, a stable stock of orders was manifested.

In the framework of the long-term development objectives, the company calculated on the recession in the demand for railway carriages and the increase in demand for public road vehicles. For that reason, they agreed with Csepel Automotive Works that from the end of the 1960's, the lorry family exceeding 10 tons would be manufactured in Győr – in cooperation with the factory in Szigetszentmiklós. During the era of the fourth five-year plan (between 1971 and 1975), they estimated the marketing of 250–300 railway carriages annually to be a realistic potential. Therefore, the company considered the reduction of railway carriage production and the direction of free capacities to public vehicle production to be an aim to follow. At the same time, they also reckoned with the rapid increase of the national and East-European countries' demand for running gears. They imagined that the further expansion of the production capacity would be realized with the help of investment credits. General Manager Ede Horváth reported of advanced West-German negotiations during the Ministerial Conference: the MAN factory would conceed the right to produce lorries in return of the running gears, and assure the components for the assemblage in Győr. The Minister encouraged the reduction of wagon manufacturing, and proposed to negotiate with several companies in order to achieve the most suitable conditions in case of big lorry and truck production.[64]

The afore-mentioned new foundry of MVG was delivered at the end of 1973. Originally, the steel-works could assure the moulding demand for around 45,000 rear bridges, and managed to decrease the weight of the running gear box in a few years to such an extent that it could already produce 60–70,000 moulds annually without further increasing the capacity of the steel foundry. With the help of the new foundry producing entirely for fulfilling its own needs and of European standard, they immediately managed to decrease the weight of the pieces by 17 per cent, and significantly improve the quality, longevity and competitiveness of the running gears. The foundry became the country's largest capacity, most mechanized and partly automatized steel foundry, which entirely eliminated heavy physical work and assured its workers a workplace comfort comparable with an average machine industry factory.[65]

Hardly had the new steel foundry been completed, new big investments were already launched in the summer of 1974. Namely, a modern forge factory was constructed north to the steel foundry on the site of the former airport within two years. This was needed because the ancient iron-framed and wooden roof forge factory built on the turning of the

64 MNL OL XIX-F-6-hb 42. d.
65 MNL OL XIX-A-121-b 32. d.

19th and 20th centuries, situated on the area of the chief company, became extremely out-of-date. Moreover, the wooden roof was flammable. The annual 18,000 ton capacity of the five-nave, almost 20,000 square metre mechanized and partly automatized forge factory constructed from a sum of 300 million HUF assured the factory's supply for a long time.[66]

Diesel Engine Manufacturing

The agreement on the licence purchasing and the construction of the complete engine factory capable of producing 80,000 cylinders, more precisely 13,000 6-cylinder engines, was signed on 6 January 1967 with the Renault Seri–MAN–Ferrostaal consortium. In order to carry out the difficult and manifold tasks, three companies united that had been in tight relationship until then. Seri Renault Engineering (the designing company of Renault), one of the members of the consortium engaged in the construction of the Rába Engine Factory, undertook the designing and settling of the factory equipments. The motor licence was provided by Maschinenfabrik Augsburg - Nürnberg AG, the second biggest public vehicle company of the FRG. The third member of the consortium, the Esseno Ferrostaal of Essen arranged the financial liquidations of the enterprise and assured the necessary credits.[67] The parameters and the efficiency of the licence engines entirely fulfilled the Hungarian and East European demands, and due to their low noise level, they perfectly functioned as engines under autobus floors. The manufacturer undertook that all its experiences related to the development of engines forming the subject of the contract would be transferred during the 10-year period of the licence agreement. That is how MVG received the developed documentations regarding the production of the 230 HP engine in 1969.[68]

In the summer of 1966, the Ministry of Metallurgy and Engineering Industries defined the expected demand for engines (for manifold times), and this was the basis for the investment project prepared in December 1967. Based on the decision of the Economic Committee, the financing of the programme was carried out with the Hungarian Investment Bank on 29 June 1968 on the basis of a state loan and a financing contract. The cost of the big series public engine factory accounted with the current assets was 2.2 billion HUF, more than half of this consisted of non-refundable budget allowance, and minor half of it came from reduced state loan.[69] The investment programme became the government's highlighted programme because a government regulation declared the Public Road Programme to be a central development programme in 1968. Until 1970, MVG had to develop gradually its capacity for producing 13,000 engines and the required spare pars annually.

