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Investigations of paleogeographic variations on the basis of the stratotype section of Viatovo at the Lower Danube

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Abstract

The Plio-Pleistocene changes of paleogeographic environment in the Lower Danube Basin were investigated with the involvement of new granulometric analytical methods. The loess-paleosol series at Viatovo (located 35 km to the SE from Russe, Bulgaria) provides a comprehensive archive of Pleistocene climate changes. Similarly to Moravian loess deposits, the investigated site situates in a corridor position between more glaciated terrains.

The completeness of horizontally-bedded loess and paleosoil layers makes it a particularly significant section in Central and Eastern Europe. With or new data, we would like to contribute to previous lithological, paleoenvironmental and chronological studies of the section.

The novelty in our study are the comparison and plotting of $\delta^{18}O$ values and our newly introduced indices (fineness grade: Fg and degree of weathering: Kd) together with traditional sedimentary parameters (Md, So, K, Sk). These values were competed with clay- and $CaCO_3$-content, and percentages of clay, silt, loess and sand. To the relative dating of the section, we have correlated our data with Marine Isotope Stages of the ODP-677 site. The series of the upper part of the section represent 100 ky cycles of Middle and Late Pleistocene climate changes.

These units are overlying the ca. 6 m thick red clay deposits and the lowermost sandy kaolinitic loess layer. The whole sequence is situated on Lower Cretaceous paleokarst system. The $\delta^{18}O$ values and other sedimentary parameters illustrate gradual decrease of temperature since the Pliocene.

The granulometric parameters suggest that pedogenic processes played also a dominant role during the formation of loess deposits. The clay and fine-silt content of the red clay, loess and paleosoil layers are also in the range of 65–90%. These loess deposits can be classified as "Mediterranean" loess.

An identified horizon with clay fragments in the upper part of the loess-paleosoil series can be employed as marker unit, and supports the correlation with other sections.

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The lower 3 paleosoils were formed under moister climate regimes, the more infiltered precipitation washed out the carbonates from these layers. The formation and evolution of river-terraces, denudation surfaces and valleys can also be observed well in the vicinity of the section.

Keywords: loess-paleosoil series, Pliocene, Pleistocene, paleogeographic environment, paleoclimate, granulometric parameters

Introduction

Loess-paleosol sequences are widely considered as the most important terrestrial records of Late Neogene and Pleistocene paleoenvironmental changes. Loess and loess-like deposits are covering extensive areas in Central and Eastern Europe, where after the regression (and desiccation) of the remnants of the Paratethys eolian processes played predominant role in sedimentation. The detailed granulometric analyses of accumulated dust material provide substantial information about changes in precipitation, in wind strength, in regional moisture balance and extent of dust source areas (Pye, K. 1987). Recent studies confirmed that windblown dust is an active component of the climate system, and can modify its elements by various ways (Pósfai, M. and Buseck, P.R. 2010; Varga, Gy. 2010).

Geographical setting and the environment of the Viatovo loess-paleosol sequence

The investigated section of Viatovo is located at the southern fringe of the Lower Danube Basin, approximately 35 km to the SE from Russe (*Figure 1, Photo 1*). It is situated between the Danube and the Balkan Mountains at the, so called Eastern Danubian Tableland. Due to the significant relief-energy of the area, it would be more proper to call it "hills". The section is located at the eastern fringe of the River Beli Lom, at north-western part of the Ludogorie Hills. The average elevation of the region is 200–300 m asl.

The horizontally-bedded Lower and Upper Cretaceous, and Neogene sediments can also be found at the surface (*Photo 1*). The remnants of the Kimmeridge terrestrial basement situate in large depth (Dinev, L. and Misev, K. 1981). In the Eocene and Miocene the area was covered by different arms of the Paratethys (Bozukov, V. *et al.* 2009), and only the north-western parts of the region stayed terrestrial (Aleksiev, G. and Spiridov, H. 2002). In the Pliocene a brackish lake (Dacian Lake) was formed in the front of western Ludogorie, at the place of the ancient Miocene sea, and sand, clay marl and clay were deposited (Dinev, L. and Misev, K. 1981).

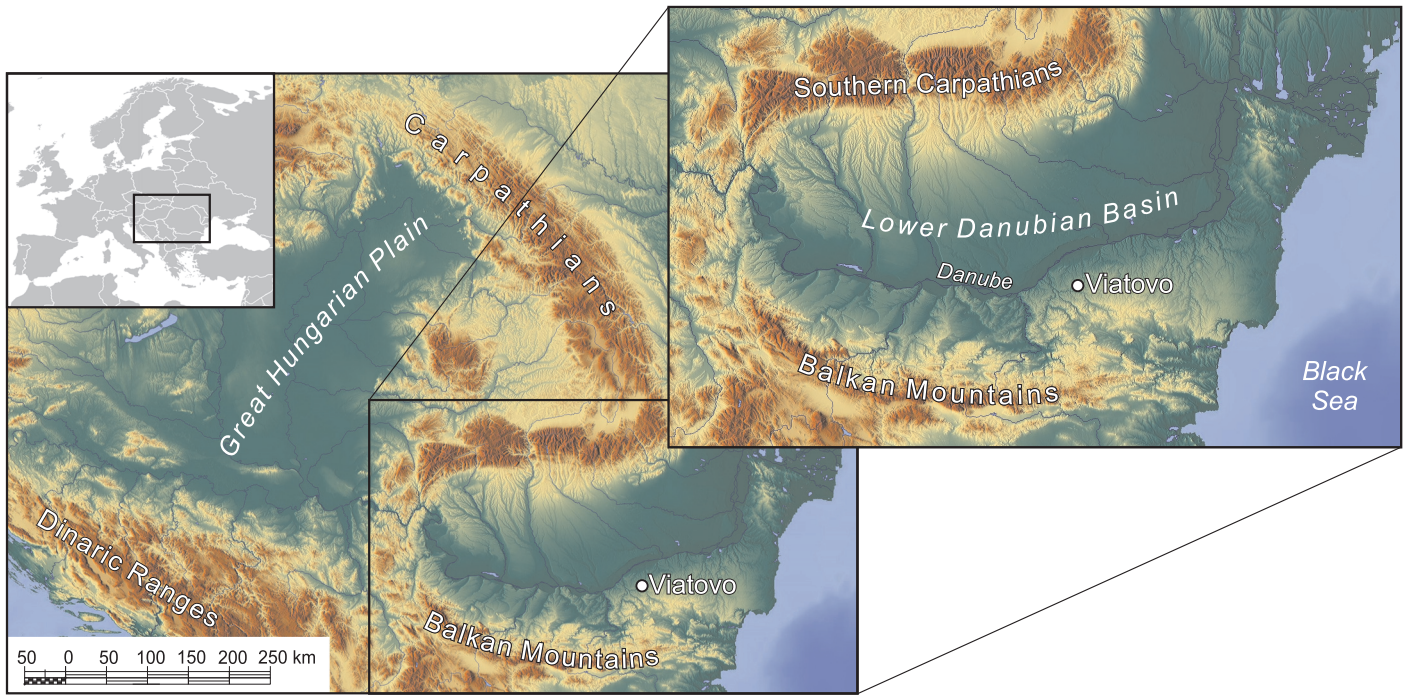

Fig. 1. Location of the investigated Viatovo loess section (Source of the digital elevation model: http://www.maps-for-free.com – Hans Braxmeier)

Photo 1. The sedimentary series of the Viatovo section (Photo by Kis, É.).

At loess-covered areas, the landscape was developed specially due to the typical properties of loess (permeability, porosity, friability, $CaCO_3$ content, vertical capillarity, etc. – Lóczy, D. 2008). As a consequence of the Pleistocene crustal movements and climate changes, rivers of the area were incised and 5–8 river terraces were formed. The thickness of the loess deposit is highest direct at the Danube, it is thinning toward the Fore Balkan and its material is altered gradually to loessial clay. At the bottom of the sequence, Lower Cretaceous paleokarst features can be found (*Photos 2* and *3*).

The series of red clays, the 7 loess and 6 paleosol deposits (*Photo 2*) were formed on the Pliocene denudation surface of the kaolinitic level (*Photo 4*) and at river terraces (Evlogiev, Y. 2006). According to Evlogiev (2006) the whole sedimentary series consist of 8 loess and 7 paleosol units at the Danube. At the area south from Russe, however, the dust sedimentation rate was lower, the layers are thinner and pedogenic processes were more intensive (Jordanova, D. and Petersen, N. 1999a,b). Therefore, the number of loess-paleosol units at Viatovo is less than in sections direct at Danube.

The loess-paleosol sequences represent comprehensively the climate changes at the Lower Danube Basin. The 100 ky cycles, loess deposition during glacials, and incision of river and soil formation in interglacial periods can be seen clearly at the *Photo 2.* The loess deposits are product of intensified glacial dust deposition.

Photo 2. Upper Pliocene and Pleistocene loess series deposited on denudated and karstified Lower Cretaceous limestone. – Paleomagnetic boundaries: B/M = Brunhes/Matuyama; J = Jaramillo; O = Olduvai (Photo by Kıs, É.).

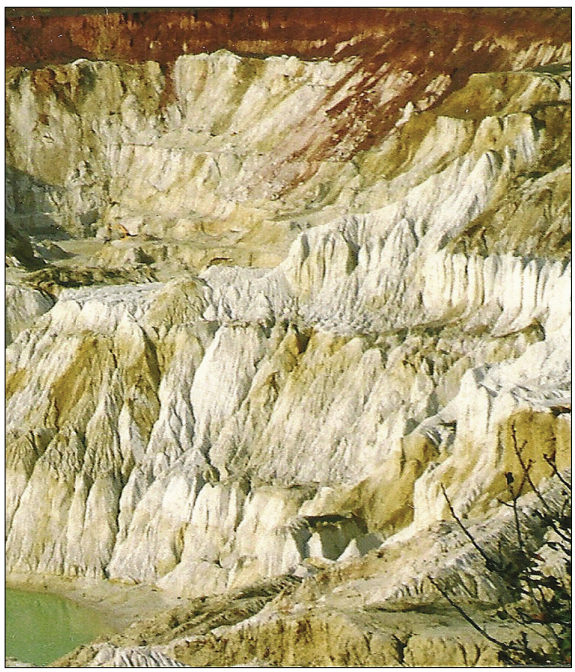

Photo 3. Specific denudation forms of the paleokarst system (Photo by Kıs, É.).

Photo 4. Pliocene denudation surface (Photo by Kis, É.).

The importance of the section was also confirmed by paleomagnetic and magnetostratigraphic analyses of Jordanova, D. (2008). The Brunhes/Matuyama (B/M) paleomagnetic boundary can be found in the lowermost loess layer (*Photo 5*), while two magnetozones were identified in the underlying red clay deposits, probably representing the Jaramillo and Olduvai paleomagnetic subchrons of Matuyama chron (*Photo 6*). The short-term events and the B/M reversal are very relevant stratigraphic markers (Jordanova, D. 2008). These markers can be used to correlate the East European loess deposits, which dust material is originated from different sources. The absence of numeric age data and correlative micro- and macrofauna also emphasise the importance of the paleomagnetic marker horizons.

The positions of major magnetic episodes in the surrounding regions were summarized by several workers (e.g. Jordanova, D. 2008). According to Tsatskin, A. *et al*. (2001), the B/M boundary can be found in Roxolany (at the western region of the Black Sea) between the 6th and 7th paleosols. This result was later confirmed by the measurements of Gendler, T.S. *et al*. (2006). The B/M reversal at Novaya Etuliya situates in the upper part of the 7th paleosol (Tsatskin, A. *et al.* 2001; Gendler, T.S. *et al*. 2006). The B/M reversal was also found at the foreland of the Eastern Carpathians in the section of Zahvizdja (Nawrocki, J. *et al.* 2002). Dodonov, A.E. (2006) found the B/M boundary in the 7th paleosol in a section at the northern coast of the Black Sea.

Photo 5. The Brunhes/Matuyama paleomagnetic reversal can be found in the lowermost loess unit (Photo by Kis, É.).

Photo 6. Two paleomagnetic events were identified in the red clay deposits, according to Jordanova, D. (2008) these are probably the Jaramillo (J) and Olduvai (O) subchrons (Photo by Kis, É.).

Eolian origin of loess in the Lower Danube Basin

Based on geomorphic and sedimentary observations, Fotakieva, E. and Minkov, M. (1966) and Minkov, M. (1968) were the first, who identified the eolian origin of loess in Bulgaria. According to their findings (blanket-like deposition of loess, southerly tilt of uplands, gradually thinning of loess deposits into southern direction, the presence of buried paleosols, angular bedding of some layers, etc.) are the proves of wind-blown origin.

Other evidences of eolian origin of loessial deposits in the Lower Danube Basin were summarized and completed with new results by Evlogiev, Y. (2007). As it was identified at several loess regions, grain-size of the loess material is decreasing gradually from the deflation area, when transport energy of wind reduces with increasing distance from the source area. It was also recognized in the case of the Lower Danube loess, where grain-size is changing from north to south and also from east to west. According to Evlogiev (2007) the well expressed directions of loess winnowing also confirms the eolian origin. The major dust source areas of the investigated section could be the alluvium of the Paleo-Danube (with its tributaries), the fine-grained unconsolidated material of the Dacian Basin and also the shelf region of the Black Sea. The stratigraphic differences of loess sections in the region are the results of the various, relief determined location of dust transport corridors. Therefore, Evlogiev (2007) differentiated five loess regions: Northeast, Yantra-Vit, Vit-Ogosta, Ogosta-Lom and the Black Sea region. The main dust transporting directions are NW–SE and NE–SW, at Viatovo both of them can be assumed.

Similarly to other old loess-paleosol sequences from Hungary, Tajikistan and China, the enhanced deposition of dust material started after the formation of the eolian red clay deposits (Kovács, J. *et al.* 2008, 2011; Varga, Gy. 2007, 2011). The accumulation of the material of the lowermost loess layers started around the Plio-Pleistocene boundary (~2.6 Ma BP) or even before this date. The oldest deposits can be found on the coastal part of the Dacian Basin (Evlogiev, Y. 2007). Similar depositional environments existed throughout the Late Neogene and the Pleistocene in Central Europe (Schweitzer, F. and Szöőr, Gy. 1997; Schweitzer, F. 2000).

Methods

A unified method of comparative grain-size analysis has been elaborated for the analysis of Quaternary sediments and this laid the foundations of an exact characterization and comparability of these deposits by the classification of loess regions (Kis, É. 2003; Schweitzer, F. and Kis, É. 2003). This method was tested in Hungary and applied exclusively by the author for the investigation into Quaternary deposits (loess and loess-like sequences) (Kis, É. 1992, 2001).

Through the evaluation of the results an opportunity has opened to acquire abundant information in a rapid way on the evolution history of the study area, including:

– the paleoenvironmental conditions during the deposition of the loess material;

– the subsequent changes taking place in the geographical environment;

– the climatic fluctuations over the past ca. 3 million years, including the ice ages;

– warming maxima and cooling minima of temperature during the Quaternary;

– sedimentary differences among the profiles of various loess regions based on the findings of the analyses.

Values of each parameter (index) as environmental indicator are gained by the application of analogous methods, so they are to be considered a correct and reliable source for the comparative analysis of profiles within a given region and between different regions, and for drawing conclusions on their paleogeography.

Quaternary sediments are characterized using the above method and an attempt is made to draw conclusions on changes in the rate of sedimentation and to establish local correlations between horizons with similar characteristics. Traditional sedimentological parameters (*So, K, Sk, Md*) were applied together with two indices introduced in Hungary recently: *Fg* (fineness grade) and *Kd* (degree of weathering), and with $CaCO_3$ content and percentage of clay, silt, loess and sand fractions. Organic matter content and pH values were also involved in the analysis.

Fineness grade (*Fg*) serves for an exact separation of horizons from each other and the reconstruction of paleotopography. Increasing or decreasing values of *Fg* are indicative of the source area of the parent material of loess, wind direction and speed during transport. The *Kd* index can be used to determine the degree of weathering, to point out extreme warming and cooling events. Traditional parameters provide additional information such as sorting (*So*) on the origin of the sediment material, kurtosis (*K*) is helpful for the sharp separation between loess and sand, asymmetry (*Sk*) orientates in the identification of regions of accumulation and denudation.

Of the newly adopted indices fineness grade shows maximum values in soils and minima in sands. Knowing these values soils horizons become recognizable while those finer than the average represent young loess and considerable finer ones represent silt intercalations. *Fg* values are used for an exact denomination of sediments, delimitation of the boundary of layers, their trend to increase or decrease refer to grain-size to refine or coarsen so they can be used for distinguishing between old and young loess varieties, revealing alterations within paleosols, correlating between loess and paleosol horizons.

The *Kd* index is represented by minimum values in soils and maxima in loess (and by figures slightly above minimum in sands). Apart from being useful for the identification and demarcation of sediments, its maxima is suitable for pointing out the traces of extreme cooling events within loess sequences (their exact depth can be identified within a given loess layer) and minimum values refer to warming maxima inside soils (exact depth within the soil horizon).

By the sorting (*So*) values, conclusions can be drawn on the origin of parent material (*So*<2.5: eolian; *So* = 2.5–3.5: fluvial; *So*>3.5: pedogenesis). The sorting values also support the distinction of young and old loess deposits, with higher values in the case of the older ones. According to Trask, P.D. (1932) *So* index values below 2.5 represent poorly sorted sediments, normal sorting is around 3 and well-sorted deposits show values above 4.5.

The asymmetry (*Sk*) values provide information on the accumulation of material and allow us to distinguish in-situ and redeposited slope sediments. Higher values refer to the highest accumulation rates of the parent material. Together with the kurtosis index, it is useful for the identification of hidden bimodal and trimodal redeposited sediments. They allow us to distinguish between sands and loess on the one hand and clays and silt on the other, and to separate areas of accumulation from those of denudation. Using this parameter more phases of sedimentation can be identified than by other methods.

Kurtosis (*K*) values support the determination of layer boundaries. The extremes indicate the mixing of loess with soil, referring to boundaries of loess and soils sharply. The laboratory analysis of the collected samples have been made in the Laboratory for Sediment and Soil Analysis in the Geographical Research Institute of the Hungarian Academy of Sciences (HAS). The grain-size distribution of the samples was measured using a Fritsch Analysette Microtec 22 laser grain-size analyser.

Oxygen stable isotope ratios of the loess samples were measured in the Laboratory of Environmental Studies in the Institute of Nuclear Research (HAS) by a Thermo Finnigan Delta Plus XP isotope ratio mass spectrometer using the GasBench sample preparation device. Depending on the carbonate content of the sample, 1–20 mg of each sample was measured in vials with septa. Headspace gases were purged by high purity (5.0) He gas, then 100% concentrated phosphoric acid is added to convert carbonates to carbon-dioxide which is lead to the mass spectrometer. Oxygen isotope ratios are published in the conventional delta (δ) values in permils, relative to the VPDB standard.

Results

The section (*Photo 7*) consists of horizontally-bedded (*Photo 8*) deposits, which represent almost the whole Pliocene and Pleistocene paleogeographic (climate,

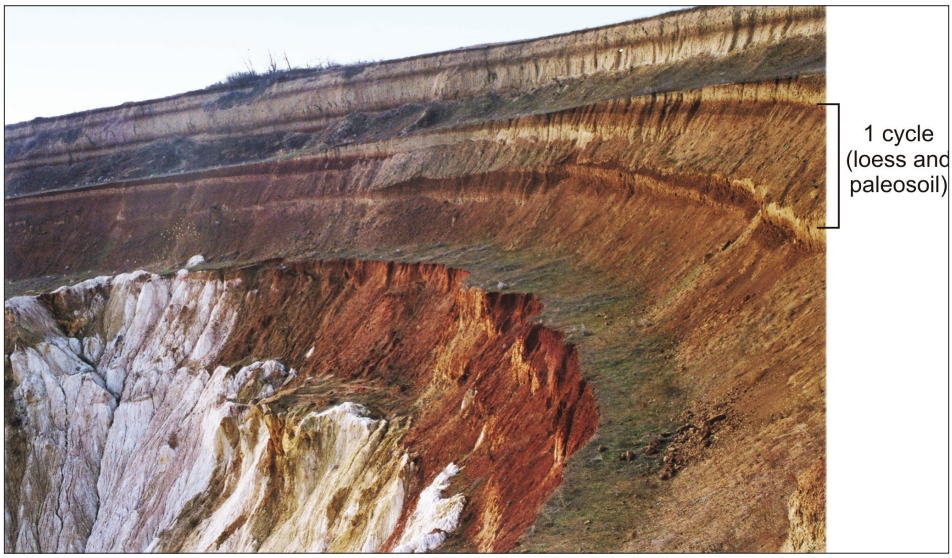

Photo 7. The ~100 ky cycles of the loess-paleosoil formation at the upper part of the section (Photo by Kis, É.).

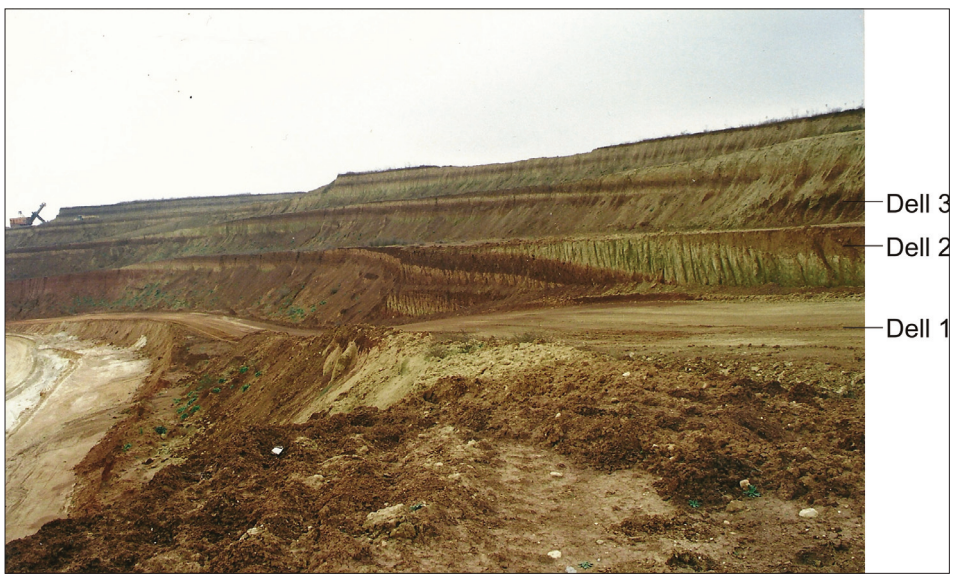

Photo 8. System of dells filled with loess and paleosoils, and soil erosion forms (Photo by Kis, É.).

relief and hydrology) evolution of the region. Therefore, it is an excellent archive of the paleoclimatic and paleoenvironmental changes of the last ca. 3 million years. The presented photos and results of the joint evaluation of granulometric and sedimentary parameters allow us to get more detailed information on these changes.

