

## PROGRAM

### 2. EVOLÚCIÓS GAZDASÁGFÖLDRAJZI WORKSHOP KÖZÉP-KELET EURÓPÁBAN: AGGLOMERÁCIÓK, KAPCSOLÓDÓ VÁLTOZATOSSÁG ÉS TÉRBELI HÁLÓZATOK

2015. Október 21-22, Szeged, Hungary

<b>0. nap, Október 20</b> (Millennium Kávéház és Klub, 6720 Szeged, Dugonics tér 12.)		
17.30-	Regisztráció	
18.00-20.00	Nyitó fogadás	
<b>1. nap, Október 22.</b> (MTA SZAB, 6720 Szeged, Somogyi utca 7, 1.em., 110-es szoba)		
8.30-	Regisztráció	
<b>9.00-10.00</b>	<b>Plenáris előadás</b>	<b>Rikard Eriksson</b> 'Returning to work: The geographical and industrial mobility of displaced workers'
10.00-10.30	Kávészünet	(Földszint 4.)
<b>10.30-12.00</b>	<b>1. hosszú szekció</b> Zsolt Csáfordi - László Lőrincz – Károly Miklós Kiss Izabella Szakálné Kanó	<b>'Tudás és hálózatok' Elnök: Rikard Eriksson</b> Hozzászóló: Raigo Ernits  Hozzászóló: Zsolt Csáfordi - László Lőrincz – Károly Miklós Kiss Hozzászóló: Izabella Szakálné Kanó
12.00-13.00	Ebéd	(Földszint 4.)
<b>13.00-14.00</b>	<b>Plenáris előadás</b>	<b>Josef Novotny</b> 'Diversity of (economic) geography: some personal reflections'
14.00-14.30	Kávészünet	(Földszint 4.)
<b>14.30-16.00</b>	<b>2. hosszú szekció</b>  Ondrej Slach Jan Zenka Stefan Rehák	<b>'Gazdasági szerkezet és regionális fejlődés' Elnök: Josef Novotny</b> Hozzászóló: Stefan Rehák Hozzászóló: Ondrej Slach Hozzászóló: Jan Zenka
16.00-16.15	Szünet	(Földszint 4.)
<b>16.15-17.45</b>	<b>1. rövid szekció:</b>	<b>'Tudás, térbeli hálózatok és kapcsolódó változatosság' Elnök: Stefan Rehák</b> György Kukely Zoltán Elekes Zsófia Vida Sándor Juhász Adam Whittle János Gyurkovics – Zsófia Vas

19.00-22.00 Konferencia vacsora (Földszint 4.)

**2. nap, Október 22.** (MTA SZAB, 6720 Szeged, Somogyi utca 7, 1.em., 110-es szoba)

8.30-	Regisztráció	
9.00-10.00	Plenáris előadás	<b>Attila Varga</b> 'Knowledge networks and agglomeration economies in empirical geographical economics' (Földszint 4.)
10.00-10.30	Kávészünet	(Földszint 4.)
10.30-12.00	<b>3. hosszú szekció:</b>  Balázs Lengyel Gábor Márkus	<b>'Vállalkozók és hálózatok' Elnök: Attila Varga</b> Hozzászóló: Gábor Márkus Hozzászóló: Vojtech Kadlec Hozzászóló: Balázs Lengyel
12.00-13.00	Ebéd	(Földszint 4.)
13.00-14.00	<b>4. hosszú szekció:</b> Balázs Páger István Máté Lengyel – Ernő Molnár	<b>'Iparágak térbelisége' Elnök: Jan Zenka</b> Hozzászóló: István Máté Lengyel – Ernő Molnár Hozzászóló: Balázs Páger
14.00-14.30	Kávészünet	(Földszint 4.)
14.30-16.00	<b>2. rövid szekció:</b>	<b>'Regionális és környezeti gazdaságtan'</b> <b>Elnök: Balázs Lengyel</b> Renáta Kitti Fodor Ágnes Roboz Bradley Loewen Zoltán Sági Zsuzsanna Márkusné Zsibók
<b>Workshop zárás</b>		

**Helyszín:**

MTA Szegedi Akadémiai Bizottságának épülete  
Somogyi utca 7. 6720, Szeged, Magyarország  
Térkép: <https://goo.gl/maps/LGDQW>