66 Rába, Vol. XXVI. 1974. No. 24., 42.
67 MNL OL KGM XIX-F-6-hb 105. d.
68 Rába, Vol. XIX. 1967. No. 2.
69 MNL OL XIX-A-121-b 18. d.

The investment started in 1967, and the planned completion deadline could be kept despite the 1968 strikes in France. Thus, the test run could start in the engine factory in April 1969.[70] The Rába engine factory started to produce a modern engine at a high production technology level on worldscale, the parameters of which far exceeded the technical parameters not only of the engines produced at home, but also those made in the COMECON. Due to the modern Western production lines, the improductive workforce significantly decreased and the productivity increased.[71] The ceremonial inauguration of the factory took place on 17 July 1969.[72]

The pilot production (mainly from components issued from FRG, partly from those fabricated at home) was launched on 1 November 1967.[73] In the first years, the running-in of the production was in a large measure hindered by the fact that Ikarus did not take over as many engines as had been fixed in the contract. After the starting up of the engine factory in 1969, the achievement of the entire capacity (14,300 engines) was envisaged by 1973. During the years of boost, for example in 1970, 7,700 Rába-MAN engines should have been produced, however, due to the low market demands, effectively only 3,874 pieces were made ready.[74] Győr made all efforts in order to sell all its engines until Ikarus boosts the manufacturing of its new type buses. These engines were built in the Rába–Balaton motor trains,[75] the Balaton icebreaker,[76] as a supplementary engine, into the ships of the Hungarian Ship- and Crane Works and the diverse products of Ganz-MÁVAG[77] , and more and more engines were delivered to the special purpose lorries of the Csepel Automotive Works.

Finally, the most plausible way to utilize the Győr engine was to build it in own assembly vehicles. As a first step, trucks, tractives, heavy-duty and special purpose lorries were produced in Győr. They manufactured such lorries which were highly needed in public vehicular transport and had not been produced in other socialist countries at that time. The main units of the vehicle (rear and front bridges, engines) were at hand, and concerning the major part of the superstructure, they could produce it themselves, they imported only some special subassemblies (driving compartment, etc.), and after a certain time, they exchanged the compartments (with the approval of the licence provider) for engines in the framework of the Romanian-Hungarian barter transactions. The Győr Factory paid MAN with rear running gears in return for the production right of Rába lorries.[78]

The leaders of MVG agreed with Csepel Automotive Works, the only manufacturer of lorries at that time, that Csepel Automotive Works would manufacture lorries up to 10 tons, and Rába would produce those of greater capacity until the authorized gross of 38 tons. According to the cooperations agreement, the two factories cooperate with each

70 MNL GyMSMGyL XXXV. 415. 1. f. 3. fondcsoport (group of fond, fcs.) 331. ő. e.
71 MNL GyMSMGyL XXXV. 415. 1. f. 3. fcs. 329. ő. e.
72 Rába, Vol. XXIX. No. 41., 28 October 1977.
73 Rába Vol. XIX. 1967. No. 44.
74 MNL OL XIX-A-121-b 18. d.
75 Rába, Vol. XX. 1968. No. 4.
76 Rába, Vol. XXIII. 1971. No. 5.
77 Rába, Vol. XXIII. 1971. No. 16.
78 MNL OL KGM XIX-F-6-hb 42. d. See also Rába, Vol. XXIII. No. 28., 16 July 1971.

other, for example, Csepel transported the clutches, the cardan-shafts, the power steering; whereas Győr transported the rear bridges and side axles and Rába–MAN diesel engines for certain types. The most important procurer of Rába lorries was Hungarocamion, and the building trade also purchased tipping and special purpose trucks. The most important foreign market for heavy-duty lorries was Yugoslavia, but they were also sold in the Middle East, Iraq, Sudan and Kuwait.[79]