The upper section of the outcrop is a series of Middle and Late Pleistocene loess and paleosol units lying on river terraces. Similarly to other loess sections, this sequence represents the ~100 ky cyclic variations of Brunes paleomagnetic chron (Varga, Gy. 2011). The Brunhes/Matuyama paleomaegnetic reversal can be found in the lowermost loess layer (Jordanova, D. 2008). The thick loess and the distinct paleosol units illustrate gradual cooling and longer depositional periods of the Middle and Late Pleistocene climate.

The loess-paleosol sequence is overlying the ca. 6 m thick red (or reddish) clay series and the remnants of Lower Cretaceous paleokarst system. According to Jordanova (2008) two paleomagnetic episodes were identified in the red clay deposits; these are probably the Jaramillo and Olduvai subchrons. The recognition of the old, Pliocene loess under the reddish clay units is especially important, since evidences of loess formation before 2.6 Ma BP are considerably rare. Based on the stratigraphic position, the material of these loess layers were deposited before the Matuyama/Gauss paleomagnetic reversal.

To identify and distinguish different stratigraphic units, we compared the $\delta^{18}O$ values and our newly introduced indices (fineness grade: *Fg* and degree of weathering: *Kd*) together with the traditional sedimentary parameters (*Md, So, K, Sk*). These values were completed with clay- and $CaCO_3$-content, and the percentages of clay, silt, loess and sand. To the relative dating of the section, we have correlated our data with the Marine Isotope Stages of the ODP-677 site. The following stratigraphic units were determined and sampled:

I. 6 soil horizons

– 5 paleosols (*Photo 9*)

– 1 multiple red clay series (*Photos 13* and *14*)

II. 4 loess layers (*Photos 9–12*).

A horizon with clay fragments can be found above the third paleosol unit. According to recent evidences, this marker horizon was formed under continental climate during the heavy rainfalls following the warm-arid episodes. The surface of bare clayey soils at the deflation area could easily desiccate and fall apart to larger blocks. Similar markers were identified in the sections of Stillfried and the Dolní Věstonice (Kis, É. 2004; Schweitzer, F. and Kis, É. 2006).

The sampled section of Viatovo consists of 4 loess and 6 paleosoil layers, 1 multiple red clay complex and the lowermost sandy loess with kaolinitic interbeddings (*Figure 2*). The $\delta^{18}O$ values of the samples suggest a gradual

Photo 9. Paleosols at the southern part of the site (Photo by Kis, É.).

Photo 10. Loess and paleosol layers with clay fragments at the surface of the paleosol (Photo by Kis, É.).

Photo 11. $CaCO_3$ concretions, ca. 5 cm in diameter (in the foreground), eroded from the prismatic paleosol (Photo by Kis, É.).

Photo 12. Old loess deposits with notable carbonate concretions at the right-hand side of the section (Photo by Kis, É.).

Photo 13. Pliocene denudation deposit between the kaolin and the red clay horizons (in the middle) (Photo by Kis, É.).

Photo 14. Multiple red clay strata and yellowish, loessial Pliocene denudation deposits in the lower right corner (Photo by Kıs, É.).

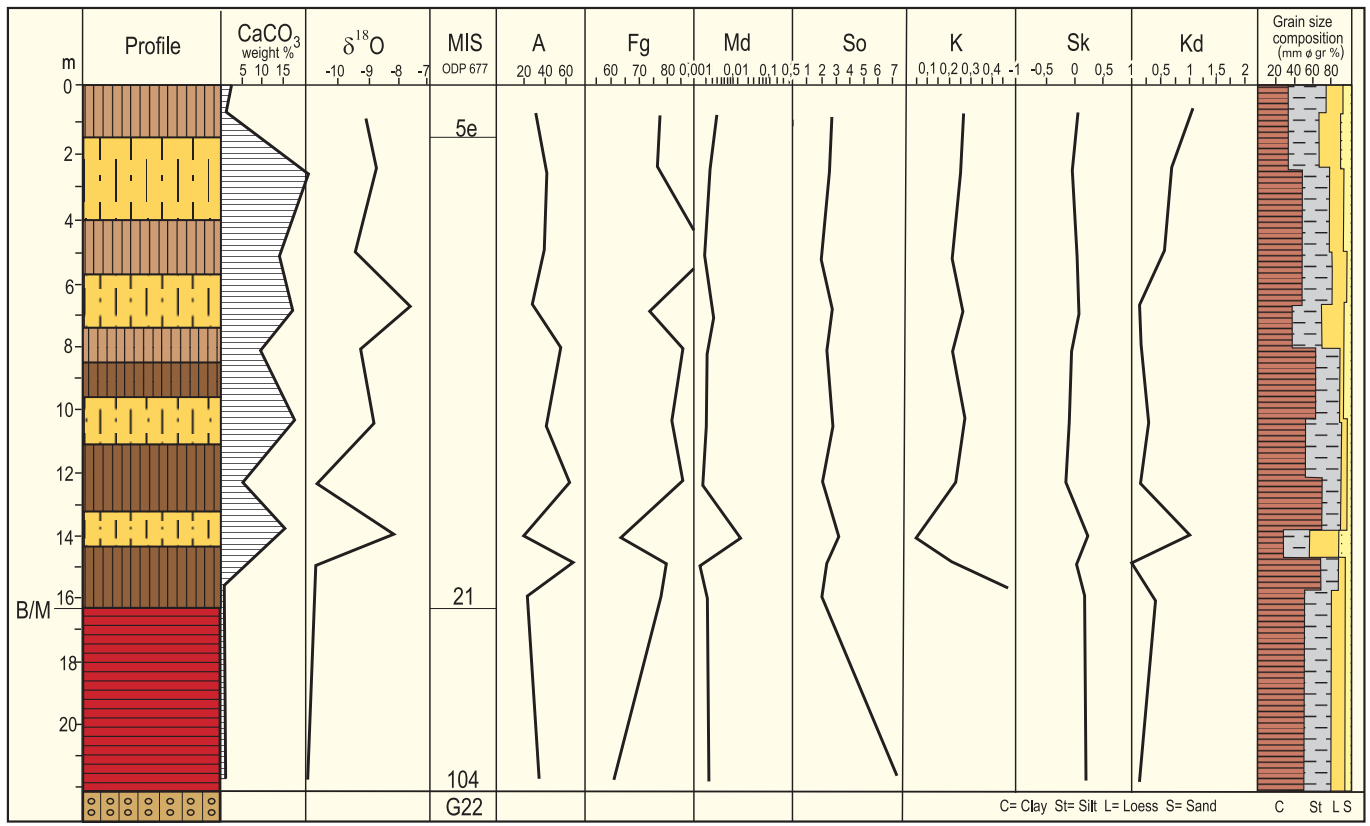

Fig. 2. Granulometric parameter values by samples from the Viatovo section (Kis, É.). Stratigraphical analysis: Kis, É., Schweitzer, F., Balogh, J. and di Gleria, M. Oxygen isotope measurements: Futó, J. and Vodila, G. Granulometric analyses in 9 grain-size categories: di Gleria, M.

decrease of the temperature during the warming phases of the deposition. The relationship between the oxygen isotopes and the paleotemperature is complicated, and it is controlled by several additional environmental factors (e.g. regional moisture sources, amount and $\delta^{18}O$ values of meteoric water, seasonality – Demény, A. *et al.* 2010). However, the main changes of the temperature are properly archived in the oxygen isotopic composition of pedogenic carbonates. Peaks of the isotope curve illustrate different temperature regimes.

The correlation of stratigraphic units to the Atlantic deep-water deposits of ODP677 site (Shackleton, N.J. *et al.* 1990) confirmed the suggested ages of the layers. The paleosoils (S_1–S_6) correspond to the odd numbered units of ODP677 as far as the Stage 21, the red clay deposits were formed after the Stage 104, while the age of the lowermost sandy loess can be correlated to the stages between 104 and G22.

According to the granulometric studies, proportion of silt fraction is very low, while the amount of clay is particularly high (27.5–75.5%) in all stratigraphic units, also in the loess layers (except the lowest loess deposit – 6.4%). The pedogenic processes played important role also during the glacial periods. This might be influenced by the climate modification effect of the nearby (~100–120 km) Black Sea.

The carbonate content of the units is also diverse. The $CaCO_3$ values are 8.76–15.43% in the upper 3 paleosoils, while these values are changing between 5% and 7.09% in the lower 3 soils.

These values show us that the older soils were formed under a moister climate, and the carbonate content was reduced due to the more infiltrated rainwater. Jordanova, D. and Petersen, N. (1999a,b) reported similar conclusions on the depositional environment. The organic content varies between 0.11% and 0.86%, with higher values in red clays, also confirming the above explained establishments. All other sedimentary parameters can be easily determined from the curves plotted next to the section on the evaluation figure.

Conclusions

The paleoenvironmental and paleoclimatic changes of the Lower Danube Basin are well represented in the compiled general section. The detected granulometric variations and sedimentary parameters provide information on the climatic and environmental fluctuations and conditions that prevailed during the deposition of the last 3 million years. All of these changes can be directly read from the evaluation figure. The curves of the measured and counted values were plotted next to the section, so the data of each horizon can be promptly determined.

Due to the same methodology, the results can be compared to the conclusions of previous studies from the region. Through these comparisons, new

proofs can be found for the correlation heretofore based upon the description of the profiles, sampling and subsequently laboratory analyses.

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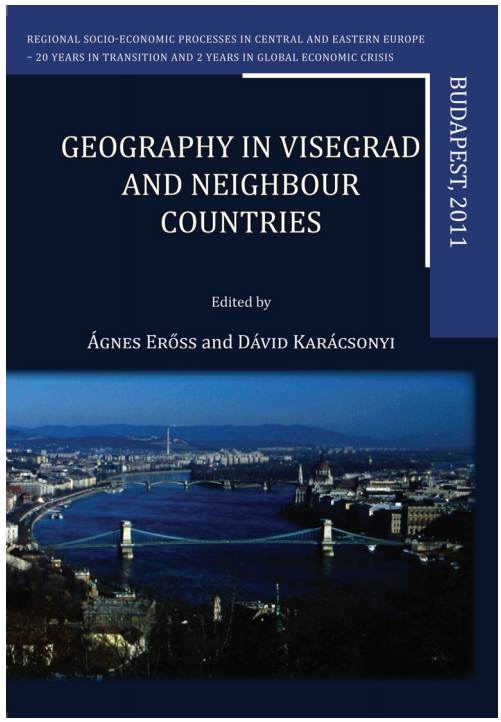
During the last twenty years the erstwhile Soviet bloc countries in Central and Eastern Europe (CEE) have taken distinct routes in post-socialist development, wherein the national trends and internal regional processes proved to be in deep contrast. Responses to the challenges of the global economic crisis also varied, repeatedly brought to the surface long existing regional issues, structural problems and ethnic conflicts. Human geographers are divided in the assessment of the shifts that occurred during the past twenty years and the exchange of experience is vital for finding adequate answers to the new challenges. In order to provide a forum for discussion the Geographical Research Institute Hungarian Academy of Sciences with the generous support of the International Visegrad Fund Small Grant Programme organized a conference in order to induce the revival of contact between the institutes of geography of Visegrad Countries and their Western and Eastern neighbours. Present volume is a selection of presentations aiming to provide a deeper insight in socio-economic processes and their interpretation from geographical aspects taking place in the broader region of CEE countries.



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Contributions to the issues of regional economic growth and equilibrium as well as the regional policy

György KOCZISZKY[1] and József BENEDEK[2]

Abstract

The geopolitical change of direction taking place after 1989 induced a number of positive and negative social and economic changes in Hungary (as in the other post-socialist countries). Among the latter changes perhaps the most depressive one is that in the past two decades the economic policy has not been able to achieve a sustainable and balanced economic growth either in the short or in the long term, or to manage the problems arising from its lack. The external and internal imbalance (at macro and mezzo levels) arising in this way is continuously generating serious tensions. This paper wishes to find an answer to the question what role the regional policy can play in creating local and regional economic equilibrium and in starting a relative convergence.

Keywords: regional policy, economic growth, new regionalism, regional equilibrium and sustainability

Introduction

The economic policy of Hungary of the past decades can be described by a number of controversies. Little wonders that the final outcome is mixed: in accordance with the ill-advised and whimsical improvisations (matching the election cycles) and, on the other hand, with the business cycles taking place in the world economy, the rate of Hungary's macroeconomic growth and the deviance from the equilibrium path keep changing from smaller to bigger; the sign and size of the domestic output margin keep changing cyclically while the exposure of macro- and mezzo-level outputs to external disturbances has also increased. At the same time the increasing tendency of interregional disparities in Hungary makes the necessity for transforming the regional policy and for

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harmonising economic and regional policy imperative. The paper wishes to reflect on the above issues and to draft the directions of a change of paradigm in regional policy.

Theoretical background – possibilities for a change in paradigm in regional policy

The regional policy must not be mistaken for sectoral macro-economic policy. It is a version of territorial policy, which is implemented at the level of regions. At the same time, however, the objectives of regional policies are of an ideographic nature, i.e. they have to be adjusted to the specialties of the given regions, in accordance with the particular problems of every region. There are three kinds of regional policy available for the policy makers for the implementation of the general objectives of regional policy (decreasing regional differences, the rational use of regional resources and factors of production, ensuring availability of public services for the total population of a region, etc.) (Amin, A. 1999):

1. The *Keynesean regional policy* dominated the development strategies of the period 1960–1980 and relied on the fundamental elements:

– income redistribution;

– the use of welfare policies in order to increase demand in backward regions;

– to support private enterprises in the form of government-guaranteed loans or by improving the infrastructure in order to encourage them to settle down in backward regions.

The Keynesean regional policy is currently heavily criticised for some of its deficiencies, such as the low level of productivity in the problematic regions; the use of this policy failed to stop the unequal development of regions struggling with problems, the dynamics of the peripheral regions depended largely on external demand, etc.

2. The *neoliberal regional policy* is one of the policies which have dominated the stage of regional development in the past twenty years. It focuses on the ideas of the deregulation of markets and decreasing the social intervention of the state. The strategies employed act towards the development of infrastructure, investment into programmes of vocational training and technology transfer. The weak points of this policy are as follows:

– the direction of funds towards weakly developed regions decreases, resulting in these regions losing the sources of development;

– these regions get involved in the global competition dominated by large international companies and regions capable of innovation – in which situation the majority of peripheral regions lose their chances for development;

– the regional policy has encouraged the mobility of production factors, which has led to an intensification of the migration of production factors, particularly labour, from the peripheral regions towards the central ones.

3. *Institution-based regional policy*, or *'new regionalism'*, appeared simultaneously with the establishment of the new regional institutions in the EU in the 1990s, in response to the deficiencies and failures of the policies described above. New regionalism explains the economic impetus of certain regions by the fact that there has been an increase in the importance of innovation and in cooperative forms of learning, particularly in the adaptation of the regions to the new economic conditions (MacKinnon, D. 2002). In this context a region is regarded as a source of competitive advantage. The innovative and learning capacity of the regions, among the conditions of the knowledge-based economy, determines their rise or fall. In consequence, this policy relies on the development of the technology factor, particularly innovation, as well as on quality factors related to labour (education, training/retraining programmes, etc.).

'New regionalism' is a heterogeneous direction with a great number of internal ramifications, according to which a region constitutes the fundamental territorial units of innovation, production, economic development and development policies. This enhanced focus on the role of the regional level highlights two processes which appeared in the 1980ies of the last century. One is the conceptualisation of the new post-Ford evolutions, in the framework of several geographical and economics directions. A fundamental feature of the post-Ford turning point involves a deep-going change in the economic area and the emergence of a knowledge-based economy. This phenomenon reflecting the logics of territorial-economic evolutions coincide with the political mobilisation of regional resources in the form of normative political regionalisation and of regionalism, which follows the logics of the political evolution of the past two decades: a weakening of the institutions of the nation state and the emergence of new forms of cooperation between the state and the players at various lower territorial levels.

The emergence of 'new regionalism' was directly triggered by the elaboration of the concepts and theories which are called territorial innovation models (Lagendijk, A. 2001). Among them the following are mentioned here: new industrial regions (Californian School), industrial zones (Italian School), innovative medium (GREMI School) and clusters. By means of contributions by these schools, new regionalism expresses the top-down perspective of regional development. The latter focuses on the relations between innovation and economic upswing within a globalised environment. Innovation is regarded as a collective form of learning, in which trust occupies a central position and connects networks consisting of companies, ensuring the participation of the companies in the process of collective learning. Trust develops under conditions of territorial neighbourhood and to a lesser extent under those of

the territorial dispersion of the companies. The inter-company networks that have developed on the basis of trust become sources of learning and competitive advantages.

Actually, globalisation triggers the emergence of new forms of agglomeration based on the production of knowledge. Under conditions of the ubiquity of codified knowledge, the repositories of special, implicit knowledge create considerable non-material competitive advantages for themselves, for implicit knowledge is created and transferred by means of close connections between persons and companies. These competitive advantages are inherent in the social relations between companies and institutions localised rather at regional than at national levels. The accumulation of the connections capital and the untraded interdependencies form the main sources of learning. Learning facilitates regional adaptation to the changes arising in the outer environment, i.e. regional development. Collective learning processes, which are cumulative in the local community of companies, encourage the spatial agglomeration of companies.

The stability and continuity of inter-company relations as well as the spatial neighbourhood of the companies are the conditions for the accumulation of implicit knowledge and connections capital. Particularly small companies are encouraged to participate in the transfer of information and knowledge. New regionalism expresses an optimistic wave among regional policies, based on the positive examples of regional economies, such as the Third Italy and Silicon Valley, more exactly on a belief in the possibility of local and regional endogen development among the conditions of increasing international competition.

The political basis of 'new regionalism' is provided by the idea that the region as a social and political construct is a topic of normative-political regionalisation and regionalism. Normative-political regionalisation denotes the decentralisation of political power and the various scopes of authority belonging to the public sphere towards regional and local levels, while regionalism is an ideological movement which supports the priority of regional values and may be passive (latent) or active (represented on the stage of politics). In this context regional identity is applied as an endogen resource which promotes regional interests, the agenda and actions of the regional political players in the interest of strengthening the positions of the regions (both economically and politically).

The instrumental mobilisation of regional identity (in the form of endogen regional development strategies) for the purpose of increasing regional competitiveness must be differentiated from its political mobilisation, where regional identity itself determines the objectives of regional development (e.g. political autonomy – Lagendijk, A. 2001). Thus, as a result of political regionalisation and regionalism a region becomes a strategic place, which

can be manipulated and becomes the site of the elaboration and introduction of regional policy projects (Lovering, J. 1999). The basis of collective regional aspirations is formed by regional and local identities mobilised by the *development coalitions* (Swyngedouw, E. 2000). This represents either *new governance structures* in the form of partnership relations between the regional and local institutions of the state, civil society and the business sphere, or local alliances between the economic and political players, which in certain situations may be coupled with local governments and/or trade unions.

Development coalitions may be progressive, open and play a positive role in regional development or regressive and closed, contradicting the fundamental democratic rules (ibid.). What's more, Lovering (1999) speaks about the emergence of a class of new regional services, which is constituted by consulting agencies (private sphere) and various development agencies (public sphere). In order to determine their roles in regional development, a number of fundamental issues are to be clarified at the level of every region: Who elaborates the regional projects? What are the objectives of regional development, and of the development plans? Whom do they benefit? What are their advantages? Swyngedouw (2000) suggests that the success of certain particular regions is directly connected to the presence of certain 'local' elites which are competitive at the global level. Their projects and activities ensure a positive development direction, while the lasting social-economic decline of certain regions can be explained by a lack of innovative local elites or the dominance of the traditional elites (ibid, Benedek, J. 2000).

The nature and structure and the alliance of these political and economic elites may boos the region. They are active as "place marketers", and are striving to maximise their own profits by maintaining certain activities or attracting them into the region, catalysing the existing markets and establishing new markets (Swyngedouw, E. 2000). We should not lose sight of the fact that in spite of the presence of innovative elites, economic upswing may be slowed down by obstacles to the emergence of growth coalitions: individualism, differing collective interests, competition among various elite groups, exclusion of certain social groups, the conflict between the old and the new elites. All these limit the efficiency of exercising authority, fragment local or regional development and result in a weak cohesion.

With the increase in the globalisation of economic relations and an increase in the mobility of capital, severe international competition has emerged between the various regions and localities of the individual countries. In this situation the development priorities of modern states are focused primarily on supporting regions and localities which are competitive at the global level. The competition between the regions is heightened by the advantages resulting from the localisation of management and control functions, the the introduction of certain production structures of the high-technology industry

and services, the immigration of dynamic social groups with high purchasing power capacities, the opportunities for attracting state or international support and investment.

The integration of various regions or settlements into the communication infrastructure becomes of maximum significance and it increases their competitiveness at the global level. Thus, the scope of regional development strategies has spread from the strong and classic factors of development (capital, labour, technology, transportation infrastructure) belonging to the economic sphere to the weak factors such as human capital, the image of the region, the quality of life, etc. and to those that fit into other areas of society: culture and education.

In spite of the above, we cannot disregard the fact that regional and local development is strongly connected with events taking place at national or international levels. The changes in the organisation of global production may have very strong spatial effects, with new winners and losers. The global competition for attracting the limited sources of capital determines the orientation of capital towards the most beneficial locations as well as the reorganisation of the production process, more precisely the spatial distribution of the various economic functions: the control function, the research and development function become concentrated in the large urban regions, and the execution (production) functions into the peripheral regions.