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**Zsolt Csáfordi<sup>1</sup> – László Lőrincz<sup>1</sup> – Balázs Lengyel<sup>1,2</sup> – Károly Miklós Kiss<sup>1,3</sup>**: The effect of labor flows and skill relatedness on firm performance

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Present paper addresses the effect of the labor flow between companies on firm productivity. Several studies found knowledge spillovers between firms, which can be observed in firm performance (e.g. productivity). An obvious channel of knowledge transfer is labor mobility between companies, since moving employees bring their human capital to another firm, enhancing its productivity.

Our hypothesis is that the difference in productivity of the sending and receiving firms basically influences the effect of labor flows on the productivity of the receiving firm. We also assume that there is a difference between labor flows from related and non-related industries in terms of their effect on firm productivity, because the industry-specific skills of employee's matter in organizational learning. We additionally hypothesize that organizational culture also matters: the new employee can exert more positive effect in a firm with similar ownership or size, because of the familiarity with the new work environment.

We have access to an anonymized employer-employee linked panel database for years 2003-2011, which integrates data collected by the Hungarian health, pension, treasury, tax and education authorities. Relative productivity of the sending and receiving firm is standardized by the average productivity of the sending and receiving industries. To identify the similarities in skills needed in various industries, we construct the skill relatedness network of industries based on intercompany mobility of employees in the data. Related and non-related labor inflows are distinguished in order to measure their effects on firm performance. Beyond information from the firms' financial statements, further explanatory variables include relative productivity, company size, and ownership structure of the firm of origin.

First results suggest that mobility from more productive firms has a positive effect on firm productivity. Labor flows from skill-related industries, and particularly from the same industry outperform other labor flow categories in increasing firm productivity. These effects are magnified by the relative size of labor inflow. The effects of ownership structure and size of the sending firm are significant in the bivariate analysis, but in the multivariate models, these effects are mitigated by the relative productivity effect.

Keywords: skill-relatedness network, industry-space, firm productivity, labor mobility, fixed-effect regression

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**Zoltán Elekes:** Related variety, related trade variety, and regional employment growth in the transition economy of Hungary

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The literature on related variety, i.e. the presence of industries that can potentially learn from each other and combine knowledge, suggests that knowledge spillovers between related industries foster regional growth. Empirical results so far showed fairly systematically that the related variety of industries in a region has a positive effect on regional employment growth in particular. This is because of the new markets forming around product innovation resulting from knowledge recombination. Other than intra-regional knowledge spillovers, extra-regional knowledge is also considered beneficial for regional development. In this respect, the related variety of extra-regional trade linkages has also been identified by scholars as a potential source of spillovers fostering regional growth. Empirical evidence in this regard is less available.

So far, research on related variety has been primarily concerned with regions of more developed economies. Evidence about different historical contexts and development paths of regions is less available. In this respect, regions of the transition economy of Hungary may prove to be a novel testing environment for related variety and related trade variety. As a result of the FDI driven economic transition from a planned economy to a market economy in the '90s, the Hungarian economy can be characterized by a technological gap between foreign- and domestic-owned firms. This so-called dual-economy structure can refine our view on the relationship between related variety and regional growth. In this respect, the related variety within or between the foreign- and domestic-ownership groups may contribute differently to regional employment growth.

In this paper we wish to contribute to the literature on related variety by investigating the relative importance of foreign- and domestic-owned firms, and by providing additional evidence on the role of trade linkages in regional growth. We set out to (1) estimate the effect of related variety on regional employment growth; (2) estimate the effect of relatedness between export and import industries on regional employment growth; (3) estimate the effect of related variety within and between the sets of foreign- and domestic-owned firms for regional employment growth. For this we rely on firm level panel data by urban agglomeration and SITC product code of export and import products for the period of 1996-2012. Relatedness of industries and trade flows are measured by entropy-decomposition. We expect that the related variety of economic activities and trade flows would have a positive effect on regional employment growth, while the relative importance of foreign and domestic ownership changes depending on the stage of economic transition.