In 1973, engine manufacturing boosted significantly, the produced quantity increased by fifty per cent compared to the previous years, but still only 80 percent of the factory's capacity could be exploited, 10,784 engines were ready at that time. Most engines, for example the 192 HP horizontal engine lying under the floor, were produced for Ikarus.[80]

The market demand – primarily due to the boost of bus production of Ikarus – multiplied, hence production expanded accordingly. In the first period, the shift number (and the number of employees accordingly) was increased, this was later followed by the number and the efficiency of the factory's machines, too. This last one was assured by the favourable opportunity that in 1974, MAN offered Rába to purchase the production lines producing the former public vehicle engine for a reasonable price since it started to manufacture new and more modern engines in cooperation with Mercedes. In October 1974, MVG got the Ministry of Metallurgy and Engineering Industries' permission to purchase the second-hand production lines for 6–7 million dollars. However, the leadership of the Ministry did not support Ede Horváth's conception regarding the improvement of MAN licence engine or to purchase the production rigt of the new, more economic and stronger engine of MAN and Mercedes fulfilling the stricter emission requirements.[81]

Therefore, the improvement or replacement of the produced engine lagged behind, nevertheless, they managed to purchase the second-hand MAN engine producing machines by mobilizing its own resources of 300 million HUF and through raising a 1 billion HUF bank credit. By 1978, through adjusting the MAN production line and reorganizing the disposable machines, the capacity of the engine factory was successfully increased to 25,000 pieces per year. On the other hand, due to spare part transport for old engines operating in the FRG, they benefited from newer incomings of convertible currency.[82]

The 40,000 Rába–MAN engines were ready by 3 November 1974,[83] the other 100,000 left the production hall on 24 October 1977. Almost a year later on the same day, they already counted with 125,000 engines in Győr.[84] Whereas in October 1967, the engines were majoritarily assembled from import components, 23 items were made of them in the course of a month, in the beginning of 1971, daily 18, in the autumn of 1977, daily 90, and in 1979, daily 104–105 pieces.[85] The second shift was introduced on the big production lines of the

79 Rába, Vol. XX. No. 7., 17 February 1968; Vol. XXIII. No. 1., 8 January 1971.
80 Rába, Vol. XXIV. 1972. No. 39.
81 MNL OL XIX-F-6-hb 105. d.
82 Rába, Vol. XXVIII. 1976. No. 4.
83 Rába, Vol. XXVI. 1974., No. 46.
84 Rába, Vol. XXX. 1978., No. 42.
85 Rába, Vol. XXX. 1979., No. 23.

engine factory as from 1 January 1971.[86] In January 1971, the factory had 528 workers, and already 1,300 during the era of its ten-year jubilee, and produced a production value of 4.4 billion HUF in 1977. The value of the 100,000 engines ready by then was around 16–17 billion HUF.[87] At the end of 1977, the reorganization of the production lines was close to completion, and they expected the onset of production equipments purchased from West Germany at the beginning of the following year. Thus, they managed to almost duplicate the capacity in 1969 with the help of a 1.5 billion HUF investment, and besides producing 25,000 engines annually, they could also manufacture spare components of 1 billion HUF value.[88]

The Big Series Running Gear Production

The last product out of the two outstanding carrier products of the Hugarian Railway Carriage and Machine Works (the vehicle engine and the running gear) became specifically known as a profitable product. In the middle of the 1970's, 80 per cent of the factory's entire production value derived from the issue of these two products. The revenues coming from the marketing of the running gears were less fluctuating compared to other products, hence the Railway Carriage Factory could finance the loss related to the development of new products and their market introduction from the stable profit achieved here, support the fluctuation of the Western market, and not the least, refund the installments of huge loans during decades.