The redistribution of functions and access by certain regions to control and/or research and development functions take place in a new accumulation framework (new historical formations, such as post-Fordism) and it redirects interregional relations and results in new inequalities. In this way each historical formation, each accumulation system can be described by some spatial inequality model and, the economic position of a region or locality in the spatial distribution of labour is determined by its successive roles in the various periods. In other words, in the course of the historical evolution of the regions, various development layers emerge and determine their current national and international economic roles (Peck, J. 2000). In this process the relations of the region with the central powers as well as the mode of its integration into the global system continue to be significant structural forces. Some authors argue for the necessity of the active involvement of the state in the regional development process, and their ideas are grouped around three arguments (Armstrong, H. and Taylor, J. 1993):

– Government control ensures the use of the instruments of regional policy in the most backward regions. The control refers to the model of the regional policy applied. If all the regions preferred the same policies, it would become impossible to decrease regional inequalities. There are three modes which can be used to ensure that public funds are concentrated in the most backward regions: the elaboration of own regional policy, providing regional

policy scopes of authority for the regional and local authorities, maintaining the control of expenditure, by elaborating the support programmes for the regions and localities. The third possibility is presented by the government control of the expenditure of the regions.

– It is a lawful interest of the central power to solve the regional problems, for decreased regional inequalities represent a common interest and this decrease will benefit all the regions of a given economic area.

– Only the central power can ensure coordination of regional policy. Deregulation of economic, political and legislation powers is a key issue. The transfer of certain economic powers can be effected, however, their emphatic transfer will not solve the regional problems.

As mentioned above, taxation policies can be decentralised to a certain extent, but their complete deregulation would result in the appearance of budget deficits and in the accumulation of large public debts in the problematic regions, for their incomes are low, their competitiveness is limited and they do not attract investors. Naturally, the most developed regions would be in better positions, but the effects of regional policy would appear not only in the regions supported, for these are open economies, thus a variety of indirect effects also appear, among which one has already been mentioned: an important part of demand and of the increase in income will seep from the problematic regions into the developed regions.

Consequently, it is necessary *to coordinate the regional policies elaborated by the different players of regional development:* between the state, international organisations and the different levels of public administration (central and local) etc.

Causes and results of the economic depression

Lasting economic convergence is a function of three factors: growth rate, the sustainability of the growth rate and economic equilibrium (*Figure 1*). Those shaping the Hungarian economic policy have disregarded this axiom since the 1970s. The debt spiral of Hungary began at the same time as the oil price explosion of 1974. The continuous deterioration of our terms of trade and the increase in the imports price level (20% annually on average) were compensated by the government by means of continuous borrowing.

Our imbalance kept strengthening between 1985 and 1989 (while our net outstanding total debt increased from 6.5 billion USD to 14.9 billion USD, and gross outstanding total debt increased from 11 billion USD to 20.4 billion USD).

On the basis of the foregoing it can be understood that the domestic economy came to a state close to depression several times in the past decades. The slow stabilisation of the past years has been halted by the economic

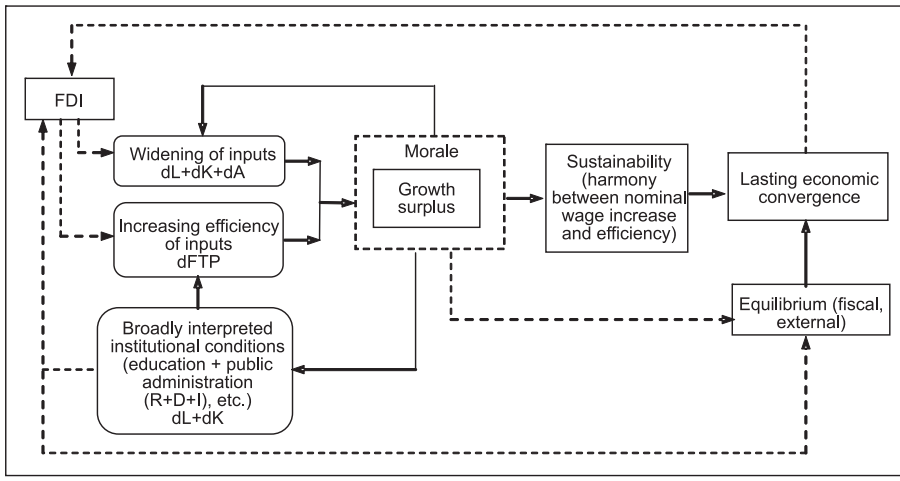

Fig. 1. System of conditions of lasting convergence. *Source:* authors' own work

policy deployed after 2002, and the outstanding total debt of Hungary began to increase again. Our position was further damaged by the financial crisis of 2008. The internal causes of our present situation close to depression can be attributed to the following (with some simplification):

a) Growth deficit, excessive desindustrialisation

The Hungarian economy has been struggling for more than three decades with the problem that the added value of our products and services is small. Since the beginning of the 1980s the nihilism of the Hungarian economic policy has set back employment and the output growth rate in Hungary *(Figure 2*).

The decline of the processing industry has played a significant role in this in the past two decades. The service sector in Hungary has been unable to replace or outdo the employment or the production value of the industrial companies being closed down.

b) Lack of equilibrium

Thus (as shown by the above), the lack of equilibrium in the economy of Hungary is not a new phenomenon. The professional authors dealing with economic policy are debating at most the date of the acceleration of the process.

A lasting lack of equilibrium can be retraced, with some simplification, basically to three causes which are in close interaction with each other: the decreasing competitiveness and exportability of our products, the increase in consumption that has become disconnected from the economic growth rate and the unfavourable changes in exchange rates. The lack of imbalance (in the budget and in the balance of foreign trade) thus arising has resulted in twin deficits.

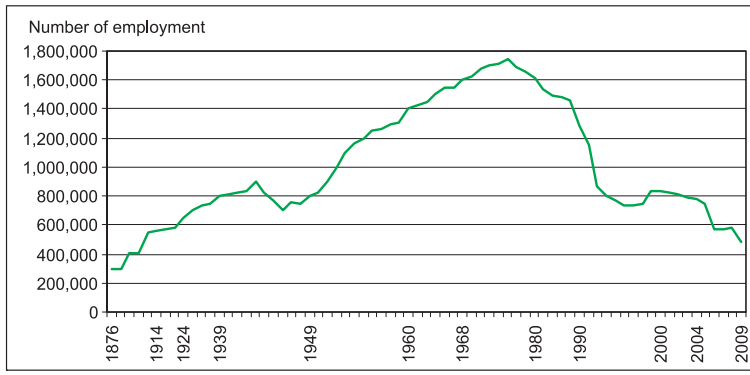

Fig 2. Development of the number of those employment in the Hungarian industry (1876–2009). *Source:* authors' own work

c) Lack of sustainability

The growth path of the Hungarian economy has been hindered in addition to the errors in the economic policy of the past years by the increasing obligations in payments in interest. The high state deficit incurs large redemption burdens, which narrows the range of possibilities for action of the budget *(Figure 3*). Part of the close to 1,100 billion HUF, which is at present used to pay interest, could be spent on productive investments and other productive expenditure (health care, public education, etc.).

While leaving the expenditure unchanged, tax burdens could be considerably reduced (7.5 times as much could be spent on housing support as in 2010, or more than twice as much could be spent on family support as in 2010, or the value added tax burden could be reduced by nearly half, or one third of the interest expenditure could be sufficient to eliminate company tax completely, or personal income tax could be reduced by more than 40%, or the social security contributions of employers and employees could be reduced by more than one third, thus reducing the tax wedge further and stimulating the labour market).

d) Moral affliction

The recognition that sustainable economic growth can hardly be set in motion without stable moral foundations is not a new phenomenon. The problem is not typical to Hungary, but the social and economic consequences of the deterioration of the general conditions are serious in Hungary.[3]

[3] In Europe more than one third of the workers of large companies asked were willing to offer cash or other presents for clinching a deal, one quarter do not trust the ethical behaviour of the company management. Hungary is the second after Russia on grounds of the occurrence of malpractice. In the framework of the survey conducted in 25 countries in Europe, more than 2,300 employees were asked from workers to top executives (For the complete survey, see http://www.ey.com/HU/FIDS.)

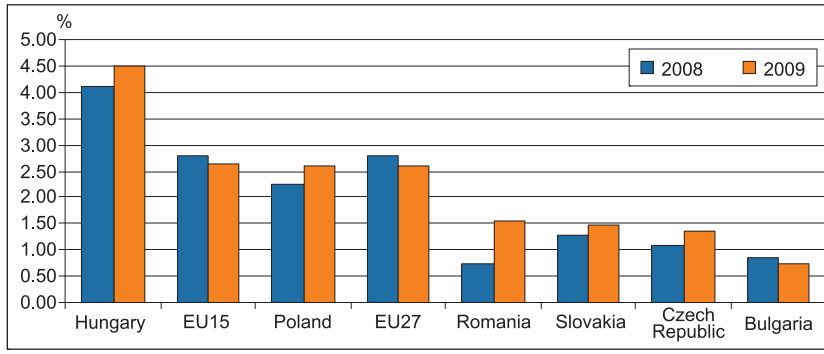

Fig 3. Interest expenditure as percentage of GDP 2008–2009.
Source: EU Commission – AMECO

The above deficiencies result in problems at the levels of both the national economy and of regions (*Figure 4).*

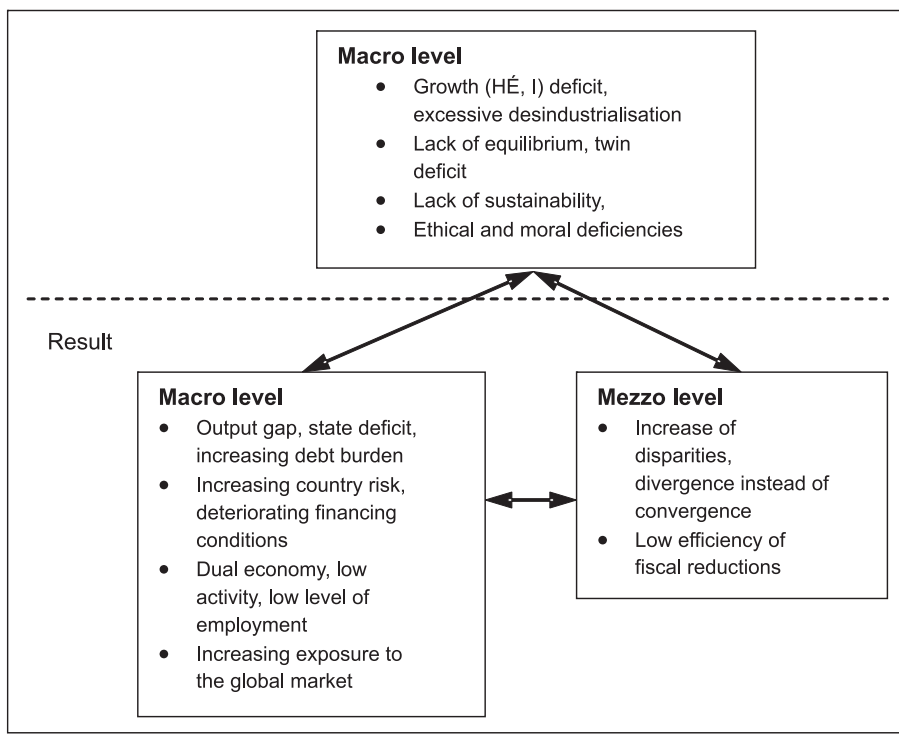

Fig 4. Macro- and sub-national results of depression. *Source:* authors' own work

Consequences of the economic depression

In the following, regional (mezzo-level) problems will be discussed, as flowing from our topic.

a) Increase in disparities, divergence instead of convergence

The transition to the market economy (1989) found the Hungarian society and economy in regionally differing situations. The real and latent regional differences are not new. In the early and mid 1980s, with the deterioration of the competitiveness of the industry, mono-structural regions came into difficult positions (a good 20 years after the processes appearing in Western Europe due to similar causes).

As is well-known, though the party and political management of the times were aware of the problems, it took no steps concerning the merits of the situation (measures taken for the sake of keeping up appearances were born instead).

The change of economic and geopolitical direction increased the regional differences further, for the counties took advantage of the opportunities arising from the changes in room for action in different ways (due to external and internal causes).

The investment and employment dynamics of the regions developed also depending on the sectoral structure of the regions (existence or lack of the driving sectors). Long-term low investment was matched by long-term low employment (although after 2009 the regional distribution of the unemployment rate decreased somewhat, it was thanks much more to higher public employment in the backward regions than to an improvement in the labour market situation (*Figure 5*).

As a result, in the labour market of the transformation starting after 1990, the West-East direction unemployment slope emerged in Hungary; and a more than tenfold difference came into existence between the regions with lower and with higher unemployment rates.[4]

The different output paths of the regions can be explained by the different personal consumption and investment as well as by the external demand. Our empirical investigations show that the volatility of regional output has been higher than the volatility of the output gap of the Hungarian macroeconomy in the past years (*Table 1).* Net exports are primarily responsible for the short-term fluctuation in output *(Figure 6*).

[4] The number of those employed in January 2011 – in the age group 15–74 – was 3,743,000, which exceeded the figure for the previous year by 0.5% (KSH, 2011). The number of unemployed aged 15–74 was 487,000, 8,000 more than a year previously. The unemployment rate of 11.5% was basically identical to that of the previous year (male unemployment rate of 12.0%, and female unemployment rate of 10.9%).

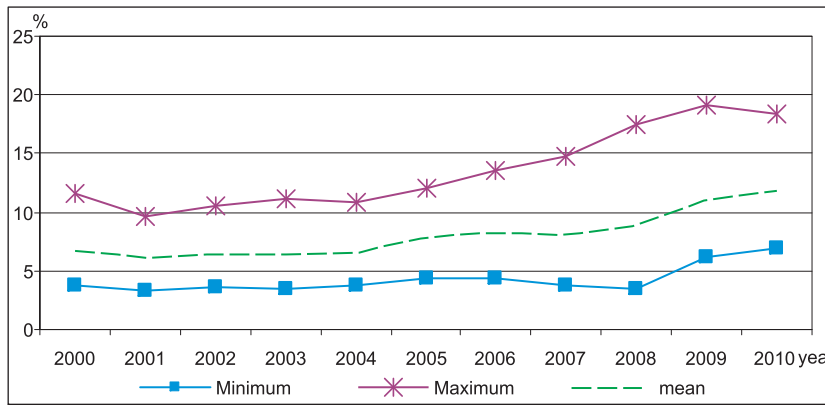

Fig 5. Distribution by county of the unemployment rate in Hungary. *Source:* authors' own work

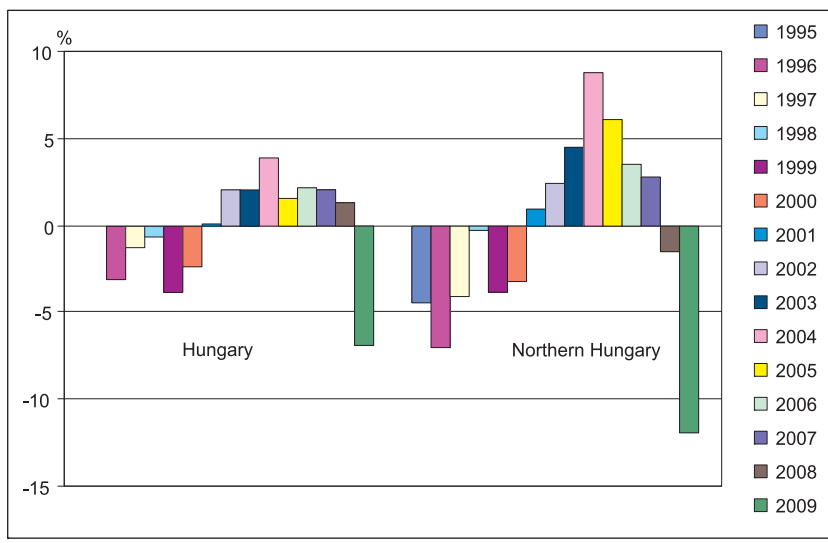

Fig 6. Output gap path. *Source:* authors' own work based on KSH data

This means that the government measures limiting or expanding consumption have a smaller effect influencing the incomes of the population than the effect of monetary policy affecting net exports (assuming unchanged demand). And changes in net exports depend on the economic structure of the given region (to a considerable extent on the cyclical positions of the multinational companies established in the region).

Table 1. Annual changes in output gap, %*

Year	Hungary	Regions						
		Central Hungary	Central Transdanubia	Western Transdanubia	Southern Transdanubia	Northern Hungary	Northern Great Plain	Southern Great Plain
1995	-0.08	15.67	-9.57	-15.26	-8.60	-4.48	-5.58	-6.61
1996	-3.09	3.97	-9.17	-12.20	-7.38	-7.04	-4.78	-4.19
1997	-1.29	1.34	-1.21	-6.99	-3.58	-4.14	-1.34	-1.47
1998	-0.63	-2.29	2.98	0.43	-0.66	-0.31	-0.27	0.83
1999	-3.87	-6.45	-2.96	3.69	017	-3.82	-6.56	-1.83
2000	-2.41	-5.25	0.99	5.12	0.31	-3.22	-4.09	-0.59
2001	0.12	-1.87	2.02	1.21	3.19	0.94	2.91	0.51
2002	2.09	1.89	-2.23	2.73	5.14	2.39	3.65	2.91
2003	2.01	-1.64	2.83	8.48	5.16	4.50	6.51	3.04
2004	3.82	0.07	7.76	7.24	5.43	8.83	6.97	5.93
2005	1.50	0.09	4.67	0.66	1.03	6.03	2.19	1.88
2006	2.13	2.59	1.42	2.74	-0.66	3.55	2.10	0.67
2007	2.00	2.52	3.83	0.66	0.35	2.76	1.13	0.11
2008	1.28	2.35	0.90	0.29	0.48	-1.48	-0.19	1.67
2009	-6.96	-3.61	-11.54	-11.64	-7.56	-11.95	-9.16	-7.71

* The literature offers several definitions for output gap (see P. Kiss, G. and Vadas, G. 2005). Our data use the results of calculation based on the actual potential GDP (GDP_{pot} – [GDP_{act14} / GDP_{act1}] x 100). Source: Authors' own calculations based on KSH data.

b) Low efficiency of fiscal moves

The EU funding appearing in the Hungarian budget (1999: 3.3 billion HUF; 2010: 706.8 billion HUF, data at current price) and expenditure (1999: 14.9 billion HUF; 2010: 804.8 billion HUF, data at current price) increased dynamically between 1999 and 2010.

Although the time period is relatively short (therefore it is hardly possible to draw considerable consequences), it can be clearly seen that the impact of the support arriving in Hungary on increasing the GDP lags behind that of the EU average (*Table 2*).[5]

This has several causes, such as:

– 'brainstorming' in the course the allocation of funds;

– the majority of funding (60–65%) had the impact of increasing one-time demand or improving the community infrastructure and not of improving the economic potential, and within that there was a high rate of 'soft' projects. By contrast, the fundamental objective of the EU cohesion policy is to enable the regions with a low performance to converge. From this it follows

[5] Under the l. National Development Plan in 2004–2006 Hungary had close to 700 billion HUF at its disposal including national co-financing from the structural funds of the European Union, and the funds provided for the realisation of about 20,000 projects in Hungary. The country was able to use almost all (99%) of the said EU funding in the period examined. However, the results is worsened by the fact that the beneficial financial performance incurred excess expenditure from the Hungarian budget of approximately 35 billion HUF. Among the reasons the National Auditing Office highlighted deficiencies in the harmonisation of the major national economic objectives, changes in certain objectives and the fact that while the institutions providing the support concentrated on the as complete as possible use of the funds, they did not pay appropriate attention to their efficiency (due to non-performance of winning projects it was necessary to have reserve developments, which cost more for their rapid production; there were also examples where developments already began had to be funded completely from national means due to suspicions about mismanagement). The convergence of Hungary to the EU average is not progressing as we would have liked it to: the per capita GDP increased only 1% between 2004 and 2009 as a result of EU funding. At regional level the picture is even more disillusioning: while the more developed region of Central Hungary developed considerably, the positions of the six convergence regions did not change significantly, what's more Northern Hungary, Northern and Southern Great Plain and Southern Transdanubia entered the group of the twenty poorest regions of the EU. Examining the environmental, healthcare and certain education investments as well as regional development, it was found that we were coming closer to the EU development level, however, in the short term they did not result in economic growth. The situation was further complicated by the size of the funds and the compartmentalisation of their use, which resulted in the fact that we were only able to achieve partial results even in the realisation of the nicely sounding objectives. It can also be seen that while unemployment was soaring, in the development programs the effect of retaining jobs prevailed. In trainings promoting finding employment, approximately half of those completing the training and only 10% of the disadvantaged found jobs (ÁSZ, 2011).

Table 2. Impact of support on increasing the GDP

Country	GDP/EU * support, %	Contribution to increase the GDP in %		
		1989–1993	1994–1999	2000–2006
Portugal **	~ 3	3.9	4.6	6.1
Spain **	~ 1.5	2.9	3.1	4.2
Greece **	~ 2.6	4.3	5.6	6.1
Ireland **	~ 2.8	n.d.	8.9	8.6
Hungary ***	~ 2.1	–	–	1.2

* AGENDA 2000 (max. 4%). n.d. = no data

** The Role of Fiscal Transfers for Regional Economic Convergence in Europe, No. 1029.2009.

*** Between 2004 and 2006. *Source:* authors' own calculations.

that support is efficient when it generates additional output (compared to the situation without support).

Empirical investigations and analyses prove also in this respect that there are considerable differences (besides positive examples low absorption efficiency is not rare):

– granting the funds took place on the grounds of political interests, significant portions were not used for investments supporting long-term convergence, and thus their impacts are also weak;

– funds are not additive, but have a substitution character. In the majority of cases they appeared not as additional funds but were substituted for former private or government investments (Koczıszky, Gy. 2010).

Our lagging and depressed regions were caught in a trap, for the efficiency of the fiscal moves of the past years (partly due to their soft nature and partly to their level being under the sensitivity threshold) was low, the injections of capital proved insufficient to generate real convergence (that would have required a much stronger fiscal impetus).[6]

Beyond the macro- and mezzo-economic conditions of the real and nominal convergence of the regions in Hungary, the past years were lacking in sectoral and local economic policy harmony as well as in the underlying moral background. Part of the programmes had a virtual impact and the supports were used for 'political show schemes.

An economic policy using a variety of fiscal and monetary instruments exclusively is insufficient for the management of regional problems, for the various shocks affect the counties to different extents.