The big series running-gear production, the other outstanding large state investment of the Railway Carriage Factory realized in the framework of the third five-year plan, preceeded the launching of engine manufacturing. The investment objective of this programme was approved on 20 October 1964, then the conclusion of the state loan and financing contract with the Hungarian Investment Bank was effectuated on the basis of the 1967 decision of the Economic Committee. More and more number of running gears were exported from Győr to the autobus-, trolley-, lorry- and other vehicle factories of the neighbouring and distant socialist countries. Hence, the demand for bridges increased in parallel with the expansion, what is more, at an exceeding rate. In 1964, some 5,000 old-type rear bridges and nearly 3,000 front bridges, trailer axles and other public vehicle components were manufactured in Győr. Due to running gear investment, they concentrated on the production of a new-type, 10-ton rear bridge, which had a greater load-bearing capacity compared to the former ones and was constructed by the engineers of the Railway Carriage Factory. After the realization of the investment, the majority of products consisted of this 10-ton 018-type public vehicle rear bridge. Besides, they also manufactured other old-type rear and front bridges for a short while for inland purposes.[89]

86 Rába, Vol. XXIII. 1971., No. 3.
87 Rába, Vol. XXIX. No. 41.
88 Rába, Vol. XXIX. 1977., No. 44.
89 MNL OL XXIX-L-5-q 68. d.

By the spring of 1966, it became clear that the new running-gear production hall (and its supplementary establishments) would also be constructed on the site of the former airport. The running gear hall was designed in such a way that it would enable a 50 per cent production increase –without new constructions and the increase of the number of machines and production lines. However, the capacity of the infrastructure had to be raised in parallel with the increase of the quantity of production.[90] The manufacturing started in April 1966, and in the fourth quarter of 1967, the construction of the mechanical handling line already started, and the area was prepared for the reception of production lines.[91]

The first phase of running gear investment started in 1966, and was completed by 1970. The production of the ten-ton running gears exceeded the orginal objective of the annual issue of 30,000 by 2,199 items. The investment programme envisaged a COMECON export of 15,000 pieces out of which effectively 27,214 pieces were exported to the member countries. By 1973, the volume of COMECON export increased more than eigthfold compared to 1968, more precisely, it grew at a greater volume than the volume of production, and in case of the running gears their proportion exceeded the 80 per cent of the production. By 1973, the running gear export issuing from the company's export from all socialist exports augmented to 52.6 per cent compared to 12.5 per cent in 1968. The resource demand for the innovation was around 2 billion HUF out of which 1.6 billion HUF covered the investment and the remaining 328 million HUF covered the current assets growth. The majority of the improvement (1.14 billion HUF) was non-refundable budget allocation, and 730 million HUF was state loan.[92]

In 1970, the government decided that by 1975, the rear gear production in the Railway Carriage Factory would be augmented to 53,000 pieces together with the spare parts. For this expansion, an investment resource of 609 million HUF and 270 million HUF current assets expansion were approved.[93] The Running Gear II programme costing nearly 900 million HUF started in 1972 from long-term preferred credit, which was reimbursed by the factory from its development fund coming from profit.[94]

By then, it became obvious that the Railway Carriage Factory's original conception was right: the hall and public works investment should be established based on spare capacity so that the output of the production machine could be increased without further construction. Namely, with the help of the Running Gear II investment, the output could be augmented to 1.8-fold with the 38 per cent increase of the costs of investment compared to the original plans (30,000 rear running gears annually). The expansion (and later the consecutive developments) was needed because of the dynamically growing need of the Soviet Union and the socialist countries.

Besides the Running Gear II programme approved in 1970 and before its completion, the leaders of Rába came up with two new development proposals referring to the market

90 MNL OL XXIX-L-5-q 67. d.
91 MNL GyMSMGyL XXXV. 415. 1. f. 3. cs. 304. ő. e.
92 Rába, Vol. XVIII. 1966. No. 37., 10 September.
93 MNL OL XIX-L-1-bbb "D" series 9. d.
94 Rába, Vol. XXIV. 1972. No. 1., 7 January 1972.

needs – namely the so-called Running Gear III and Running Gear IV alternatives – that were of greater magnitude than the original plan. On the basis of the Running Gear III programme, they envisaged to establish a 100,000 capacity annually together with the spare parts, and to transport 30,000 rear bridges to Soviet export from the surplus, which would be built in primarily by the local bus factories into their own products. The cost of this investment aiming at capacity expansion starting in 1974 would be around 5 billion HUF, out of which 3.3 billion HUF would cover the purchase of machines (capital machines for 27 million dollars, that is to say, for a value of 2.2 billion HUF).