[6] There are no significant changes in the leading pack or in the lower third of the human development index (compared to 2000). According to the figures for 2009 the positions of Budapest (0.8739), Győr-Moson-Sopron county (0.687) and Fejér county (0.669) are the same, while those of Nógrád county (0.600) and Szabolcs-Szatmár-Bereg county (0.587) deteriorated further somewhat.

Desirable directions of a paradigm change in Hungary

The mainstream of economic policy has been obsessed with growth in the past three decades and this view was mostly adopted by the authors of studies on regional growth and convergence as well. Today, however, it is more and more recognised that economic growth (even in such export-driven economies as Hungary) can be primarily achieved by an increase in productivity and added value and not by obtaining an increasing share of the global markets.[7]

The makers of the Hungarian economic and regional policy are facing a task that is not slight: they have to reduce low employment and the lack in output arising from the deficit of added value simultaneously. This will, however, require a transformation of regional policy, which is part of both territorial policy and of economic policy at the same time, i.e. a genuine change of paradigm. Hungarian regional policy re-visited has to meet several requirements at the same time.

Condition 1: it has to be integrative, that is it has to arrange the elements of sectoral policies referring to regions in a multiplicative way along realistic objectives and funds; it has to meet top-down and bottom-up planning principles simultaneously.

Constructing regional policy is not independent of the objectives, instruments, resources of the sectoral and other cross-sectional policies (budgetary and monetary) or of the national economy-level allocation and re-allocation mechanisms (*Figure 7*).

Condition 2: sustainable and realistic regional growth objectives have to be set. The objectives for a given region have to achieve improvements in economic growth and employment simultaneously.[8]

That is why the empirical literature on convergence devotes more and more attention to conditional (relative) convergence (Barro, R. and Sala-i-Martin, X. 1992; Romer, P.M. 1986), that is instead of 'catching up' it is increasingly the lasting growth rate that is determined by the own equilibrium path that comes to the foreground.

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[7] Economic widening is determined by the fight for a share that can be obtained in the global markets of processed goods. Economies showing external surpluses are generally declared to be 'competitive', taking no account of the development of their economic growth or productivity. Trade balance is regarded as the major index of a country, as if it were only a company. In reality, however, the two have hardly anything to do with each other. Trade balance means simply the difference between investments and domestic savings, or in a more general sense, the difference between aggregate expenditure and total output.

[8] This will probably be a prolonged process without the domestic industry (particularly the processing industry). It must not be forgotten that the high-tech (nano-, bio- etc.) sectors produce high added value, have a low employment capacity and are located in highly concentrated areas even in the developed countries.

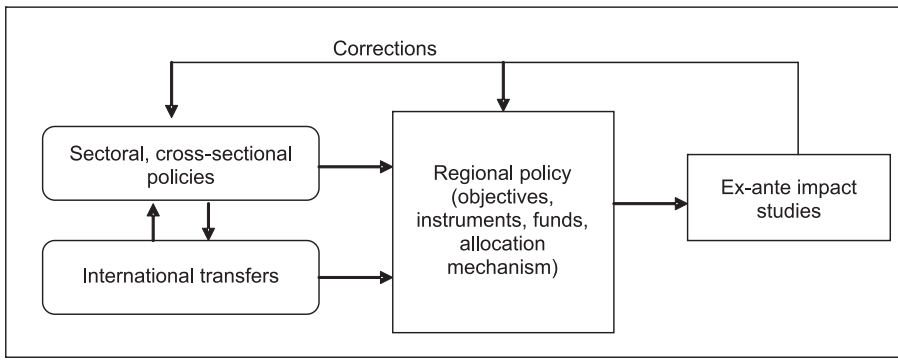

Fig 7. Logical process of constructing regional policy. *Source:* authors' own work

Creating the state of equilibrium at a lower level uses the empirical experience that in peripheral regions the likelihood of producing a high added value is lower due to the lower human potential index, therefore, the increasing employment should be put in the foreground. This can increase the income of the population even in the short term, and local consumption can be increased without raising inflation.

Condition 3: expected consequences of regional policy are to be supported by ex-ante impact studies; its system of indicators and its methodology have to be elaborated.

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Depending on motorways – transport connections of Hungarian industrial parks and their enterprises

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Abstract

After regime change industrial parks (IPs) with different transport conditions played a prominent role in the renewal and the spatial transformation of Hungarian industry. One of the main goals of this study was to reveal a relationship between the main features and the transport connections of IPs and to demonstrate the impacts of transport infrastructures on the site selection of IPs. A further goal was to study the correspondence between the transport connections of IPs and their enterprises. The research was part of OTKA (Hungarian Scientific Research Fund) project (ref no. K 75906) and was based on two surveys (carried out by questionnaires). The first survey was made among IPs in 2010, the second one (based on the previous research) was carried out among enterprises selected considering several aspects in 2011. During the empirical research the strong dependence of IPs on motorways and the significance of transport infrastructure (especially road transport) in site selection of industrial investments became obvious. All those phenomena determine the new spatial pattern of Hungarian industry and may effect its possible transformation in the future.

Keywords: industrial parks, transport, motorways, Hungary

Introduction

After regime change, radical alterations took place in the Hungarian industry which came to pass in a differentiated way both in space and time and led to the dramatic spatial restructuring of the industry (Kiss, É. 2010). The industrial parks (IPs) being new places for the industrial production contributed to that realignment considerably giving sites for dozens of industrial enterprises (Kiss, É. 2001, 2003). The pace of the industrial renewal and the development of the industry and the IPs depended on many factors (e.g. geographical posi-

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tion, the quantity and the quality of labour force, the conditions of living, the development of infrastructure).

Among them, the character and the technical level of transport infrastructure were emphasized in several studies (Tiner, T. 1996, 2003; Abonyi-Palotás, J. 2006; Bodor, É. 2006; Koltai, Z. 2006). There is no doubt about the close context with the geographical location of the new industrial facilities, the spatial structure of the foreign capital investments, the technical level of the transport infrastructure and the directions of the main axes of the transport network. (Eyerly, R.W., Twark, R. and Downing, R.H. 1987; Molnár, L.J. and Skultéty, L. 2000) All the factors mentioned above had positive impacts on the economic development having been investigated by several experts from different aspects (Hardi, T. 2000; Tóth, G. 2002; Lakshmanan, T.R. 2011).

IPs appeared in Hungary in the 1990s and started to grow in number at the end of the decade. 210 industrial parks were registered in 2010 and their area reached nearly 12,000 ha-s. The number of enterprises settled in them reached nearly 4,000 and about 60 percent of their total income (HUF 10,000 billion) derived from export. The estimated number of their employees was about 200,000 persons. On the whole, they play a very important role both in regional and local economy. But there are considerable differences among them looking at their geographical position, spatial concentration, economic structure and their role in economic and regional development. Additional important factors are their positions in transportation network and the regional differences existing in the technical level of transport infrastructure. Both factors have direct influences on profitability.

Goals and method of the research

It was a remarkable goal of the study to reveal a presumptive relationship between the selection of IPs with different features (e.g. the year of their foundation, their area, the character and the number of their investments) and the quality of their transport connections. We also made an attemption to answer the question how the process of site selection of IPs is determined by the level of transport infrastructure of the chosen region and the direction of the main axes of transport network.

We study whether the transport facilities of IPs correspond with the transport connections needed for the settled companies and we also examine the main reasons of the possible discrepancies are. We try to answer to those questions in the frame of Hungarian Scientific Research Fund (OTKA) project titled "Spatial structural impacts of industrial investments and their transport connections". Connecting to that project, several papers have been published revealing partly the theoretical and the methodological premises and partly

the evaluated regional structure and the transport connections of the firms among the top 500 Hungarian companies settled in the IPs (Tiner, T. 2010a, b). However, the comprehensive study of the IPs is still missing.

This study is based basically on the experiences of two empirical surveys carried out in 2010 and 2011. At first we attempted to reveal the main features and the transport connections of IPs then after the typology of IPs, we made a survey among the 23 selected IPs with different transport facilities. In 2010 questionnaires containing 19 questions were sent to all IPs. One half of the questions referred to the main characteristics of IPs (e.g. the year of the foundation, their area, the type of investments, the number of enterprises and employees). The other half of the questions referred to the transport geographical positions and the transport connections of IPs. Only one third of all IPs (72 altogether) answered the questions, which can be considered a fair rate considering the fact that about 10–20 percent of the IPs have been out of operation for several years (Regős, Zs. 2007). (Among the 72 IPs, few ones haven't answered each question.)

In the course of the empirical research carried out in 2011, questionnaires containing 21 questions were filled out by only 70 transport intensive enterprises (12.6 percent) of the selected 23 IPs. The most important questions referred to the number of employees, the transport connections, the input-output freight traffic and the role of transport conditions in site selection. Though the number of polls filled out seemed to be relatively few (very few questionnaires were sent from the South Hungarian Plain region), we consider the polls sent to us suitable for revealing tensions and contradictions hidden in the transport conditions of the IPs and their enterprises investigated. Furthermore, the given answers may contribute to evaluating the role of transportation in site selection and may disclose the differences of development of IPs.

Relationships between industry and transportation

There is no doubt about the statement that there is a strong coherence between the economic (especially industrial) development and transportation (communication). It is also obvious that investing in transport infrastructure have benefits on the economic (industrial) development of a given region. But there is an argument about the rate of that influence and the way of its measurement (Banister, D. and Berechman, Y. 2001). Though attempts have been made to measure it by applying different methods inland and abroad (e.g. shift and share analysis, potential models) (Hardi T. 2000; Tóth, G. 2006, 2008; Lakshmanan, T.R. 2011), there are no sure evidences demonstrating a clear correlation between the development of economy (industry) and transportation. The reason for that is the difficulty to make differences among influences with high variety (e.g.

distributive and generative effects in case of motorways; multiplicative and accelerative influences in case of railways (Erdősi, F. 1991; Tóth, G. 2006).

Distinct interactions existing between the varied branches of transport and the different sectors of economy make it more difficult to evaluate the interdependency between communication and economic growth. For example, the traditional sectors of industry (because of their transport intensive character) depend on the level of transport to a greater extent than the high-tech and knowledge intensive branches of industry. Of them, the technical level of telecommunication may be the more relevant factor.

The interaction existing between transportation and economy (industry) can be considered as a self-strengthening, dynamic process. Consequently, changes taken place in the transport system have an influence on the accessibility of a given region in accordance with their weights and they also determine the direction of development (Erdősi, F. 1991; Femald, J.G. 1999). Nevertheless, several authors emphasize that the development of transport infrastructure as well as the high standard of transport infrastructure are not enough to develop the economy (industry) or a region. An adequate presence of other factors (e.g. highly developed physical and human infrastructure, political or institutional conditions etc.) is also indispensable (Banister, D. and Berechman, Y. 2001; Tóth, G. 2002, 2006).

Of course, it is difficult to figure out which factors and when will play a decisive role in the process mentioned above. It depends on several conditions and it can change from time to time. For example, in the early 2000s besides the level of skills of labour force, local motivations such as local taxes and different types of allowances played an important role (Kiss, É. 2001, 2003). However, during the last years, those facilities have become less relevant mainly because of the deepening economic crisis and due to the fact that self-governments are suffering from the high rate of deficit of the local budget. Hence, in case of establishing IPs, the settlement can not afford to provide any types of allowances or free areas to the investors to attract them to the settlement.

Throughout history, transportation and its branches have taken part in economic (industrial) development, the site selection of industrial constructions and the shaping of the economic space in different ways. It was clearly demonstrated in a historical review made by Knowles, R.D. (2006). For long centuries, water transport was the most favourable and effective form of transportation. Accordingly, the Hungarian settlements which were located near the bigger rivers (e.g. Danube, Tisza) showed a spectacle economic prosperity. Industrial plants with high transport needs were located also along the big rivers. Until the appearance of railways, there had been no considerable or sharp differences in the conditions of road transport of landlocked countries.

The construction, the spatial structure and the nodes of railway network had a positive impetus on economic development and the selection of

industrial sites which resulted in the shaping of industrialized belts developing dynamically along the main railway lines. Consequently, railway transport played a leading role in the process of industrialization, the establishment of new industrial sites and their location close to the railway lines. That process determined and differentiated the economic (industrial) development of the different areas considerably. It means that the impact of transportation on the economic and regional development is of the same age as the development of railway transport (Erdősi, F. 1991).

In the second half of the 19th century large-scale railway constructions began in Hungary resulting in the build-up of more than 6,000 km long national railway network. At the beginning of the 20th century that length of railway lines represented a very good position in the ranking of the European countries. Railways connected not just Hungary having a periphery position at that time but also its certain fringe areas to the European economic circulation (Berend, T.I. and Ránki, Gy. 1978). Railway construction fostered the development of heavy industries (coal and iron ore mining, metallurgy) with great needs of raw materials. Mostly the main railway lines attracted the new industrial sites and became the main axes of economic prosperity creating important economic (industrial) centres (Erdősi, F. 2005).

In the 20th century the technical development of transportation had a revolutionary impact on overland transport. The process of turning from the railway era into the motorway age was more slowly in the Eastern part of Europe than in the Western one and that process accelerated only in the early 1990s after the political regime change. Consequently, at the beginning of the 21st century structural inequalities in the branches of transport between the Western and the post-socialist countries diminished considerably. In 2005 the rate of vans and lorries in full freight transport was higher in Eastern Europe than that in the EU-15 countries (Erdősi, F. 2009). Moreover, in 2010 more than 70 percent of goods were carried by road in Hungary as well.

The evolvement of motorisation age and the sweeping advance of road transport were connected with the extension of public road network and its technical improvement coming from the high activity in main road construction. Between 1990 and 2010 the total length of motorways and motor roads extended from 349 km to 1,272 km. It is of great importance because more and more counties managed to get main roads for rapid transit. While in 1990 eight Hungarian counties (Bács-Kiskun, Fejér, Győr-Moson-Sopron, Heves, Komárom-Esztergom, Pest and Veszprém) had a modest rapid transit network (with a few dozens of km), 20 years later only 4 counties (Békés, Jász-Nagykun-Szolnok, Nógrád, Vas) missed that type of arterial roads. In the middle of 1990s when the volume of foreign direct investments (FDIs) increased, more than 75 percent of motorways and motor roads were still concentrated in 4 counties (Győr-Moson-Sopron, Fejér, Komárom-Esztergom and Pest). Those counties

also enriched in several industrial investments at that time and deriving from that fact they determine the regional structure of the Hungarian industry of today as well (Kiss, É. 2002, 2010).

As opposed to the developed countries, the intensity of research activities focusing on the economy stimulating effects of transport investments (highway constructions) increased in Hungary only in the last decades. It has two objective reasons. Firstly, the rate of expressways represented only a modest rate within the Hungarian main road network before 1989. Secondly, during the socialist era the transport costs had only a marginal influence on site selection criteria of the large industrial investments (Barta, Gy. and Enyedi, Gy. 1981). After regime change, the importance of transport and transport geographical position determining the accessibility increased spectacularly.

Recent investigations have underlined the positive effects of highways constructions on economic and regional development. Motorway M1 is a good example for that statement because it contributed to the establishment of several industrial plants and the shaping of a new spatial structure of industry by attracting foreign capital investments. However, it was confirmed that probably other favourable local endowments also contributed to it (Móricz, S. and Szegedi, Zs. 2008). It seems to be proven by the fact that different sections of the same highway have an effect of a different degree on the economic development. E.g. motorway M7 did not promote the development of the city of Nagykanizsa, but an area of 100 hectares of the new industrial park located at the village of Sormás was occupied by companies within a few months.

The geographical closeness and the running direction of motorways were important factors in decision making, mainly for German and Austrian investors. The American investors preferred establishing large scale industrial plants in deconcentrated form all over the country. In contrast, the investors arriving from German speaking countries focused their activities mainly in the Northern part of Transdanubia (Kiss, É. 2002). It was also manifested that motorways had positive effects on tax revenues, export incomes, the employment, the living conditions and the competitiveness of settlements (Erdősi, F. 2002; Hardi, T. 2000; Kálnoki Kis, S. and Molnár, A. 2003). Different investigations also revealed that 1–2 years after the construction, the positive economic effects of motorways were limited only to a relatively narrow (10–20 km) zone, but later those impacts expanded to a far greater belt (Tóth, G. 2006).

Parallel to the extension of globalisation the transportation as an important branch of the Hungarian economy is being gradually transformed because of the alteration of the processes of production, storage activity and the distribution of goods. On one hand, those processes are creating new demands and requirements for transportation (Berényi, J. 2006), on the other hand the needs for rapid transmission of information are growing spectacularly revaluing the importance of telecommunication. Furthermore, deriving from the

extension of our rapid transit network, its differentiating role in the economic (industrial) and regional development, the site selection and the shaping of industrial areas will be presumably diminished in the following years.

Features of industrial parks and their transport endowments

It is not a simple task to define the concept of 'industrial park'. Several definitions were born to describe it. Generally, it means an area which is prepared for industrial use (Buzás, N. and Lengyel, I. eds. 2002). However, it can also be considered as a property management project with an area suitable for location of concentrated industrial activity (Benko, G. 1992; Kiss, É. 2001). The areas which have won that title can be considered to be "industrial parks" in Hungary. (Our research focuses on those IPs.) The criteria of getting that title has changed compared to previous conditions. Originally, an area selected to economic and/or industrial development and with industrial profile may manage to win the title of IP if it possessed 10 hectare area, 10 firms and minimum 500 employees.

Nowadays the basic area of large-scale constructions operating as IP must be 10 hectares. However, when applying for a project, only 5 firms are needed to be settled in an IP with only 100 employees. Later applicants must be obliged to increase the number of firms settled in the IPs from 5 to 10 and the number of employees from 100 to 500 within five years. Probably those less strict conditions of getting an IP title contributed to the IP's modest occupation during the last years. Additionally, the long-lasting global economic crisis has unfavourable influences on the rate of occupation and the employment of IPs.

Nearly two third of the IPs taking part in a survey made in 2010 were established before the turn of the millennium. A long time has passed since their establishment and thus there has been an opportunity to build up the infrastructure of their communication and strengthen their connections of transportation. The rate of the IPs established between 2001 and 2005 and after 2005 are nearly the same. The answers given by 72 IP-respondents reflect clearly their distribution by the years of their establishment. Nearly half of them were established in 1997 and 1998 so they belong to the group of older IPs.

Among the respondents, we can discover Győr Industrial Park, the oldest one in Hungary (and in East Central Europe too), which was established in 1991. But officially it has been operating only since 1997 when the Industrial Park Programme was introduced at a governmental level. There is a constant increase in the number of IPs in Hungary (in 2012 their number was 217) and their regional distribution became more even. But here has to remark that even in the early 2000s, there was not a single Hungarian settlement without an IP within its 30 km radius (Nikodémus, A. 2002) *(Figure 1*).

According to the character of investments, IPs can be categorized into three main types: greenfield, brownfield and mixed ones.

a) Initially, the IPs were established as *greenfield* investments, because that type of construction was faster, cheaper and easier to locate than the brownfield ones (Kıss, É. 2001). Those IPs were popular among enterprises settled mainly because their areas and the types of their uses could be changed flexibly and they could be enlarged later. Greenfield IPs show greater regional density in Northern Transdanubia, in the agglomeration zone of Budapest and in the middle part of the Hungarian Great Plain (Alföld) Region.

b) Brownfield IPs were located mainly in previous traditional industrial areas and in the sites of previous factories as the most frequent form of their recycling. A few of them were established in the territory of a former military base. In a broad sense, every non-greenfield IP must be considered as a type of IP which has brownfield character. Most brownfield IPs are connected to former traditional industrial belts developed in the mountainous regions rich in mineral and energy resources.

c) In recent years more and more *mixed* IPs have been established because brownfield ones have expanded their territories with greenfield areas where their local capabilities made those enlargements possible *(Figure 1).*

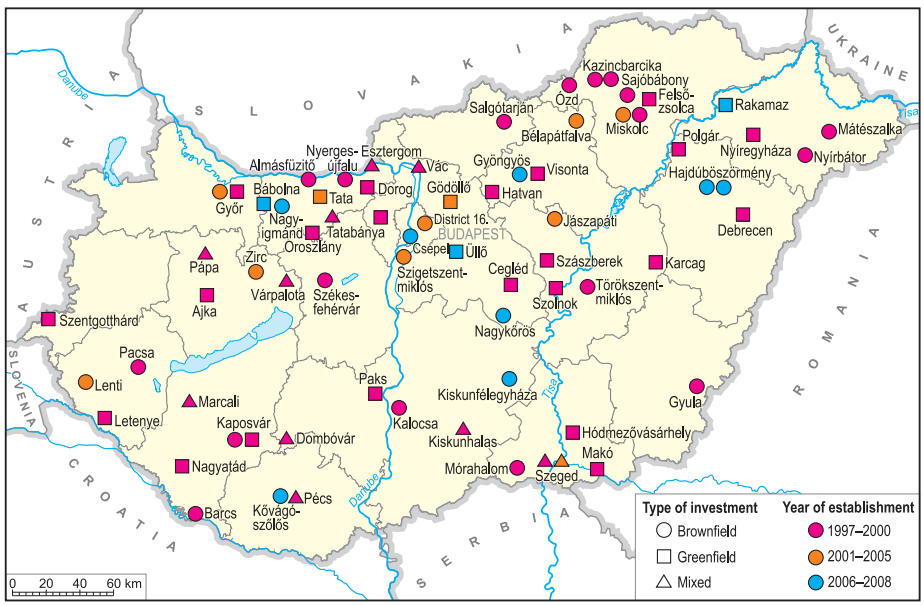

Fig. 1. Regional pattern of IPs by the time period of establishment and the character of investment, 2010. *Source:* Survey carried out in 2010.

28 of 72 investigated IPs were the result of greenfield investments, further 32 IPs were brownfield ones, the rest of them belonged to mixed type. It is very important to deal with the types of investments, because they have different impacts on the transport connections of the firms settled in (the area of IPs). Greenfield investments offer optimal logistics and financial conditions for building up transport and other service infrastructure (e.g. places for parking) in the IPs even in the first phase of their constructions. In contrast, brownfield IPs have to face with more limited possibilities and they have less freedom to form their already existing transport infrastructure. The firms settled in the IPs must take into consideration the previously constructed transport infrastructure, the quality of which is generally far from the modern and high-tech ones built up in the greenfield IPs. Presumably, transport possibilities and facilities available in brownfield IPs determine the type of enterprises settled in (*Photos 1* and *2*).