The other alternative (Running Gear IV phase) proposed the establishment of an annual capacity of 140,000, out of which 60,000 would be exported to the Soviet market. The cost of this investment would already be 7.5 billion HUF, out of which around 5 billion HUF would be alloted to machines for a value of 42 million dollars, and 3.7 billion HUF would be spent on capital machines. The production value would augment by 4 billion or so, and the profit by 1 billion HUF.[95]

The medium-term projections were aborded at the Ministerial Conference of the Ministry of Metallurgy and Engineering Industries in October 1974. The enterprise had dynamically increased its revenues in the previous years, which augmented to 6.4 billion HUF by 1973 compared to 4.1 billion HUF in 1970, and by 1975, they envisaged a revenue of 9.5 billion HUF. The rapid boost was due to the Public Road Programme, in the course of which the production branches within the enterprise were significantly reorganized (see Table 1).

Table 1. Changes in the production structure of MVG between 1970 and 1973, in percent

	1970	1971	1972	1973
Public road branch	57.2	67.1	68.8	76.2
running-gear	40.3	42.8	45.4	45.9
engine	13.8	19.2	19.1	25.6
Railway branch	25.7	15.9	12.3	10.5
Other	17.1	17.0	18.9	13.3
Total	100.0	100.0	100.0	100.0

Source: MNL OL XIX-F-6-hb 105. d.

The plan estimated with a significantly growing foreign demand in the field of running-gear production: the Soviet Union, Poland, Czechoslovakia and Yugoslavia altogether raised a claim for 246,500 running gears for the period of the fifth five-year plan (between 1976 and 1980). In addition, the above-mentioned countries wanted to order additional special purpose running-gears (trolley-buses, road machineries, etc.), too. They also negotiated with the companies of other capital countries, from which they expected the sales

95 MNL OL XIX-L-1-bbb "D" series, 9. d.

of 5,000 running gears annually by 1980. Furthermore, in the year of production boost, the company aimed at marketing about 80,000 running-gears in 1980.

In the case of engine production, by 1980, they planned to manufacture 25,000 engines by increasing the shift number and relieving tight bottlenecks. Besides inland lorry and bus production, they wanted to market these engines in the framework of Romanian cooperation, in the planned Yugoslavian cooperation and in the West.

The manufacturing of agricultural engines was envisaged in the framework of Western cooperation in Győr in such a way that in the first half of the plan period, they concentrated on the domestic needs, and planned to aim at the capital markets in the second half of the period.

During the following plan period, besides increasing the entire production volume by 45 per cent, they reckoned with the further reinforcement of the public road branch on the basis of the indicated demands (see Table 2).[96]

Table 2. The planned changes in the product structure of MVG between 1975 and 1980, in percent

	1975	1980
Public road branch	73.1	80.3
running-gear	31.5	43.0
engine	33.5	31.1
truck and mounting crane	8.1	6.2
Agricultural engine	7.3	4.2
Railway branch	7.0	5.6
Other	12.6	9.9
Total	100.0	100.0

Source: MNL OL XIX-F-6-hb 105. d.

The achieved results of the big company were evaluated during the Ministerial Conference of the Ministry of Metallurgy and Engineering Industries on 19 October 1974, but at the same time, they found that the new development demands were exaggerated and partly unsubstantiated.[97] Hence, the grandiose plans had to be slightly moderated.

Finally, 4.4 billion HUF was spent on the investment of the Running Gear III phase aiming at the expansion of the socialist export, whereas a sum of 1.5 billion HUF was consecrated to the investment of the Running Gear IV, aiming at the exploitation of the socialist and capital market demands at the same time. For the first one, Rába obtained a 3.4 billion HUF credit, and 1.1 billion HUF bank loan for the last one.[98] Thus, Ede Horváth once again managed to fight out the necessary resources based on his own concepts, and achieved the increase of capacities. This time, the directing authorities' compliance was

96 MNL OL XIX-F-6-hb 105. d.
97 MNL OL XIX-F-6-hb 105. d.
98 Rába, Vol. XXVIII. No. 24., 15 June 1976.; Vol. XXIX. 1977. No. 7.

rather due to the serious imbalance and high indebtedness of the Hungarian economy. Every dollar was needed, and with these investments, the Railway Carriage Factory undertook to realize an annual capital export of 100 million dollars as from 1980–81.

The Engine II and Running Gear III-IV investments were completed by 1979 and 1980, the new forge-shop plant was also ready, the 67,000 square metre hall was constructed on the site of the former airport, the 15,000 square metre hall in Szombathely was also completed, and they also started to construct a new 20,000 square metre hall from own resources at the same place. The investments of the chief company and the airport investmens cost about 6 billion HUF.[99]

In the field of running gear production, Rába achieved such a mechanical-technological level that from the second half of the 1970's it also conquered the overseas markets with its products. The running gear development objective of the fifth five-year plan clearly indicated a new direction, namely, the opening towards the capital markets besides the stable Soviet and socialist markets capable of absorbing huge quantities. Nevertheless, the orders coming from there were small series (or medium series at the most) and of special purpose in several respects. Hence, the machine park was designed in such a way that the small series orders issuing from the capital countries can be economically carried out. The great volume of orders on behalf of the socialist countries were executed in the big halls, whereas, in order to fulfill the demands of the capital countries, NC machines were introduced in the production in the automotive factory unit, which were also capable of manufacturing small and big series.[100]

The huge capacities in running gear production opened new horizons for fulfilling the machine requirements of the domestic large-scale agriculture, too. That is, from the beginning of the 1970's, the professional production of corn and sugar-beet increased dynamically, and the conversion to the production system also started in case of the production of wheat, turnsole, rice, lucerne and soya. On the basis of the much better crop results, the agrarian leadership wished to expand the cultivated areas by several additional hectares. However, for this purpose, much stronger tractors were needed than those used in the Hungarian agriculture until then, and these were produced only by the Soviet Union within the COMECON, but their transportation was promised only from 1976 or 1977. Thus, the domestic producers procured American heavy-duty tractors (John Deere, International Harvester Company, Steiger) for 20–30,000 dollars per piece. In order to trigger the large import, the idea emerged that MVG should negotiate with Steiger about the assemblage of a 180 HP engine in Hungary. In July 1974, the Political Committee of MSZMP approved this novel initiation.[101]

According to the permission, MVG signed a cooperation contract on 25 October 1974 with the American Steiger, and then started the import of the components of the selected Cougar II-type power machine, as well as the preparation of its domestic production. The first five prototypes were produced in December 1974 from Rába–MAN engine, Rába

99 Rába, Vol. XXXII. 1980. No. 26., 27 June 1980.
100 Rába, Vol. XXXVII. 1975. No. 23.
101 MNL OL M-KS 288. f. 5. cs. 640. ő. e. 152–155., 7–8.

running-gear and under-carriage, and were immediately issued to trial operation. The series production started from January 1975, and in the course of the year, already 330 pieces were delivered to the domestic agriculture. For the Hungarian large plants, the fifth five-year plan allocated the production of 1,100 heavy-duty tractors, and as regards Rába, it delivered more and more running-gears to its American partner for the Cougar II models year by year. The International Harvester Company (IHC) emerged as a new overseas procurer that required running gears for its lorries in the scope of 5–10 years. Later on, Steiger made a proposal for a long-term cooperation in the framework of which it wanted to order 30,000 running gears until 1980, but the business was realized within a much more moderate framework due to the American farmers' decreasing demand. The 4.7 billion HUF development of Rába (Running Gear III) was not modified by Steiger's demand, but the acceleration of the investment became necessary.