The areas of IPs differ in size considerably and with their development they often change in time. Of course, those changes have an effect on the transport capabilities of the IPs. The majority (69 percent) of the investigated IPs have territories under 50 hectares. Probably, that value derives from their estimated optimal size which is between 30 and 50 hectares (Rakusz, L. 2000).

Photo 1. Part of the Csepel brownfield industrial park (Photo by Kiss, É.)

Photo 2. Part of the greenfield Győr idustrial park
(Photo by Kıss, É.)

In 2010 the size of 17 IPs exceeded 100 hectares, while in the early 2000s that number was 23. Consequently, during the last decade the number of larger IPs decreased considerably. Though a few of them are greenfield investments (e.g. Győr IP, Szentgotthárd IP and Nyíregyháza IP), but their majority belong to brownfield and mixed type ones.

There may be considerable differences in the number of entrepreneurs settled in and also their employees both within an IP and among the IPs. Generally, IPs with few entrepreneurs have less employees as well. In 2010 78,315 persons were employed at more than 1,800 firms in the 72 IPs altogether. It equals to 25 enterprises and 1,088 employees per IP as an average. Actually, the values of the latter indicator are under the average in case of two third of IPs, so the real number of their employees is much smaller than the average.

Several IPs with less than 10 enterprises operated in the Hungarian Great Plain (e.g. in Jászapáti, Törökszentmiklós, Makó and Kiskunfélegyháza IPs) and in Transdanubia (e.g. in Nagyatád, Barcs and Zirc IPs). However, more than 100 firms belonged to only two brownfield IPs (Ózd IP and Budapest District 16 IP). Most workers are employed not only in those two IPs but in five additional ones (Esztergom IP – 7,750 persons; Tatabánya IP – 5,600 persons;

Győr IP – 4,554 persons; Hatvan IP – 4,247 persons and Nyíregyháza IP – 4,000 persons). The smallest number of employees worked in Almásfüzitő IP (30 persons), Barcs IP and Polgár IP (40–40 persons).

In 61 percent of IPs the occupation of available areas was more than 50 percent which seems to be a very favourable value. IPs with occupation rate of 25–50 percent operate mainly in the Great Plain region. It means that the major part of their area is in permanent use. Less than 25 percent ratio occurs only in case of a few newly (a few years ago) established IPs in North Transdanubia and to the North Hungary. The largest differences between IPs with high and low occupation rates are demonstrated along the Miskolc–Kaposvár line with NE–SW direction. The majority of IPs with high occupation rates is located North of that hypothetical line. The main part of IPs with low occupation rates is concentrated on the South of that line (especially in the Great Plain region).

It must also be emphasized that the occupancy itself doesn't reflect neither the profile and the profitability of located firms nor the utilization rate of IPs. Starting from this statement, there should be remarkable differences between the IPs settled in the Northern parts of the Transdanubian region and the ones settled in the Southern parts in spite of the fact that the occupancy rates are high in both regions. Different transport capabilities have undoubtedly had an influence on it.

The majority of IPs are settled along the motorways. Nearly half of them are located closer than 10 km to those arteries. So the closeness of motorways is a basic condition of the existence for the operation of IPs. Several investigations have confirmed that areas having good motorway connections were put „on the map" of foreign investors and this way they were doomed to development (Bartha, A. and Klauber, M. 2000). The need for accessibility via motorway is various in the different branches of economy. Transport capability is very important especially for the processing industry and mainly for machinery (automotive industry, electronics), because many of their inland factories being subsidiaries of transnational companies are in close contact with the global networks of production.

A close correlation can be detected between the routes of motorways and the spatial distribution of IPs, mainly in the agglomeration zone of Budapest and along the motorways. E.g. along the M1 on Northern Transdanubia, M3 in Northern Hungary and Northern Hungarian Plain, M5 in Southern Hungarian Plain, M6 in Southern Transdanubia and finally along M7 in Central Transdanubia NUTS2 regions. Closeness of motorway is the dominant element of typisation in case of IPs by their position in transportation network (*Figure 2.* A, B, C).

The existence of IPs close to M1 motorway (e.g. Nagyigmánd, Almásfüzitő, Nyergesújfalu IP) with low rate of occupation confirms the hypothesis that additional factors (e.g. favourable demographic structure, skilled

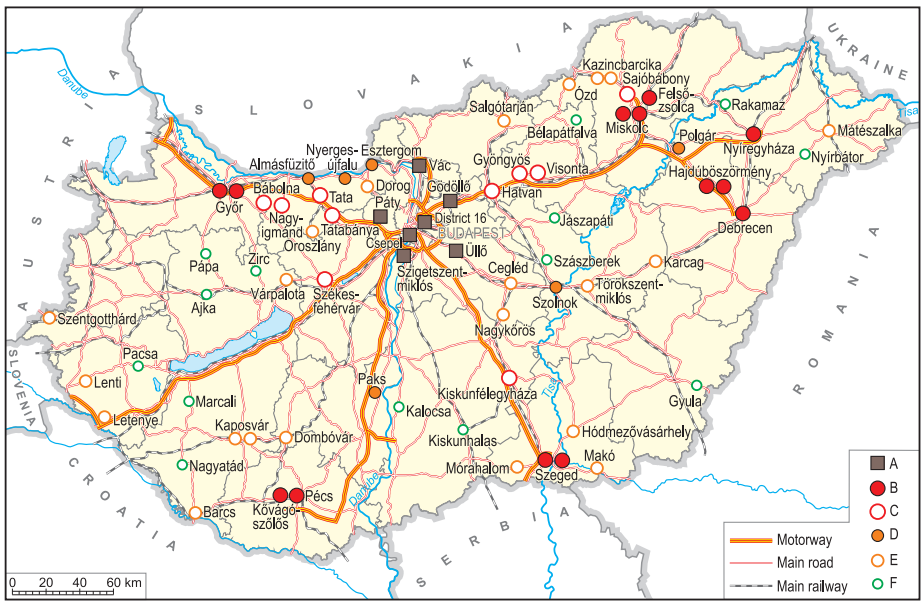

Fig 2. Types of IPs by their position in transportation network, 2010. A = IP in multimodal transport location connecting to superhub (Budapest); B = IP situated along main arteries near important river port and/or airport; C = IP situated along main arteries far from important river port and/or airport; D = IP situated along secondary arteries near important river port and/or airport; E = IP situated along secondary arteries far from important river port and/or airport; F = IP situated along tertiary arterial position. *Source:* Survey carried out in 2010.

labour power) are also necessary to enhance the positive effects of a motorway. Probably, those additional factors contributed to a relatively high occupation rate even in IPs (e.g. Videoton IP in Kaposvár, Gyula IP, Barcs IP) being more than 50 km away from the nearest motorway. Since the majority of the IPs mentioned above are brownfield investments, their connection to motorways is not a decisive factor for their activities, as probably only few enterprises settled in the IPs have close connections to global economy.

Only Gyula IP (Békés county) out of the surveyed 72 IPs informed us about the fact that its distance from the nearest motorway was more than 100 km. Obviously, it is not a coincidence, because transport geographical position of Békés county is very unfavourable. Even these days there are no motorways in Békés county.

Their closeness to primary and secondary roads contributes to the relatively good road accessibility of IPs (*Figure 2.* D, E, F). 19 IPs revealed that their distance from the nearest primary or secondary roads is more than 10 km.

Their regional distribution generally follows the structure of periphery areas of the country, namely they can be found on the outer peripheries along the border regions (e.g. the Barcs IP, Letenye IP) and on inner peripheries along the county borders (Bélapátfalva IP, Makó IP, Szászberek IP). In other words, IPs with poor road accessibility are situated out of the North Transdanubia region which has the most developed industry. North Transdanubia is a pioneer in the industrial innovation and its integration into the global economy is the most advanced).

The connection of IPs to *railway lines* – except Letenye IP, Várpalota IP and Visonta IP – seems to be favourable, because the majority of them can reach railway lines in(side) their settlement/location and within a few km distance. Mainly double- and single-track electrified main railway lines are available for IPs. However, the utilization of that advantageous condition is far from the optimal, because of the lower attraction of freight and passenger rail transport. Consequently, railway connections do not play an essential role neither in site selection of IPs and their enterprises nor in their further development. Generally, Hungarian experiences are in accord with the international trends and they follow them permanently *(Figure 2).*

Looking at the *water transport,* we can state that most of the IPs are in unfavourable position, because the majority of their sites are far from the ports of our navigable rivers. IPs situating in hilly regions with traditional industries are in the worst position. One sixth of the surveyed IPs announced that the nearest river ports are less than 20 km away from them and they are situated along the Danube and the Tisza River.

The water transport connections are also determined by the routes of the navigable rivers. Consequently, only the IPs situated close to water routes can enjoy the benefits of that situation. It often occurs that water transport is not utilized by IPs despite the availability of water transportation. On the other hand, being without direct water transport accessibility doesn't necessarily mean a handicapped situation, because among others, water transport connections might not be important for the companies of the IPs. Survey made among the firms of IPs served to confirm or deny of that preconception (*Figure* 2 B, D.)

Based on the accessibility of their *air transport* connections, IPs can be divided into two groups. The first one involves the IPs situated relatively close (within 20 km) to the nearest airport, the second one consists of IPs situated farther than 50 km. Latter ones can be found mainly in Northern Hungary region, which can be explained with the low airport density of the region owing to its hilly relief. IPs with the best airborne traffic connections are settled in towns, especially in county seats (e.g. in Debrecen, Győr, Pécs, Szeged). The towns mentioned above have old traditions of air transport and they have had their own airports for decades.

From the closeness of IPs to the various elements of transportation networks, we can conclude which elements could play a role in their site selection and in what measure. Answers given to the questions focusing on that problem have also confirmed that high quality elements (highways, primary and secondary main roads) of public road network available in different measure are key transport factors for IPs in site selections. More than 40 out of 72 IPs have revealed that elements of public road and railway connections mentioned above have had the greatest influence on their site selection *(Table 1).*

Table 1. The importance of different transport elements in the site selection of industrial parks, 2010

Denomination of different transport elements	Indicated by industrial parks*	
	Number	%
Motorways	43	59.7
Main roads	41	56.9
Railway lines with different quality	42	58.3
Railway terminals for freight traffic	16	22.2
Water transport connections (river ports)	9	12.5
Air transport connections (airports)	11	15.3
Other elements of transport	4	5.6
Transport connections were not important	7	9.7

*An industrial park might indicate more transport elements. *Source*: Survey carried out in 2010

Mostly road transport and rarely railway transport were in dominant position in case of IPs where waterborne and airborne traffic connections were also relevant factors in site selection. Only four IPs (Szigetszentmiklós IP, Rába IP in Győr, Kalocsa IP and Üllő IP) announced that each form of transport connections had influenced their site selections. All those IPs are settled along the Danube. Ten percent of the IPs answered to the question of the inquiry/survey that not a single transport factor had influenced their site selections *(Table 2).*

IPs classified into various types according to the role of different elements of transportation network in site selection do not form special territorial groups. Essentially, the categories have not spatial specific appearances, they don't favour certain regions.

On the whole, the investigation among IPs revealed partly the importance of road transport and partly the fact that the IPs generally have a favourable transport geographical position. Motorways have played prominent role in site selection for IPs from the middle of 1990s and nowadays their differentiating function still has a great impact on the structure of the Hungarian industry.

Table 2. Groups of industrial parks by different transport connections in their site selection, 2010

Denomination of transport connections	Names of industrial parks with settlements
A) Overland transport network connections (51 IPs)	
Exclusively motorway (5 IPs)	Bábolna, Kazincbarcika (Borsodchem IP), Miskolc, Nagykőrös, Páty
Motorway and main road (6 IPs)	Debrecen, Felsőzsolca, Gödöllő, Makó, Mórahalom, Oroszlány
Exclusively main road (10 IPs)	Ajka, Cegléd, Kaposvár (Videoton IP), Nagyatád, Paks, Pápa, Rakamaz, Salgótarján, Szeged (Délép IP), Törökszentmiklós (Videoton IP)
Motorway, main road and railway (9 IPs)	Győr, Hajdúböszörmény (Eastern IP, Western IP), Hatvan, Mátészalka, Nyergesújfalu, Nyírbátor, Sajóbábony , Várpalota
Motorway and railway (9 IPs)	Budapest (district 16 IP), Gyöngyös, Kiskunfélegyháza, Nagyigmánd, Nyíregyháza, Pécs-Kővágószőlős, Polgár, Székesfehérvár, Visonta
Main road and railway (10 IPs)	Barcs, Dorog, Esztergom, Gyula, Jászapáti, Karcag, Pacsa, Ózd, Vác, Zirc
Exclusively railway (2 IPs))	Kiskunhalas, Lenti
B) Overland and water transport network connections (4 IPs)	
Public road and waterway (1 IP)	Szászberek
Public road, waterway and railway (3 IPs)	Almásfüzitő, Budapest (Csepel IP), Szolnok
C) Overland and air transport network connections (5 IPs)	
Public road and air transport (2 IPs)	Kazincbarcika, Tata
Public road, railway and air (3 IPs)	Kaposvár (Eastern IP), Szentgotthárd, Tatabánya (Western IP)
D) Overland, water and air transport network connections (4 IPs)	Győr (Rába IP), Kalocsa, Szigetszentmiklós, Üllő
E) Transport connections were not important in site selection (7 IPs)	Bélapátfalva, Dombóvár, Hódmezővásárhely, Marcali, Miskolc (DIGÉP IP), Pécs, Szeged (Kálvária IP)

Source: Based on the survey carried out in 2010.

Few previous results of research on transport connections of companies in selected IPs

In 2011 23 IPs with balanced regional structure were chosen for further investigations from among IPs classified into different groups in 2010. 83 so-called "transport intensive" companies situated in those 23 IPs were selected in a way that each NUTS 2 region of the country was represented by 3–4 IPs. The suitable level of transport connections is of great importance for the firms aiming rapid access both to domestic and international markets.

The investigation of transport intensive firms was made by questionnaires. The most important questions referred to the year of foundation, the profile of the firm, the ownership structure, the number of employees, the transport position of IPs inside the transportation network, the network links and the accessibility of network nodes for IPs within the transportation system, the level and the condition of transport infrastructure inside the IPs, the reasons for settling in the IPs, the volume and the seasonal waves of input-output flow of production of the firms, the place of origin of the input and the destination of the output. Though the data of investigation are still under processing, the first achievements of the research are displayed below.

1. Referring to their transport position, the majority (64.2 percent) of the surveyed companies revealed that they had favourable connection possibilities to motorways. 38.4 percent of them responded that they had accessibilities to main railway lines, but only few of them mentioned a neighbouring airport or a river port as important transport factors for their activities. The distribution of responses above seems to verify the hypothesis that transport intensive firms locate their activities in IPs with favourable highway and good railway accessibilities along the East-West international transport axes of northern third of Hungary (Nyíregyháza–Miskolc–Budapest–Győr line) *(Figure 3).*

2. The favourable position in transportation network seemed extremely important or very important for 68.4 percent of the investigated enterprises as a factor of location. In case of enterprises with foreign interest that rate reached 77.8 percent. From among the pathways of branches of transport, 61.4 percent of the companies chose the motorways, additional 25.1 percent mentioned the main roads as essential elements of transport infrastructure needed for their operation. The closeness of railway lines as a factor of location was important only for 13.2 percent of the companies and the accessibility for a neighbouring airport was mentioned merely by 3.6 percent of the investigated firms while the closeness of river ports proved to be a neutral factor of location for the interviewed companies. The survey underlined that transport intensive firms settled in IPs refuse to use railway transport mainly because of its organizational inflexibility, the low level of its transport logistic services, furthermore, for its relatively high freight rates and missing rebates.

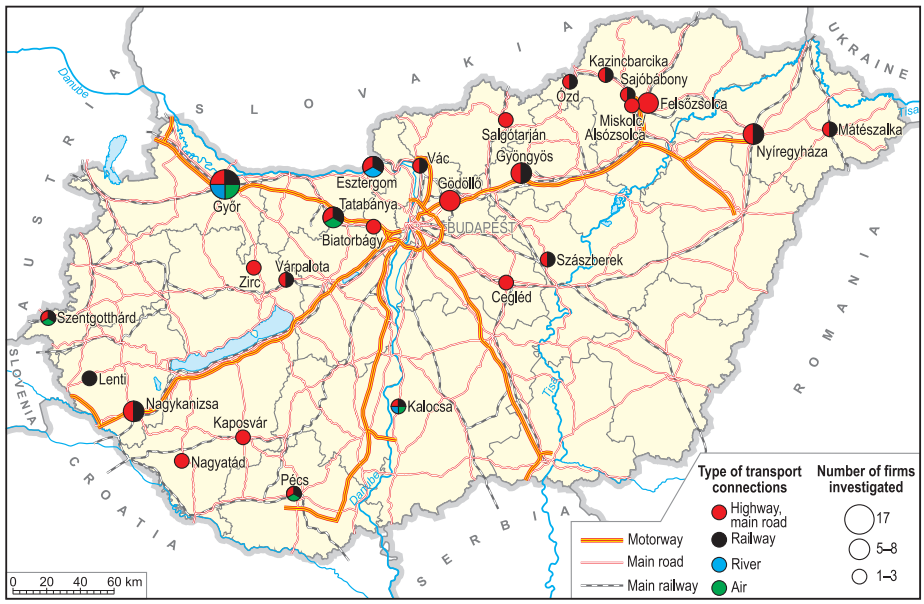

Fig 3. Types of transport intensive enterprises in IPs by their connection opportunities to different branches of transport, 2011. *Source:* Survey carried out in 2010.

3. The regional distribution of mainly transport intensive companies demonstrates a considerable rate of concentration in Western Transdanubia (27 firms) and Northern Hungary (17 firms). Only a dozen of them can be found in Central Transdanubia and 11 of them were settled in Central Hungary. Merely 7 firms represent the Northern Great Plain region and only a few of them moved into some of the IPs of Southern Transdanubia and Southern Great Plain region. This phenomenon demonstrates the industrial character of the investigated companies, their traditions in making all kinds of industrial products mainly for export and the relatively high technical level of the built-up infrastructure of IPs.

4. Considering the years of their foundation, the companies show a relatively balanced temporal distribution between 1985 and 2008. Slightly more than half of the firms (52 percent) were founded in the 1990s, 43 percent of them were established between 2000 and 2008 and merely 5 percent of the them started their activities before the regime change. Nearly 40 percent of the surveyed transport intensive enterprises (35 companies) are owned by international corporations or joint ventures with foreign majority. Being the largest employers, their proportion in the total volume of employees reached 78 percent out of the 83 surveyed companies. It is a general experience that

foreign companies gave the majority of industrial productions, the incomes and profits of more branches of economies in Eastern European countries (Kıss, É. 2010).

5. Based on the collected data for the number of employees, it can be stated that the 83 investigated firms had increased the number of their employees from 4,249 to 13,693 (3.2-fold increase) since their foundation. Among them foreign (transnational) companies and joint ventures with foreign majorities increased their staff number from 3,353 to 9,813 (by nearly 6,500 persons) and purely domestic companies increased the number of their employees from 896 to 3,880 (by only 3,000 persons). Generally, the size of foreign companies are much larger than the Hungarian ones, because they have enough financial resources to wide their productivity in abroad. From their establishment the top 6 companies with the highest increase in staff number (above 500) were the Hungarian Suzuki Co, Esztergom IP (+2,100 employees), Coloplast Hungary Ltd, Tatabánya IP (+1,253), Videoton Elektro-Plast Co, Kaposvár IP (+920), Horvath Transport Ltd, Gyöngyös IP (+670) and ACC Glass Hungary Ltd, Tatabánya IP (+501).

It's an important remark that the long-term prosperity of transport-intensive enterprises essentially depends on the volumes of regular FDIs accumulating in different branches of the Hungarian economy. The volume and the rate of the accumulation of the national capital are far behind the desired level and serve only a few branches of the Hungarian economy (e.g. energy sector, special branches of agriculture).

6. Wholly or partly foreign owned enterprises represented in the sample appeared in Hungary after 1989 and started their economic activities in different periods of the last decades. Austrian companies were among the first ones which launched their subsidiaries in Hungary. More than 75 percent of them were established in Hungary before the year of 2000. Two third of the German owned companies and the German-Hungarian joint ventures were founded during the period of 1998–2002. American (USA) firms appeared in the early 1990s, but additional non-European companies (eg. from Japan, Israel, New-Zealand) started their activities in IPs only after 2001. During the early 2000s Hungary's *preparation* for *accession* to the *European Union was accelerated which* contributed to an increase in the number of companies in the Hungarian IPs (*Figure 4*).

7. Spatial "density" of companies with foreign interests surveyed above demonstrates the dominancy of larger Hungarian towns easily accessible by motorways M1 (Győr, Tatabánya) and M3 (Gyöngyös, Nyíregyháza). Still in the first years of new economic regime they have a considerable advantage in the economic competition for home and foreign markets. The huge economic attraction of Budapest and its agglomeration zone also inspired foreign companies (e.g. the Israeli TEVA in Gödöllő) to choose their sites in Central Hungary offering transport infrastructure of highest quality. Hungary as a landlocked

Fig 4. Establishment of transport intensive enterprises with foreign interest between 1989 and 2008 (according to the nationality of majority owners). *Source:* Survey carried out in 2010.

country with its relatively sparse river ports, underdeveloped river transport and airport infrastructure is rather unable to meet the high technical and logistical requirements of international companies. Only Budapest and larger towns situated along the main transportation axes of road and railway transport are favoured by multinational companies (e.g. Audi in Győr, Coloplast in Tatabánya, Suzuki in Esztergom, Lego and Electrolux in Nyíregyháza etc.). The spatial concentration of foreign enterprises mentioned above also confirms that (*Figure 5).*

8. The investigation outlined that in case of 26.3 percent of transport intensive enterprises both the place of origin of inputs and the destination of outputs were situated in Hungary. More than one fourth of the firms above have not entered the international market yet, moreover, 90 percent of them are wholly domestic owned.

Two third of them are located in Northern Hungary, in the Southern part of Transdanubia and in the Hungarian Great Plain. 63.1 percent of the firms importing goods and services both from Hungary and from other member states of the European Union are foreign-owned companies or joint ventures with mainly foreign interest. Nearly 72 percent of them operate in IPs situated along the primary transport axis of Gyöngyös–Budapest–Győr line.