In 1978, the demand of the new partner, IHC was 5,000 pairs of tandem axles, from 1979, 10,000 pairs, and an additional 20,000 wrought tandem bridge structures from 1976. By the period between 1981 and 1985, Rába already counted with the delivery of 195,000 tandem bridges and 100,000 bridge structures to IHC in such a way that the dollar export did not threaten the deliveries of COMECON. The realization of the programme required a 3.3 billion HUF investment and a half billion HUF working funds increase. In order to regroup the production capacities, MVG agreed with MÁV that it would cease the production of railway carriages, hence, from that time on, the Railway satisfied its demand for passenger-carriages from other sources. For the grandiose expansion, new sites were transferred to Rába, namely the factory unit of the Mosonmagyaróvár Agricultural Machine Factory in Szombathely, as well as the Mosonmagyaróvár Agricultural Machine Factory.[102] The State Plan Committe, the economic cabinet of the Council of Ministers, approved the business on 11 March 1976.[103]

Despite the increasingly difficult worldmarket circumstances and the intensifying competition, MVG managed to carry out its engagements related to the capital export. In 1978, the dollar income of the company increased by 37 per cent compared to that of the previous year and achieved the 50 million dollars,[104] and in the 1980's, transacted a convertible export of about 100 million dollars. Moreover, nearly half of its convertible export was realized in the USA, on a market where socialist Hungarian machine factories had never been able to break into with their products. The American business was of outstanding importance for Hungary, which was constantly struggling with shortage of capital, because the purchasing of American products was not necessarily required in return for export. Consequently, the American export yielded pure convertible foreign exchange revenue for the country (Honvári 2009).

The Western economic crisis following the 1973 oil price explosion did not shake MVG, only intensified the competition, and the solvent demand decreased on the Western markets. There were years when the factory's production value increased by 20 per cent

102 MNL OL XIX-A-121-b 25. d.
103 MNL OL XIX-A-121-c 2. d.
104 Rába, Vol. XXXI. 1979. No. 1.

(moreover, by 40 per cent in a certain year). However, the year of 1979 was closed with the evaluation according to which the planned production value was not achieved with the 17 billion HUF output, although the company's result was still 3 billion HUF.

The 1980's and the Change of Regime

All in all, the fifth five-year plan (between 1976 and 1980) was still the era of dynamic growth in the factory's life (although greater proportions of the increase of output derived from the incorporation of the external production units during these years). Compared to the previous five-year plan (when 37 billion HUF production value was realized within five years), they managed to duplicate the output in the fifth five-year plan. Moreover, the socialist export augmented from 386 million rouble to more than 1 billion, and the value of the export to the market economies increased from 86 million dollars to about 300 million dollars, while the profit also duplicated from 6 billion HUF to 12 billion exactly. At the same time, the problems were increasing, the solvent demand decreased, and the marketing became difficult at home and also aboard. The growth rate decreased accordingly, and more and more efforts were needed to be able to perform well in the worldmarket competition. After 1973, the cost of the products of the countries depending on raw material and fuel import raised, which could be acknowledged only partly in the prices on the world market. Due to the indebtedness of the East European countries, the demand for the Rába products decreased, and the direct partners of Rába (Ikarus and Csepel Automotive Works) found themselves in a more difficult situation at home: they could only escape bankruptcy with the help of multiple state interventions (e.g. prolongation of credits and budget funds).