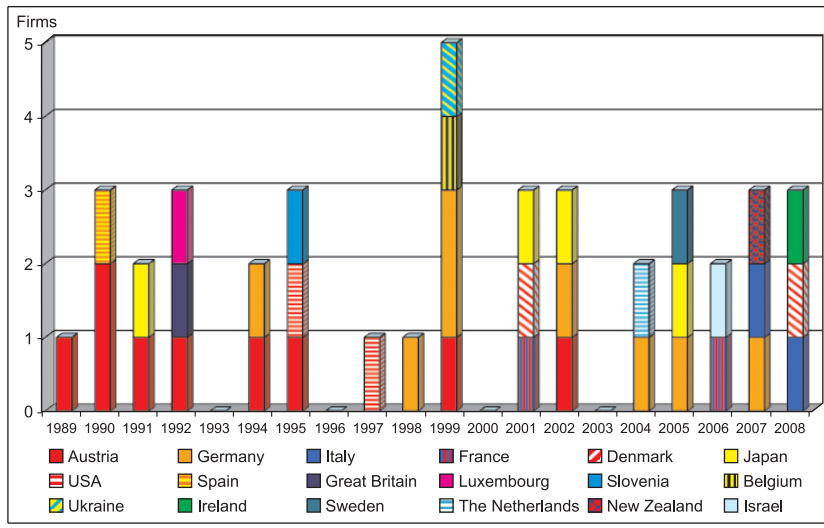

Fig 5. Regional pattern of transport intensive companies with foreign interest, 2011 (according to the nationality of majority owners and the numbers of employees). *Source:* Survey carried out in 2010.

Finally, it is also important to mention that several transport intensive companies are unsatisfied with the transport infrastructure near the IPs. Their problems have both quantitative and qualitative characters:

– Exit lanes of motorways are relatively far from the entrances of many IPs which shows that the transport interests of firms were not taken into consideration when deciding where to build exit lanes.

– Public roads connecting arterial roads with IPs are often narrow and deteriorated because of huge lorry traffic. The bad physical condition of roads causes strong vibration, e.g. fragile commodities often get damaged.

– Transversal roads crossing settlements of Budapest agglomeration zone are permanently congested which leads to bad road accessibility conditions of the IPs of the agglomeration belt.

– The quality of inner road network of several industrial parks is insufficient because those roads were built with low expenses. There are neither pavements nor bicycle roads in several industrial parks which has led to an increased risk of traffic accident.

– It's also a crucial problem that a lot of IPs have bad public transport accessibilities. From among the surveyed employees only the car owners and the daily commuters carried by company buses to their workplaces were satisfied with the conditions of daily travel.

Summary

Empirical studies demonstrated clearly that transport infrastructure had played an important role in site selection of IPs and their enterprises. It was also confirmed that their main attraction factors were the good conditions for road transport, especially the routes of motorways. However, it is an unfavourable fact that IPs don't utilise other available modes of transport for different reasons. Preliminary studies showed that the transport needs for IPs and their companies corresponded with each other, however, some problems had also emerged which predict the main directions of developments.

A close correlation was found between the main indicators of IPs (the years of establishment, the areas of IPs, the characters of investments, the rates of occupation etc.) and the quality of their transport connections. In general, it can be stated that the highest occupation rate can be found in Greenfield IPs established before the turn of the millennium thanks to their favourable transport geographical positions. The majority of those IPs and their enterprises are concentrated in Northern Transdanubia.

Consequently, the sites of enterprises and their IPs depend on the motorways to a great extent. That fact has a decisive impact on the regional pattern of the Hungarian industry and its shaping effect on the regional structure of industry must be taken into consideration as well.

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Geographical Research Institute, Hungarian Academy of Sciences, Budapest, 2009

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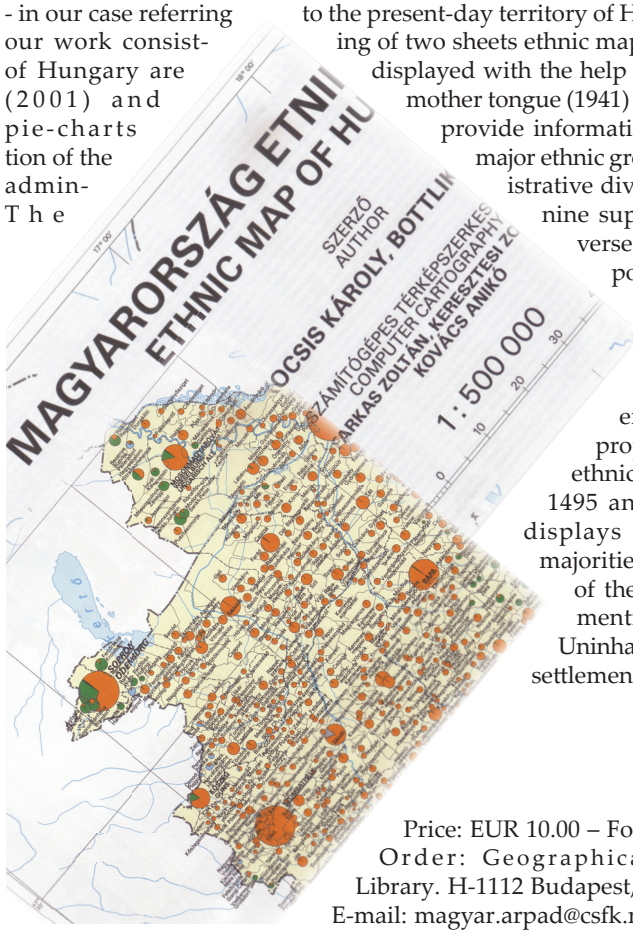

The nine supplementary maps on the reverse show the lingual-ethnic composition of the present-day territory of Hungary in 1495, 1715, 1784, 1880, 1910, 1930, 1941, 1990 and 2001 respectively. The chart here explores the quantitative and proportional changes of the main ethnic groups' population between 1495 and 2001. The series of maps displays absolute or relative ethnic majorities only in the inhabited areas of the settlements which had been mentioned in the source referred. Uninhabited areas with no permanent settlements are shown as blank spots.

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The effects of global economic crisis in Hungary

Tamás EGEDY[1]

Abstract

In recent years it has become apparent that the global crisis affects not only the core economic zones, but it also put pressure on individual nation-states to rethink their economic policies. The recession has brought about great waves of transformation especially in the European Union. The case of Greece, Italy, Ireland and Spain shows that the future of the political and economic union and the euro zone may greatly depend on proper local management of the crisis. Smaller countries with open economy like Hungary face particularly difficult situation in Europe, therefore, they should elaborate tailored policies to cope with the consequences of global economic crisis. This paper first briefly outlines the causes of global economic crisis, then it focuses on the most important socio-economic outcomes in Hungary. The paper pays special attention to the changes having taken place in the national economy, the labour market and their effects on the situation of households.

Keywords: global crisis, economic environment, labour market, credit crisis in Hungary

Introduction

According to the European Commission, the financial crisis which has hit the global economy since the summer of 2007 is without precedent in post-war history. From then onward the EU economy entered the steepest down-turn since the 1930s. Many experts investigated what in fact could lead to the global economic crisis. Partnoy, F. (2003), Akerlof, G. and Shiller R. (2009) pointed out that speculation on the financial markets were the main reason for the crisis. Bookstaber, R. (2007) and Authers, J. (2010), however, emphasised that problems caused by the crisis lie, on the one hand, both in institutional structures and lack of control, weaknesses of state institutions on the banking system and, on the other hand, in wide-spread misconception that such

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long-established, large institutions do not fall off the market. Posner, V. (2010) concluded, that the previously unquestioned and seemingly immaculate institutions can also fail.

According to many economists (e.g. Rajan, R. 2010) the crisis actually neutralises global economic counterbalances in economy and trade between the U.S. and China, the two important economic core areas. The intertwining of the two power centres shows that nearly a quarter of the U.S. government bonds are presently in the hands of China and it is the most important U.S. export market. Some economic experts expeditiously note that the U.S. economy has been financed by China for many years (Kiss, J.L. 2009).

Other theories explain the background of the crisis on a cultural and national basis: German and French academics consider the crisis basically as an Anglo-Saxon problem, and they blame the stock exchange speculations taking place on the Wall Street and in the City of London for the crisis. (This attitude was less widespread in Chinese media, knowing the multiple mergers of the U.S. and Chinese economies). Stuttaford, A. (2010) also pointed out that the Greek national bankruptcy can also be traced back to the specific national mentality and consumption patterns as the global crisis to the US-American ones. According to Bernek, Á. (2009) it is no coincidence that the global crisis broke out in the United States. This can primarily be explained by the economic weight of the United States e.g. two thirds of global R&D expenditures comes from the United States, it is the largest FDI exporter and importer, and 180 out of the world's 500 largest companies are located there respectively. The stock market in New York continues to place the world-leading capitalist stock exchange and the USD's role is widely known in international speculations.

No doubt, electronic (virtual) markets, the "paper economy" proliferation and a parallel strengthening of deregulation had all determining role in the global crisis. Control and restrictive role of state institutions weakened what led to speculative financial transactions and to the spread of "casino capitalism" (Simai, M. 2010). As a result, capital flow became more and more free, profitability and the financial transactions have grown faster than the production itself (for example, in many automobile works more revenue came from virtual financial transactions, than that from the production of cars) (Harvey, D. 2011). Consequently, the world economy reached a stage of development where its development was not determined by the actual production processes, but by international cash flow processes (Bernek, Á. 2009). The global crisis has also proved that the neo-liberal economic policy is not adequate, therefore, to take measures for overcoming the crisis the states should play more active role. Thus, in the long-run the return to the strict state-controlled economic policy is expected.

In this paper first I briefly review the chronology of the crisis and its impacts on European countries and cities. Then more detailed discussion will

be provided on the impacts of global economic crisis on the social and economic environments in Hungary. The paper is based mainly on the most important international and domestic literature. In the final section of the paper I present the results of an empirical survey conducted in several Hungarian cities regarding the consequences of the crisis among households.

The global economic crisis and its underpinning factors

Due to the globalisation of world economy national economies, financial institutions and transnational (multinational) companies have become more and more interconnected, at the same time, they have increasingly liberated themselves from national and international control. Another problem was that rating firms were closely intertwined with lending companies (banks), which led to the confusing situation that rating agencies often rated their own decisions. Financial speculation and panic due to deterioration of the situation (i.e. the hysterical reaction) became also factors of the outbreak of the global fiscal crisis.

Before the crisis speculation affected first of all the "securitized" receivables of mortgage-backed real estate loans. Due to the boom of real estate market these bonds offered higher and higher yields. Globalisation circumvented the attention of globally interconnected financial institutions: the long-established giants spread the risks among them and considered themselves invulnerable. The high yields and low risk, along with the ever-weakening control fostered financial processes and investments. Due to the interconnections between business and capital, revenues from the emerging countries have been increasingly channelled into the world market as well, leading to the increasing amount of liquid capital in the global market.

The large amount of money brought about a reduction in bank interest rates and an increased propensity to invest, which basically came to the U.S. real estate market. Under such circumstances, of course, the banks were pleased to give loans, therefore, significantly increased the supply of consumer credit and lending, which boosted the demand on the housing market.

Result of this predatory lending was that households often spent half of their incomes for payment of instalments (Szanyi, M. 2009). The crisis started in 2007, when credit indicators on the U.S. real estate market began to creep up, accompanied by the fall of prices. The increasing interest rates more and more swept away the frontier of the solvency of households and over time they became massively insolvent. The subprime mortgage securities depreciated while more credit institutions went bankrupt or posted a big loss. Large credit institutions of the United States as Citigroup, Merrill Lynch, Goldman Sachs and Morgan Stanley have suffered billion losses by the end of 2007. Then a dramatic turn occurred: in 2008 real estate prices in the U.S. dropped by 20

percent and in some cities the fall rate rose up to 30 percent (Aalbers, M. 2008). Around 150 billion USD losses have been reported by key players of the U.S. financial sector, banks and brokerage houses by the spring of 2008. The collapse of Lehman Brothers in September 2008 extended (globalised) the crisis and transferred it on to the financial market. Thus, the global economic crisis started off the real estate and credit markets and then pulled the money market. The U.S. sub-prime real estate market crisis turned into a global financial crisis.

The global crisis reached the European Union during the second half of 2008. The underlying reason was that the U.S. mortgage refinancing was often carried by European credit institutions (i.e. "poisoned" securities, toxic assets often landed in their hands). In the last quarter of 2008 and first quarter of 2009 in all European countries very similar processes took place: due to the cumulative losses lending conditions became even more extremely strict, the availability of credit became inflexible, so that the financial crisis gradually passed through to other sectors of the economy. The crisis began to escalate into other sectors of the economy. EUROSTAT data show that the largest decline took place in durable goods industries (e.g. manufacturing, construction industry, automotive industry and electronic parts manufacturing, and consumer electronics). National currencies have been devalued compared to the dominant ones, the rate of unemployment began to rise. National governments were forced to pump money into the economy and the banking system to consolidate their positions (in many cases, taking loans from international organisations). This process practically still present, while the rescue packages introduced were more or less successful (see also Boros, L. and Pál, V. 2011).

The global economic crisis, however, also started to show the vulnerability of national economies and the underlying differences among countries. The real GDP growth in the European Union was –4.3 percent in 2009, however, substantial differences could be observed within Europe (*Figure 1*).

The European Commission identified three main categories of countries depending on the characteristics of local economy:

– The extent to which housing markets had been overvalued and construction industries oversized (e.g. the Baltic Countries, Ireland, the UK, Spain and France).

– The export dependency of the economy (e.g. Germany, Austria and the Netherlands).

– The size of the financial sector and/or its exposure to risky assets (e.g. the UK; Ireland and Luxembourg)

Due to the global crisis problems in the European Union's structure and the functioning of the euro zone became also clear. Internationally renowned experts expressed their pessimism in the community's future and the fate of the euro (see spring of 2012 when George Soros envisioned the disintegration both of the EU and the euro zone). Germany and France initiated their leading

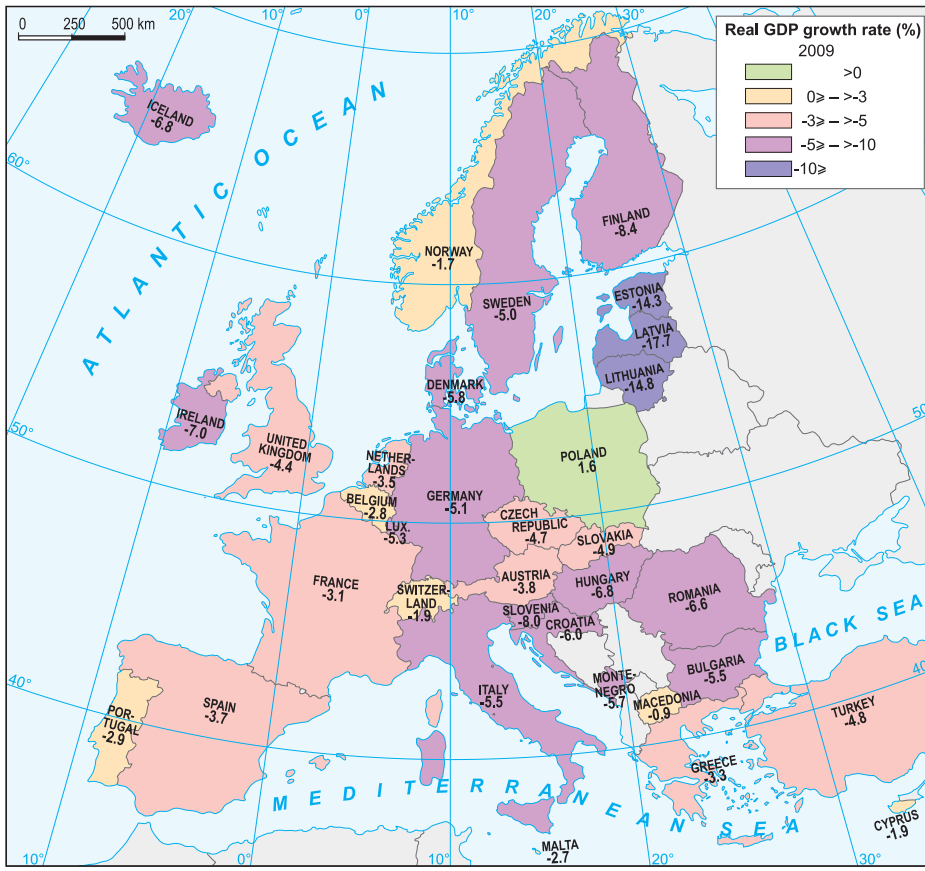

Fig. 1. Real GDP growth in European countries (2009, percent, compared to the previous year) *Source*: EUROSTAT, designed by Agárdi, N.

role in combating the crisis in Europe (not least because of their exposure and interests in countries being in crisis) and the political and economic positions of those countries being proactive in the crisis management have clearly been strengthened. However, as Harvey, D. (2011) noted we must also see that in the long run the state cannot balance the problems generated by the capital, because the smooth functioning of the state depends just on the capital itself. The capital, however, never resolves its own crisis; only circulate around it.

Confirming Harvey's ideas Solow, R.M. (2000) believes that the capitalist system is able to cope with smaller problems and deals with the crises related issue, but it is not able to solve global crises. One of the main questions of successful management of crisis will be if global crisis management measures can be coordinated, as global crisis requires global actions and regulations.

Global economic crisis and its impacts on European cities

In 2009–2010 an international research project entitled "Cities and the economic crisis" was carried out focusing on the impacts of the economic crisis and the responses of cities (Guidoum, Y. and Soto, P. 2010). The research was part of the URBACT II programme. Within the research programme a questionnaire was sent to 190 cities from 24 EU countries and Switzerland participating in the 28 URBACT projects of the First Call for proposals during the 4th quarter of 2009. Altogether 131 cities responded to the questionnaire survey. This chapter summarises the most relevant outcomes of the survey in the interpretation and explanation of the author.[2]

Local budgets decreased in 80 percent of the surveyed cities with the main reasons reported being lower tax revenues and lower state contributions. Cities where businesses were severely hit by the crisis and where budgets were highly dependent on local tax revenues were also likely to be more exposed to significant reductions in their budgets. In many cities in the new member states (e.g. Hungary), the change in exchange rates following the crisis have caused a considerable increase in the interest rates of loans taken in foreign currency. As a result, municipalities had difficulties with increasing costs and difficulties repaying their loans and accessing new bank credits.

Major projects supported by private funding have seen the private partners withdrawing for different reasons: their inability to access credits from the banks and the reluctance to take risks and the fall in demand as in the case of housing projects. As a consequence, important infrastructure projects have been downsized, delayed or simply halted. A direct consequence of the decline in budget revenues was the inability of cities to provide the required co-financing for projects supported by the European Union Structural Funds. This was the case particularly in the New Member States where the flow of such funds is especially important.

The largest group of cities (one out of three) referred to individual measures to combat the crisis. These varied from the application of national recovery plans to fire fighting actions to cut expenditure to more innovative tools. Over 10 percent of the cities referred to the adaptation of existing strategic development plans to respond to the long term effects of the crisis. Finally just 30 percent of the cities said that they had not yet developed a response or provided no information (Guidoum, Y. and Soto, P. 2010).

[2] The survey itself has two main parts, firstly, the nature of the impact of the crisis on different kinds of cities and secondly, the nature of their response. The aim of the first part of the survey is to give an overview of the ways in which the crisis is affecting the extremely diverse cities of Europe today. The second part of the survey provides an early picture of the types of response to the crisis that are being explored by European cities.

The global economic crisis has also had serious impacts on the social conditions and cohesion of cities through the labour market. As a consequence of the economic recession, unemployment rates increased in 80 percent of the cities responding to the URBACT´s survey, both in the public and private sectors. Between March 2008 and March 2009, unemployment in the European Union rose by 5.4 million people to 21.5 million (8.9 percent). The largest increases took place in the Baltic States where unemployment tripled to around 15 percent in May 2009 and in Spain where it was doubled to 18.7 percent.

While cities generally reported the construction sector as being the most affected by the crisis in terms of business closures and bankruptcies, it is in the industrial/manufacturing sector where most job losses were recorded. In the European Union youth unemployment increased more than twice as fast as unemployment as a whole between 2008 and 2009 (3.7 percent compared to 1.6 percent), leading to a youth unemployment rate of 18.4 percent. Young people were clearly identified as the group most severely affected by the crisis. In some cities, high levels of youth unemployment was said to be leading to a "brain drain" of qualified young people to other EU countries, the United States and Canada.

According to EUROSTAT the crisis has affected men more than women, and between 2008 and 2009 the male unemployment rate increased more than the female rate in almost all Member States. Migrants have also suffered disproportionately from the crisis. Since the start of the crisis, the unemployment rate of non-EU workers grew faster than for other workers and reached 18.9 percent in the third quarter of 2009, as against 13.6 percent one year before. According to EUROSTAT low skilled jobs have been declining much faster than medium skilled or highly qualified jobs during the recession.

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East Central European countries followed different pathways in the 2000s with regards the usage of foreign currency loans. In the Baltic States, fixed exchange rates favoured foreign currency lending, in Hungary and Romania indebtedness of residents occurred mainly in foreign currencies as well. In Romania the situation is better as the savings of the residents are predominantly in euro and the loans are also mainly in EUR and not in CHF. Similar situation could be observed in Croatia, where 74 percent of bank loans are in foreign currency, of which four-fifth is in EUR. Due to the high proportion of guest workers in the West and the country's role in international tourism this type of indebtedness does not create major problems. In the Czech Republic and Slovakia foreign currency debt was not significant, and the foreign currency loan portfolio of Poland and Bulgaria remained at a low level as well.

Before 2000, 25 percent mortgage charges were recorded in Hungary. It is no coincidence that in 1999 only less than 20 thousand new homes were built in the country. This unfavourable situation was changed by the new housing program of the FIDESZ government in 2000, and according to CSO data the amount of subsidised housing loans increased in the following two years to nearly 500 billion HUF. In the following years, the number of newly built homes reached an annual level of 40 thousand, however, after this peak it decreased again in 2006 and 2007. This can partly be explained by the fact, that in 2003 a correction of the subsidised housing program was introduced, which actually meant a gradual reduction of state subsidies. Foreign currency based lending started to run up when the non-subsidised forint loans' mortgage interest charges reached an unaffordable level.

In the first half of the 2000s due to the state interest subsidy system introduced earlier, to the improved real wages, and to the loans taken at the beginning in HUF and later in foreign currency a huge demand on the housing market occurred resulting dramatically increasing prices on the real estate market between 2002 and 2008. The soaring housing prices have not dampened the demand, and more and more residents indebted. However, at this time already in foreign currency because of the more favourable interest charges and the tightening conditions of public interest subsidy system. In 2007, the amount of subsidised HUF housing loans was 1,530 billion HUF (375 thousand housing loans); while the rising amount of foreign currency loans by 1,459 billion HUF (272 thousand foreign currency loans) were close to this volume. By the end of 2008 the ratio of foreign currency loans jumped to 60 percent within the total housing loan portfolio, although it was only about 1 percent at the turn of the millennium.

The crisis broke the Hungarian Forint's (mostly artificially) retained power and stability. In the last quarter of 2008 and the first quarter of 2009, the Hungarian currency has been depreciated by 15 percent compared to the CHF, and by 17 percent compared to the EUR. Due to the increased instalments this depreciation has led in many households to insolvency and to an emerging credit crunch. At the end of 2009, the amount of housing loans in Hungary was 3,920 billion HUF (i.e. 15 percent of the GDP), of which 63 percent was the ratio of foreign currency based housing loans (Kapitány, Zs. 2011). 2009 brought significant changes in housing loans. First, the banks have continued to reduce the lending of foreign currency mortgage loans, on the other hand, the residents became more cautious, which halted the growth of foreign currency loan portfolio in 2009.

However, 2009 also brought changes in the sense that the ratio of late loans has dramatically increased. According to estimations of the Hungarian Financial Supervisory Authority there were altogether 1,225,419 residential mortgage-backed treaties in mid-2011 registered, and a quarter of these had

already some delay in issue, and more than one tenth had a delay beyond 90 days. The number of foreign currency loans was 262 thousand out of 301,700 loans with delay, 123 thousand out of 142,300 with a delay beyond 90 days. It is important to distinguish between foreign currency denominated housing loans and home equity freeware loans, since the construction of the two loan types significantly differ from each other, so the ratio of non-payers also differ in the two portfolios.

The average HUF repayments costs of foreign currency loans increased by 21 percent between 2007 and 2011, partly because of the previous practice that banks have not used reference-based interest rates (i.e. the amount of interest to be paid was not linked to interbank interest rates). While financial institutions in the neighbouring countries using reference interest rates already reduced their interest burden, interest rates remained unreasonably high in Hungary. High interest rates have further heightened the negative effects of exchange rate fluctuations. At the end of 2011 financial institutions still offered CHF-based loans with an extra rate of 3.2 percent in Hungary, which was much higher than the bank's funding costs and country risk would have been justified. In Hungary, banks applied extraordinary high interest rates during the crisis and they further compounded the situation of households for extra profits. The above mentioned fact points out the low level of financial culture of residents, the predatory profit hunger of Hungarian credit institutions and the delayed and inadequate state regulations. Typically, before and during the crisis policy makers, the central bank and the banking institutions could be characterized by inaction, almost nothing happened except that the central bank's stability reports consistently warned of the risks of foreign currency lending.

In order to mitigate the negative effects of foreign currency exposure, in September 2011 the Hungarian government passed a law on final repayment of foreign currency loans in a lump sum. Altogether 170 thousand households with foreign currency loan used this possibility to repay or to exchange into a HUF-based loan. The amount repaid was equal of 1,354 billion forint which made up 24.1 percent of the total portfolio of foreign currency loans. Since only 984.2 billion HUF out of the above amount was paid by the households, the banking system in Hungary had to bear a loss of more than 370 billion HUF. It is no coincidence that international and domestic financial institutions and economists heavily criticised these measurements. Since the neediest strata were unable to use the offered possibility of final repayment, in April 2012 new measures were taken by the government – now in agreement with the banking sector –, to help the needy households (fixed exchange rate of repayment for 5 years duration).

Difficulties of the Hungarian economy arose not only from the global economic crisis, because already few years earlier major problems were experi-

enced in the economy. In recent years, it became clear that the main economic problem in Hungary is the increasing level of overspending. It was not as obvious during the first half of the 2000s as the country's economy performed relatively well: average economic growth was 4.2 percent between 2001 and 2006, which was mostly guaranteed by the industrial production growth rate of 6.4 percent (Stark, A. 2011). The rate of increase, however, was broken in 2007 and the negative trend continued also in 2008, thus, economic development in Hungary lagged behind the neighbouring countries. The crisis found Hungary in a very depressed economic situation.

According to Békesi, L. (2011) the main problems of the Hungarian economy are the low economic performance of the country, its low competitiveness in international comparison, scarce resources, the small size of the domestic market, the unfavourable demographic trends, and the quantitative and structural problems of labour force. This is combined with disproportionately high state responsibilities, liabilities and expenses, high-level corruption and huge accumulated debt.

The structural problems with the negative effects of the crisis caused a GDP decline of 6.7 percent between 2008 and 2009, of which 2.9 percent could be linked with the industry. The number of corporate and individual enterprises significantly dropped, the volume of foreign direct investments in the Hungarian economy fell from 4.5 billion HUF per year nearly to its third. The volume of investments has been reduced in many industries (e.g. in mining by 46 percent, manufacturing 15 percent). The industrial and manufacturing investments especially decreased in the counties of Western Transdanubia and in Borsod-Abaúj-Zemplén and Heves counties in Northern Hungary region. In the same period, industrial production fell by 18 percent: it was especially significant in the manufacturing of metals and fabricated metal products (40 percent) and, also in the automotive industry (30 percent). Examining the economic sectors we can conclude that between the first quarter of 2008 and 2010 the production in manufacturing fell most dramatically (16.8 percent). Compared to its share within the GDP there was also a significant decline in construction industries. The sharp drop of new car sales from 177,000 to 45,100 between 2007 and 2011 illustrates the combined impacts of the narrowing domestic market and the effect of increasing interest rates of car loans. Actually, the above decline in car sales almost destroyed the new car dealer network in Hungary.

The effects of crisis on construction industry and real estate market became also obvious. Due to the unfolding credit crisis housing prices significantly declined which brought about the freezing of the property market and a deepening crisis of construction industry respectively. In 2006 nearly 200,000 flats were sold, while in 2010 it barely exceeded 80,000. The number of dwellings built nationwide was only 20,800 in 2010, and, in 2011 it fell further by 40 percent compared to 2010. In 2011, construction output was lower

by 7.8 percent compared to a year earlier, and in the first quarter of 2012 the negative trend was not stopped.

We can conclude that especially the export-oriented sectors have been more exposed to and hit hard by the global economic crisis (Kiss, É. 2011).

There is no coincidence that in Hungary the Central and Western Transdanubian counties suffered the largest production decline in the past few years (see also Enyedi, Gy. 2009; Tiner, T. 2010). Hungary's situation during the economic crisis has significantly worsened; therefore, the country can be classified as one of the bigger losers. The main reason behind is the openness of the country's economy. The ratio of companies participating in international production systems is 40 percent, the contribution of these companies to the export reaches 75 percent. Approximately 45 percent of the assets of Hungarian companies are controlled by foreign investors. About 25,000 foreign enterprises are registered in Hungary. They provide nearly two thirds of the GDP, and their share in export and import goes up to 80 percent of the GDP (Bernek, Á. 2009; Simai, M. 2010).

International comparisons show that Hungary is one of the countries where the crisis was accompanied by a modest increase of unemployment. Lőcsei, H. (2011) gives an excellent summary on the temporal and spatial spread of unemployment during the crisis. According to her outcomes the period between the autumn of 2008 and the summer of 2010 can be divided into four phases:

– From October 2008 to January 2009, a moderate rise in unemployment figures was detected. In this phase the proportion of unemployed and job seekers at the centres of industrial production in the counties of North Western Transdanubia increased significantly. Due to the reduced production in the larger companies of manufacturing centres major layoffs have occurred in Komárom-Esztergom, Fejér, Győr-Moson-Sopron and Vas counties. In this period there were no significant differences between the unemployment figures of individual settlement categories. However, changes in the unemployment rates were strikingly high in the most disadvantaged areas, where unemployment definitely increased.

– Between January and May 2009, the unemployment rate increased rapidly, and in May it was nearly 33 percent (140 thousand persons) higher than one year before. In this period in all regions of the country the number of job seekers increased and rising unemployment was no longer limited to the export-oriented core areas of Transdanubia. Higher redundancies took place in the traditional industrial centres (e.g. Dunaújváros, Százhalombatta, Kazincbarcika, Miskolc). In general, the negative labour market consequences were transferred from the larger cities to the smaller settlements.

– In the period from June 2009 to February 2010 the proportion of job seekers in the population aged between 15 and 64 continued to increase from 8.6 per-

cent to 9.3 percent, but the intensity has not reached previous extremities. Labour market effects of the crisis, however, reached Central Hungary region (the region of Budapest), where due to the predominance of the service sector the negative effects of the crisis were somewhat delayed. Differences between the settlement categories with respect to the number of job seekers constantly disappeared: the spatial effects of the crisis have become more even. The unemployment rate peaked at 11.9 percent in the first quarter of 2010 (Bálint, M. *et al*. 2011).

– Since March of 2010 a downward trend could be detected in the number of registered job seekers. The positive trend could be explained, on the one hand, by seasonal reasons and by the public employment programs introduced, and, on the other hand, by the emerging consolidation of manufacturing enterprises in the North and West Transdanubian regions. However, favourable changes in the agglomeration of Budapest could not be recognised yet. During this period, the employment in small communities of disadvantaged areas (e.g. villages in Cserehát, Szatmár and Ormánság regions) improved somewhat faster (Lőcsei, H. 2011).

About the sectoral effects of the crisis we can conclude that the largest decline in employment occurred in the industry (11 percent), and more precisely within the construction industry. Between the first quarter of 2008 and 2010 the number of employees in this sub-sector decreased by 14.9 percent (Bálint, M. *et al*. 2011). In addition, a large number of losses in manufacturing took place, also in real estate enterprises, and private companies involved in education (Köllő, J. 2011). The reduction in the labour reached first engineering industry, automotive industry, but most intensely hit electronics industry (Kiss, É. 2011). The biggest redundancies (collective, organized, massive lay-offs) took place in foreign-owned automotive and electronics companies performed in Budapest, Esztergom, Tatabánya, Szombathely, Székesfehérvár, Veszprém and Kecskemét. It is estimated that approximately 25 thousand people lost their jobs in the automotive industry in Hungary due to the crisis. In other sectors of the economy layoffs speeded up in the spring of 2009.

The effects of the economic crisis in Hungarian cities

To supplement international and domestic experiences we carried out questionnaire surveys in Budapest, Szeged and Győr during the summer of 2010. The questionnaire contained altogether 39 questions. The household survey was supplemented with street questionnaires containing 10 short questions. The household questionnaire has also been published in digitised form on the internet and I expanded the research with an internet survey in the second half of 2011. The empirical results introduced in this chapter are based on the assessment of the information collected in these surveys. Although results of the surveys are not representative, they give a good insight into the subjective

interpretation of the crisis, how people living in the major Hungarian cities see and appreciate the effects of the global economic crisis in their daily lives.

Almost 60 percent of the respondents defined the start of the economic crisis in 2008. Just over a third of the respondents put this to the second half of 2008, which was the period of the outbreak of the crisis in the European Union. In recent years many analysis have been published about the crisis, in this respect the above rate is not considered to be high. However, respondents could clearly identify the United States, where the crisis originated from: nine-tenths of the respondents named this country as the cause of the crisis. The respondents can be divided roughly two-thirds to one-third according to the responses if the Great Depression began in the banking (64.5 percent), or in the real estate sector (27.6 percent). The distribution of answers could also be influenced by the problems of banking sector that had a decisive effect on the people in Hungary.

It is also worth taking a look at our empirical results revealing which branches of the Hungarian economy suffered the greatest losses in the crisis. Two-thirds of the respondents stated, that the construction industry was the biggest loser of the crisis, while one fifth of the respondents identified the automotive industry and automobile trade.

According to our survey urban residents perceive that the crisis in the cities caused the biggest problems on the labour market (e.g. shrinking employment opportunities, increasing unemployment). In addition, respondents also mentioned the real estate market as the focus of problems, the negative changes occurred in the economic environment (e.g. business bankruptcy), and financial shortages and funding problems in governments and businesses. The lack of development and investments in cities is closely related to the latter. Generally a positive picture can be drawn among the residents with regards future development of cities in Hungary. While only a quarter of the respondents expect the downturn, a further quarter thinks the current situation will be stabilised. However, nearly half of the respondents expect positive changes *(Figure 2*). Responses make it clear that on higher levels of the settlement hierarchy people see more optimistic the possibility of recovery from the crisis.

No clear picture could be drawn among city residents about the real effects of crisis on the labour market, namely how many people actually lost their jobs as a result of the crisis. Answers to the question scattered widely: some said that the global crisis had hardly any effects on employment, while others estimated the number of redundancies to be around half a million. The largest proportion (27 percent) within the sample is represented by those interviewees who estimated that 100,000 to 150,000 people lost their jobs due to the crisis, which approximately corresponds to the actual data (*Figure 3*). Nearly half of the respondents experienced labour market effects also personally, as their acquaintances (32 percent), relatives or friends (16 percent) lost their jobs.

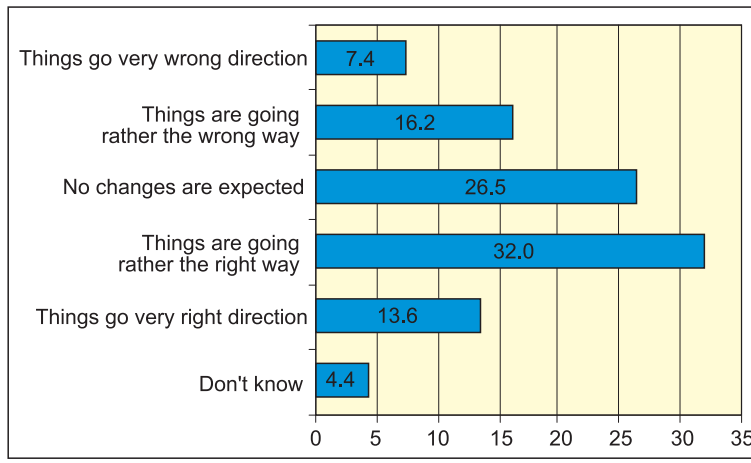

Fig. 2. Evaluation of future urban development trends by urban residents (2011, n = 545).
Source: author's survey

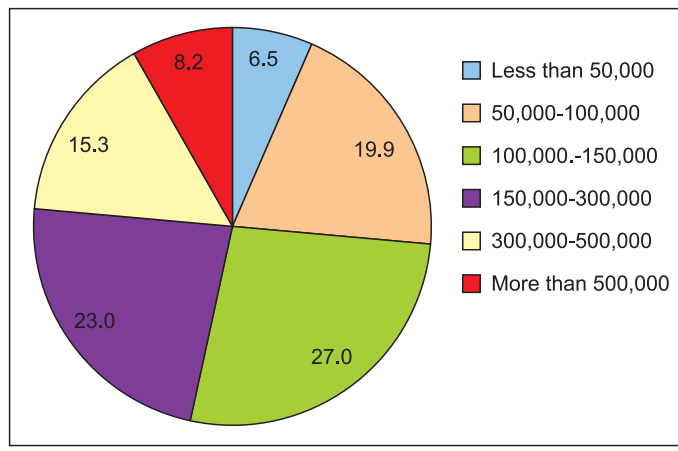

Fig. 3. Estimations on job losses due to the global crisis by urban residents (2011, n = 353).
Source: author's survey

The crisis had impacts not only on the labour market, but also significantly affected the financial conditions of households, income and savings relations as well. The impacts of the economic crisis on households can be summarised, that the social composition by income and financial situation became polarised, i.e. on the one hand, more and more people slipped down on the income ladder to the lowest deciles, on the other hand, the gap between

the richest and poorest widened. The financial crisis had clearly sharpened the differences between the households. The decrease of income and the level of indebtedness had a determining role in the financial situation of the households (Tóth, I. and Medgyesi, M. 2011).

These outcomes were also confirmed by household surveys of TÁRKI Social Research Institute made in 2009. On the one hand, on the basis of subjective perceptions the proportion of those households combating with financial problems or even are deprived rose (from 19 percent to 22 percent and from 4 percent to 8 percent respectively) compared to the results of 2007. On the other hand – especially among poorer households – a significant increase in the proportion of indebted families has been registered since the crisis started.

The gradually increasing indebtedness of poorer households is indicated by the fact that 14 percent of households in the lowest income quintile paid bank credit instalments in 2001, however, this figure climbed to over 40 percent in 2009. In the same group, the ratio of households paying housing loans rose from 7 to 24 percent over the same period, and the proportion of those with trade loans increased from 7 to 17 percent. The indebtedness of the highest income quintile of households was not so dynamic. At the beginning of 2010, in the lowest income quintile 43 percent of the total incomes were spent on debt repayment, while in the highest quintile it was only 15 percent (Tóth, I. and Medgyesi, M. 2011).

Empirical results show that the quality of life of urban residents decreased after the outbreak of the crisis. Nearly half of those surveyed claimed that their quality of life deteriorated somewhat in recent years, nearly one-fifth of the respondents stated that their quality of life decreased significantly since the crisis started (*Figure 4*).

The deterioration of quality of life in many cases can be explained by the worsening financial conditions of households: no coincidence that more than a quarter of respondents is worried about their future income ("won't be able to feed the family"), a further fifth of respondents is worried about job or livelihood. Respondents spend almost two-fifths of the household's net monthly income on overheads; the ratio of food within the monthly budget is close to 30 percent. Expenditures spending on clothing (12 percent), entertainment and culture (15 percent) are significantly lower.

In recent years, more and more news note in Hungary that saving ability and willingness for that of the population is low: respondents – if they have a chance for that– set aside less than a fifth of their monthly income. Households primarily try to defend themselves against the crisis by reducing their direct expenditures (e.g. fewer but smarter shopping, cutting expenditures for clothing). A usual method for savings is to reduce overheads (cutting water, gas, electricity consumption), and to cancel services (e.g. internet, telephone and cultural programs).

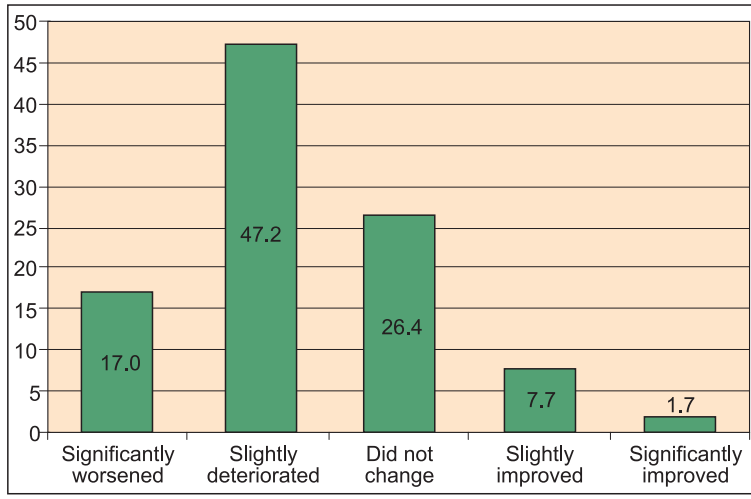

Fig. 4. Perceptions of residents about the quality of life since the break-out of global crisis (2011, n = 353). *Source*: author's survey

Conclusions

More and more people say that it is actually not only the world economy, but also the whole socio-economic development path so far is in crisis that affects the whole of human society, culture, lifestyle, outlook and morals (Szentes, T. 2009). According to the most relevant ideas of Quinn, D. written in his book Ishmael (1992) I would clarify this that the so-called "Western culture", the "white man's culture" is in crisis, if we really interpret the current global crisis as a failure of the socio-economic development path. In fact, the market is now driven by selfish individualism ruling everything, not just the economy but also culture, sports, science and everyday life. The biggest problem in this respect is defined by László, E. (2008) very well: "The global economic growth continues, but fewer and fewer people see benefits."

Several theories are circulating in professional circles about the causes and backgrounds of the crisis. The current crisis began in the United States and swept around the world. Considering the functioning of the economy (short-, medium- and long-term cycles), in the magic triangle of *speculation–virtuality–interlacement* it was only a matter of time, when and where a crisis of a similar size broke out. Due to the economic crisis to be expected that a certain degree of rearrangement occurs in the global economic space (see Asia's and especially China's growing role in the global economy). The European

Union has to rethink both the state's role and responsibilities in the regulation of financial markets, and the role of nation-states in the community's future development.

The crisis has affected the cities in many ways and at very different scale. International experience shows that considering the negative effects of the crisis it is not the city size, but rather the composition of the local economy that plays a major role. Cities with export-oriented, deeply embedded economic sectors in international market and trade have been more hit by the crisis. According to the European Commission cities should implement a smart, sustainable and inclusive growth to avoid future negative trends in their local economy. „Smart growth" means the development of economy based on knowledge and innovation, „sustainable growth" promotes more resource-efficient, greener and more competitive economy. „Inclusive growth" would foster a high-employment economy delivering economic and territorial cohesion.

East Central European countries have followed different pathways in their political, economic and social transformations (Cotella, G. 2006). Even before the global economic crisis the differentiation of Central European countries was marked and it has only been further accelerated by the crisis. Hungary, as an apt pupil during the years of transition has lost its leading role in the region. According to Kiss (2009), the country today is characterised by a kind of double marginalisation: firstly, the country's position weakened not only in the EU but also in East Central Europe; on the other hand, Budapest's role is thinned in the region as well. Therefore, the membership in the European Union for Hungary – although often criticised in political phrases –, also represents an essential form of protection.

Due to the irresponsible decisions of the political elite in Hungary the economic crisis reached a weakened state. Therefore, it is not surprising that many experts view that Hungary is one of the biggest losers of the crisis in Europe. The crisis damaged the country's export-oriented sectors, growth industries; it occurred earliest and had often the biggest negative impacts in the formerly prosperous regions (e.g. Central Transdanubia). The economic problems were coupled with problems of the financial market: far-reaching credit crisis reared its head in Hungary, which has deepened the social crisis. According to present understanding the state, the credit institutions and the public are all to be blamed. For many years there has been no effective state (political) means of credit market regulation, credit institutions applied much higher interest rate indicators to damp their profit hunger and the population – due to the low-quality financial culture – irresponsibly took mortgage-based housing and trade loans.