It seems that Ede Horváth did not perceive the changes, and despite the deterioration of the external circumstances, he continued to rush investments, constructions, machinery purchasing and the enhancement of vehicle production. In October 1980, János Kádár visited the Rába Factory. In his report, Ede Horváth explained that by 1985, the 40-type running gear production should be raised to 300,000 pieces, whereas engine production to 39–40,000.[105] He stated this at the moment when in 1980, altogether only 200,000 Rába–MAN engine driven vehicles were circulating in the world and the Hungarian economy was drifted to the edge of financial collapse. Rába could not fulfill these unrealistic targets, moreover, by 1985, the produced quantity of engines and running gears decreased compared to 1980. Instead of the planned 40,000 vehicle engines, only 25,531 were produced, and 126,638 running gears instead of 300,000. After 1985, the output increased for two years, but the factory could no longer achieve the production planned by 1985 in the socialist era, and in 1988–89, the output started to decrease.

MVG financed the spectacular developments through raising large-scale credits, but their repayment caused increasing burdens due to the decreasing demand, which was the result of the economic crisis exploding in the world economy after 1973, and the Hungarian

105 Rába, Vol. XXXII. 1980. No. 40., 17 October 1980.

financial debt crisis occuring in the beginning of the 1980's. In 1980, the profit reduced to the half from the former one was entirely consecrated to the financing of the corporate debt, which augmented to 5 billion HUF in the meanwhile (Kelemen 1992).

The transition from wagon production to public vehicle production took a decade. In 1966, 47 per cent of the production value still consisted of rail vehicles, engine production contributed to the output with 1 per cent, and running gear production with about 20 per cent (the remaining part of the production value amounted to iron structures, bridges, etc). In 1986, no more railway carriages were manufactured in Győr, but 75 per cent of the entire production value issued from diverse engines and running gears. Various trucks, tractors and agricultural engines were also produced. By 1987, the 2.3 billion HUF production value in 1965 exceeded 25 billion HUF in current price.[106] (The increasingly growing inflation had an important role in the decupling of the output value, and obviously, the production value corrected with inflation increased at a much less rate.)

From the middle of the 1960's, Rába built its strategy on the public vehicle cooperation of COMECON and mainly on eastern markets, which led to the boost of the company and to a dynamics of unusual volume even within the socialist circumstances. In 1990, the most important factor was the collapse of the Soviet bloc, which almost buried the giant factory under itself. The output of the most important domestic users of the Rába products – Ikarus Bus Factory and the Csepel Automotive Works – fell back to the level experienced in the middle of the 1960's. By 1991, the accumulated loss was close to 9 billion HUF. For that reason, the factory was taken under administrative control this year. The public crisis management project prooved to be efficient, and the company closed the year of 1992 with moderate profit through serious self-mutilation and the transformation of certain business units into separate ones.

106 Kisalföld, 14 May 1987.

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The city Győr with its hinterland belongs to the economically most successful Hungarian regions, where the role of the automotive industry is crucial in the development. Therefore, the programme on the research of the Győr automotive region – whose final volume is this book –, intended to analyze the functions and space shaping ability of dynamic centers with regard to the European trends. The studies in this book give a theoretical overview on the topic; they explore mainly the specificities characteristic for the Central European region, principally in shaping the economic structure, features of the urban network and the set of tools and institutions of spatial planning and local development.

Focusing on the situation of the small- and medium-sized cities, the authors introduce the most recent developments of the European and Hungarian urban network, since Győr, based on its size, can effectively bid for the role of sub-center in the Vienna-Bratislava metropolitan area. Throughout the analyses special attention has been given to the automotive centers of Southern-East Europe, since it is necessary to evaluate the city's competitiveness in this context as well.

For a long time, development policy theories have been established to make the urban network more competitive and today the evaluation of application conditions of growth pole strategies and industrial district conceptions has become timely again. Another group of studies argues for the general reindustrialization of the lagging, underdeveloped regions that needs to be accompanied by surpassing the dual structure and avoiding monostructures. The role of the state is unquestionable when considering the effectiveness of the development process, thus, shaping the state urban policy, planning authorization given to urban regions and the model of urban governance are all factors highlighted in the studies.

Finally, it is an acknowledged fact that Győr has followed a special, unique development pattern throughout the last hundred years, where continuous renewal and innovation can be seen. Therefore, the final study in the volume, with special emphasis on the research of endogenous resources, deals with the history of the Győr-based vehicle production.