The governmental measures started in 2011 in order to mitigate the negative impacts of the crisis have sharply been criticised at home and abroad.

At the moment no clear positive effects of these measures can be detected yet, but because of the short time scale it is too early to draw the bottom line. Anyway, a more cautious opinion can be noticed that the recent actions have not strengthened Hungary's position within the European Union. It is still an open question to estimate the results on the future development of the so-called unorthodox economic policy presently followed by Hungary.

Acknowledgement: The article and empirical survey presented above have been supported by the Bolyai János Scholarship of the Hungarian Academy of Sciences.

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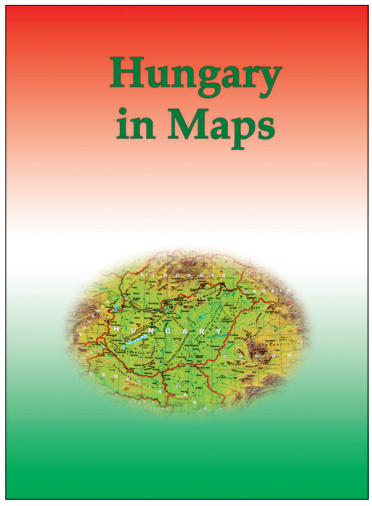
Hungary in Maps

Edited by
Károly Kocsis and Ferenc Schweitzer

Geographical Research Institute Hungarian Academy of Sciences
Budapest, 2009. 212 p.

'Hungary in Maps' is the latest volume in a series of atlases published by the Geographical Research Institute of the Hungarian Academy of Sciences. A unique publication, it combines the best features of the books and atlases that have been published in Hungary during the last decades. This work provides a clear, masterly and comprehensive overview of present-day Hungary by a distinguished team of contributors, presenting the results of research in the fields of geography, demography, economics, history, geophysics, geology, hydrology, meteorology, pedology and other earth sciences. The 172 lavish, full-colour maps and diagrams, along with 52 tables are complemented by clear, authoritative explanatory notes, revealing a fresh perspective on the anatomy of modern day Hungary. Although the emphasis is largely placed on contemporary Hungary, important sections are devoted to the historical development of the natural and human environment as well.

In its concentration and focus, this atlas was intended to act as Hungary's 'business card', as the country's résumé, to serve as an information resource for the sophisticated general reader and to inform the international scientific community about the foremost challenges facing Hungary today, both in a European context and on a global scale. Examples of such intriguing topics are: stability and change in the ethnic and state territory, natural hazards, earthquakes, urgent flood control and water management tasks, land degradation, the state of nature conservation, international environmental conflicts, the general population decline, ageing, the increase in unemployment, the Roma population at home and the situation of Hungarian minorities abroad, new trends in urban development, controversial economic and social consequences as a result of the transition to a market economy, privatisation, the massive influx of foreign direct investment, perspectives on the exploitation of mineral resources, problems in the energy supply and electricity generation, increasing spatial concentration focused on Budapest in the field of services (e.g. in banking, retail, transport and telecommunications networks), and finally the shaping of an internationally competitive tourism industry, thus making Hungary more attractive to visit.



This project serves as a preliminary study for the new, 3rd edition of the National Atlas of Hungary, that is to be co-ordinated by the Geographical Research Institute of the Hungarian Academy of Sciences.

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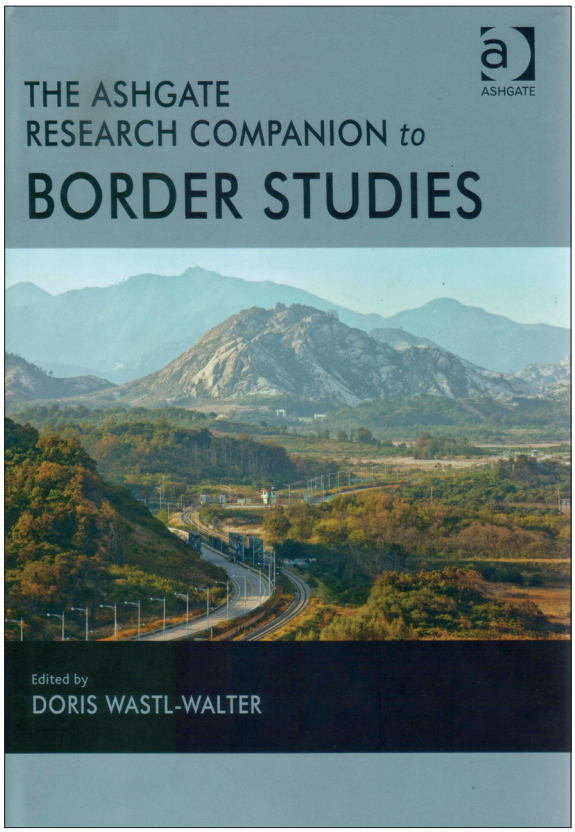
Hungarian Geographical Bulletin 61 (2) (2012) pp. 175–179.

Wastl-Walter, D. (ed.): The Ashgate Research Companion to Border Studies. Farnham–Burlington, Ashgate Publishing Ltd., 2011. 705 p.

The Ashgate Research Companion to Border Studies is a Bible for border studies, an encyclopedia which is a real milestone in social and political geography! These are the first thoughts coming to the reviewer's mind when looking at the fantastic variety of the studies connecting to the main topic of the thick book. The wide range of authors (40 altogether) representing 21 countries of 6 continents guarantee a sophisticated and very detailed content of the volume. Therefore, not surprisingly, this book has aroused great interest in the academic sphere and it can extend our knowledge on the complexity of problems connecting to border regions all over the world. That achievement is the result of a hard and well-coordinated editorial work of Professor Doris Wastl-Walter, University of Bern, Switzerland.



The book consists of 8 major parts and contains 32 chapters. The first part of the book (*Theorizing borders: conceptual aspects of border studies*) sets the theoretical framework of the topic providing an overview of the exciting and multidisciplinary field of border studies. The reader can get various approaches on the discipline and the phenomenon of border. Reading the first part makes us realize that it is very difficult to give a real "border" definition. (Is it a word, a belief or a simple mask?) The authors of that chapter also deal with the problems of the historical borders remained in the collective memory; the negative consequences of the political and social division represented by the former borders among peoples in the neighbouring countries and, last but not least, with the concept of the so-called 'intersectionality' which makes easier to understand the main differences between borderland areas as a methodological tool.

Part two (*Geopolitics: state, nation and power relations*) starts with a really interesting study in which the author (J. W. Scott) demonstrates how the collapse of the Iron Curtain in 1989 and the enlargement of the European Union in 2004 transformed the country borders in Central Europe. The further 4 chapters of that part of the book are case studies analyzing the situations along the most disputed borderlands of the world (e.g. the Turkish–Greek borderline in the heart of Cyprus; the post soviet boundaries reflecting new power relations between the newly independent Baltic States and Russia; the problems of the Arctic and the Antarctic border debates and finally the special situation along the borders between Thailand and Myanmar).

Initiating the synopsis of the third part (*Border enforcement in the 21st century*), the editor draws the readers' attention to the fact that a lot of border sections of the developed countries have been reinforced since 9/11/2001 and the free permeability of the international borders are suspended from time to time. So the question of security and homeland protection does have actuality and it may contribute to the militarization of the borders, especially in case of the United States. That tendency encourages e.g. the regime of North Korea and several further (autocratic regimes) in Latin America to maintain and enforce the recent form of governing. The authors of that part of the book demonstrate the detailed results of the investigations made on militarized border sections in various forms.

The chapters of part four (*Borders and territorial identities: the mechanisms of exclusion and inclusion*) focuses on the minorities living in border regions. The questions of the territorial boundaries are explained through three special examples (the Basque Country inside Spain, the Province of Trentino–Alto Adige in North Italy and the Slovakian-Hungarian border region in South Slovakia) in a remarkable study (J. D. Markusse). In the author's opinion, the internal territorial boundaries proved to be essential elements of minority rights and autonomy. In case of the Hungarian–Slovakian border region, the territorial incongruence between the common Euroregions and the homeland of the Hungarian minority in Slovakia is a major obstacle in weakening political tensions.

The content of the chapters in the fifth part of the book (*The role of borders in a seemingly borderless world*) concentrates on the consequences of cross-border economic regimes among the different social groups in border regions. Case studies of that section describe the prosperous European, Asian and US-Mexican border regions playing increasing role in the global economy. The German–Dutch border region, the Greater Pearl River Delta in South China (especially the neighbourhood of Hong Kong including Shenzhen) and Singapore are mentioned and analyzed in details.

Part six with its short title (*Crossing borders*) draws attention to international and domestic migrations always involving crossing borders all over the world. Readers can study three exciting chapters. The first one is about the everyday practices of border crossing along the North Korean state borders, the second one shows the characteristics of migration of Asian women and the third one demonstrates the confused border realities in Western Sahara. Last chapter is illustrated with two attractive maps of the Western Sahara region which is divided into two parts. The larger territory is held by the Moroccan government, the smaller one belongs to the Polisario Front and it is controlled by several nomad tribes by whom the whole region is considered to be borderless. (On the second map, it is difficult to recognize the main tribal travelling areas because of the missing legend.)

Three European studies are collected in the seventh part of the book (*Creating neighbourhoods*). The first chapter gives an overview on the different forms of interactions and co-operations along the Western and Eastern borders of Finland explaining their historical background. The most exciting segment of that chapter when the author (H. Eskelinen) analyses the changes of the Finnish-Russian borderlands. The second study starts with

providing an outlook on general features of neighbourhood relationships in the Carpatho-Pannonian region. The authors (K. Kocsis and M. M. Váradi) emphasize the differences between the borderlands maintaining good relationships (Austrian–Hungarian) and the problematic ones (Slovakian–Hungarian, Romanian–Hungarian). The last mentioned relationships have been burdened with serious historical and ethnical conflicts for almost 100 years. It would be urgent to solve those long living problems to promote mutual relations in the fields of minority policy, cross border cultural and institutional connections and local spatial interactions. The third chapter focuses on the Lower Danube Euroregion covering borderlands of three countries (Romania, Ukraine and Moldova). Its conclusion is that the institutionalization of the Lower Danube Euroregion across the borders means an attempt to integrate the national borderlands into a supranational space.

The final part of the book is about environmental issues (*Nature and environment*). The authors of that section try to explain why it is important to maintain natural areas along the borders and to extend transboundary nature conservation areas (South African examples). They also reveals why it is necessary to delimit the maritime boundaries on the continental shelves.

The book starts with the lists of figures, maps and tables and contains the short scientific CV of the contributors. The chapters are followed by a detailed name and place index. (It's a pity for us that the name of Burgenland is missing from that list…)

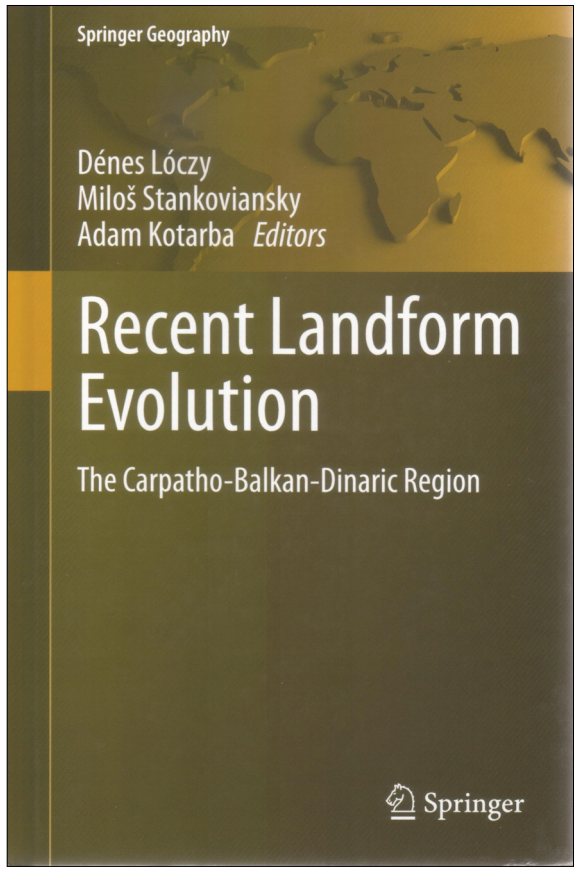
Summing up the content of that encyclopedical work, I found the eight parts of the book highly informative and inspiring. I strongly recommend the book for all those academics and politicians of the governmental institutions who are interested in border studies and would like to know more about the complexity of that topic.

Tibor Tiner

Lóczy, D., Stankoviansky, M. and Kotarba, A. (eds): Recent landform evolution. The Carpatho-Balkan-Dinaric Region. Springer Geography, Dordrecht, 2012. 460 p.

Present day geomorphologic processes have special interest in physical geographic research. The continuously growing knowledge on landscape formation is the basis of a successful spatial planning. Each country needs exact data on surface morphology and particularly on surface processes to manage the environmental resources and problems.

The whole surface of Earth is always changing due to the results of different landform evolution events, accordingly both draft and detailed description of surface formation and its related processes are complicated and they are basically scale-dependent. This monograph published as part of the Springer Geography series solves that problem by outlining the development directions of the surface of the study site. As it was also emphasized by the editors, the study area boundaries are not ordinary ones since they follow physical borders on one place and political borders on the other. This unusual location and shape of the research area are the results of some former cooperation among the national research groups of the region. The volume can be interpreted as a late outcome of the Carpatho-Balkanic Geomorphological Commission and the International Association of Geomorphologists Carpatho-Balkan-Dinaric Regional Working Group. The cooperation within the framework of the mentioned groups has long traditions. Lóczy, D. the recent president, highlighted the importance of the collection of national investigations on geomorphology.



The volume contains three main parts. Part I is a general description of the main environmental circumstances of the region, however, the actual boundaries are hardly comparable with those drown from a physical point of view. Four chapters highlight the role of the most important factors in recent land formation, namely geology, climate, rivers and land cover/use. In subchapter "Geology" and "Rivers" the text division follows the spatial units of the region, while the others focus on separate parameters of climate (i.e. zonation, temperature, precipitation etc.) and the processes of land use (change).

The second part is a collection of national studies on surface formation. That part accounts for nearly 90% of the whole volume. Altogether 11 countries (Bulgaria, Croatia, Czech Republic,

Hungary, Macedonia, Poland, Romania, Slovakia, Slovenia, Serbia and Ukraine) present their results excluding Austria. The editors made efforts to uniform at least the structure of the studies, but because of the mentioned differences between political and natural borders, the chapters are varied. The general national chapter begins with an abstract followed by the introduction focusing on the historical presentation of investigations. The authors discuss the most important landscape forming processes in individual subchapters step by step according to their country attributes and traditions. In some cases the classification and description of the landforms are the basis of the study structure. Each subchapter is compiled by one or two geomorphologic expert on the topic; accordingly every single subchapter is independent from each other. Most of the country studies have a separate subchapter on soil erosion, fluvial landscape formation, eolian, periglacial and karst processes and mass movements. Unfortunately, the list of contents contains only the main titles of the national chapters while the subtitles can only be found in the text.

The roles of biological and especially human impact on surface formation are emphasized to different degrees in the separate country reports. For instance, in the Hungarian chapter that part concentrates on mining and does not underline the influence of agriculture and infrastructure development, however, they have critical importance. Broadly speaking, the approach of the studies is mainly descriptive; the authors let the reader to conclude the results of the facts. That kind of presentation is very good for experts and researchers but for students, further interpretation would be needed in some cases. Furthermore, the monograph exceeds 480 pages in present form, so additional information could reduce its usability.

The third part is the conclusion but it doesn't contain any general conclusions in a usual way. Instead, the editors briefly summarise the history of the above mentioned cooperation and discuss the traditions and research directions of the different schools and countries. Traditional differences and high diversity of the region cause the hard comparability of the results and the lack of a general conclusion.

Although I did not find the price of the monograph printed in the volume, copies for around 180 USD are available on the web. That cost sounds badly for an average Hungarian undergraduate and even a researcher of our region considering buying a copy. I presume that the copies of public libraries will be very popular. I fully agree with the editors who emphasize that the most important achievement of the monograph is the revelation of the significance of "mutual learning starting with the unification of terminology and finishing with the creation of international teams in thematic research". I believe that this volume is not only a useful resource for today and future geomorphologists of the region but could be a basic work for everyone who is interested in physical geography.

Gergely Jakab

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Report on the 2012 Annual Meeting of the Association of American Geographers

New York, February 24–28, 2012

The Association of American Geographers (AAG) Annual Meeting was the third outstanding conference I had the opportunity to attend within less than a year. The other two were the RGS–IBG Annual International Conference 2011 in London and the VI. International Conference of Critical Geography in Frankfurt. Though this meeting was the third one in timeline, it came up to the first place in many respects. There were about 7,000 geographers and other social scientists (from the USA, Canada, Latin America, Europe and even from Eastern Europe, such as Hungary) taking part at that conference. One could choose from among 4,000 programmes which included presentations, plenary lectures, posters and panel sessions and field trips as well.

The short volume containing only the titles of the papers and the posters without their abstracts have 434 pages. In spite of the very high number of participants, the organizers did an excellent job starting from registration (where you had to wait for 2 or 3 minutes at the worst) to the end of the conference. The Annual Meeting was held in two

AAG's Information desk: always helpful, always well-prepaired

„From the right to the city to the urban revolution: Lefebvre reconsidered"

Occupy Hilton NY!: before, during, after or instead of sessions chatting, reading, planning, preparing or just relax on the luxurious floor carpet

'Greetings from AAG New York'

50-storeyed luxury hotels in Midtown Manhattan. This environment conveyed the conference the atmosphere of an international business meeting rather than a scientific one. The formal style most of the participants were wearing just enforced that feeling.

The topics discussed were of a really wide range: from political geography to environmental issues and high level philosophy of science analyses. There were physical geography sessions as well as others dealing with teaching geography or applied geography examining the possibilities of using geographical knowledge in practice (e.g. GIS). The plenary lectures were very varied: Saskia Sassen, the AAG's 2012 Honorary Geographer, with her excellent humour, delivered a lecture entitled "Analytic tactics: Geography as obstacle". In her presentation she talked about globalisation, urbanisation as well as the "occupy" movement. She pointed out the importance of paying attention to interrelated topics and places in geographical researches. Jeffrey Sachs, director of The Earth Institute at Columbia University gave a lecture on sustainability stressing first of all the importance of the further development of technology.

Other paper and panel sessions analysed the geographical projections of various global economic processes (transformations and crises) like for example the "new economic policy" in India which is actually a connection of a series of theories, among others neo-liberalism, postcolonialism, network-society, structural adjustment and others. Outstanding researchers who work in India and the USA expounded their viewpoints on that problem. China's ever bigger role in the world was apparent in the programmes of the conference as several panel talks and lectures analysed China's growing presence in the world economy as well as its internal problems. There had been a serious shift in the topic of urban theories. Researchers and policymakers became more and more interested in urban theories based on case studies of megacities in the Global South instead of North American or European cities. This change was obvious at the session called *"Infrastructures of theory: rethinking megacity"*, chaired by Ananya Roy (University of California, Berkeley). But even with fieldworks in developing countries, these theories come from top universities of the western world, without substantial contribution from the places they referred to.

The organisers of the conference put great emphasis on environmental topics as well. Global climate change was not so outstanding and dominant as usual at geographical conferences while other topics like waste, water supply management, resilient cities and sustainability made the range of topics more balanced. It was very profitable that some sessions were followed by discussant or panel talks. The former one highlighted some important issues not mentioned in lectures but related to the topics while the latter one provided possibilities for the participants to debate and that was very important because there were several specialists dealing with the same topic but with different background and experience coming from different parts of the world. At the session called "Unpacking the eco-city phenomenon" several new ideas and sometimes utopian visions (e.g. eco-city developments in China) were discussed but during the panel session academics criticised the elitist master plans and pointed out their unsustainability.

It is worth mentioning that several Hungarian lecturers took part at the conference. Ágnes Erőss (Geographical Institute, Research Centre for Astronomy and Earth Sciences, HAS) and Mónika Váradi (Research Centre for Economic and Regional Studies HAS) examined the so called "Yugosnostalgia" among immigrants of Hungarian nationality coming from the former Yugoslavia. Balázs Forman (Corvinus University of Budapest, Eötvös Loránd University) chaired a session called "Geography of Finance". Eszter Gábrity (University of Szeged) analysed the living conditions and daily experiences of Hungarian minority commuting from Serbia to Hungary while Ferenc Gyuris (Eötvös Loránd University, University of Heidelberg) talked about the political embeddedness

of the scientific discourse of spatial disparities. Éva Kiss gave a paper on "*Industrial Parks and their Transport Connections in Hungary*" (Geographical Institute, Research Centre for Astronomy and Earth Sciences HAS) and finally, Gábor Michalkó (Geographical Institute, Research Centre for Astronomy and Earth Sciences HAS, Kodolányi János University College) and Tamara Rátz (Kodolányi János University College) presented a paper on leisure mobility and well-being in Hungary.

Besides lecturers coming from Hungary, there were several others with Hungarian background who work as researchers abroad but still dealing with Hungarian topics (e.g. Zsuzsa Gille from University of Illinois talked about waste ethics in an empirical case study of the industrial recycling in communist Hungary). Keeping in touch with these notable geographers would have a definitely positive effect on the Hungarian geographical research.

The trips organised during the conference were very diverse. One could choose according to his interest or time at disposal. There were opportunities to taste the wines of Slovenia or visit Chinatown, take a trip to the Hudson valley or the suburbs of New Jersey and several others. More participants visited the South Bronx, the once ill-famed district of New York. The objective of the trip was to show the changes of the landscape over time and to contextualize the disinvestment in the Bronx.

As a conclusion it can be said without exaggeration that this conference offered so many opportunities and so much diversity in topics that it came outstanding among the conferences of that type. There were so many world famous researchers that it was a real problem to decide what to leave out and what to attend. The next yearly conference of the AAG will be in Los Angeles in April 2013, a new opportunity to get an extensive view of the world.

László Cseke