**Keywords:** related variety, trade linkages, economic transition, regional development

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## Raigo Ernits: Diversification challenges for small industrial towns

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Spatial specialization enables for regions to benefit through economies of scale, spillovers and other externalities. On the other hand, the variety of sectors or industries in the region has seen as the way to benefit from cross-sectoral spillovers and reducing the vulnerability through risk diversification. In sparsely populated countries, especially in post-socialist countries with traditionally lower spatial mobility, the variety is needed to study across smaller areas as well. In the coming paper, structural patterns of small towns (2000-10000 inhabitants) economies will be studied. The aim of the paper is to explain, how the challenges and future options of small towns are dependent on their former economic structure. Empirical study in Estonian small towns have shown that there is, besides the cross-sectoral (cross-industrial) variety, necessary to distinguish additionally the variety across different production stages, across different essential production inputs (resources) and outputs (products). In smaller towns and regions, the economies tend to indiversify more frequently as larger towns or regions because soon in relatively small scale some activity may prevail over the rest. Besides, in smaller towns, the scale even of prevailing activity is small enough to hold in single company and this leads to organizational indiversity. There are mainly three reasons why towns with indiversified economies are established or why in a town's economy is forming indiversified during the time. First, towns established close to resources located away from the other activities, second, towns where prevail activities with similar productivity per space (activities pulled out from bigger cities), and third, the towns which are located as central places for dispersed specific activities. The combination of these three different location reasons is often the case as well. Additionally, negative externalities of activities tend to locate them separately from other activities.

For the towns established for to use natural resources with specific location, is characteristic the input indiversity but this has in turn caused indiversity across industries and products as well. These towns can have potential for variety across different production stages (to add product development, marketing etc) but problem is the lack of cross-industrial spillovers. The towns where prevail the activities with low profit per space unit ratio, can be rather varied across different industries and in turn across resources, products and organizations but not across production stages. The unrelated variety delivers them some protection against asymmetric shocks but main development problem for those towns is the lack of motivation for related variety across existing industries. The last group, the towns functioning as central places for specific suppliers, have related variety across production stages backward but not forward. For them, the main challenge is related to development of an unique forward production linkage or the attraction of additional industries acting on the same scale.

Keywords: specialization, indiversity, diversification, small towns, path-dependence

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**Renáta Kitti Fodor:** PES – a Payment for Ecosystem Services or a Price for our (un)Efficiency System?

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“(A) system of conservation based solely on economic self-interest is hopelessly lopsided. It tends to ignore and thus eventually to eliminate many elements in the land community that lack commercial value but that are (as far as we know) essential to its healthy functioning. It assumes, falsely, I think, that the economic parts of the biotic clock will function without the uneconomic parts. It tends to relegate to government many functions eventually too large, too complex, or too widely dispersed to be performed by government. An ethical obligation on the part of the private owner is the only visible remedy for these situations.” (Leopold 1949).

In the 1970s, the ecosystem functions as services began the utilitarian draughting according to the attention of the public opinion at biodiversity and the environment protection. In 2003, there was an international gathering (it called Millennium Ecosystem Assessment), where the participants reached an agreement about that the ecosystem services are necessary to deal with on a daily level. 24 pieces of ecosystem services were defined, which content only 4 show an improvement, 15 services decline seriously and 5 services show stability.

Ecosystem services are essential, non-substitutable and poorly understood. Nowadays, there are real costs to their provision and protection. Someone must pay those costs. In the last few years, global economic problems have framed and conducted global cost-benefit analysis and this led to the Payments for Ecosystem Services (in additional PES) to come into existence.

Therefore my research questions are what is the PES? How does it work and what kind of level? Is it a new economic policy tool or something's redefined? There are a lot of case studies, but not in Hungary. May it work in Hungary in an unorthodox economic environment? Can it be an option to solve environment problems in Hungary?

I would like to show that although PES is not a perfect tool, it can still be one of the best tools available today. Nowadays, when the sources are scarce available. Nowadays, when the population is dramatically growing. Nowadays, when there are lots of problems, which are world-wide.

In my future research I would like to show that PES is a mechanism to translate non-market values of nature into real economic incentives, well-defined property rights, absence of intermediaries and PES is emphasizing the economic efficiency advantages of sheer market transactions. Payments could change the logic from doing and to start thinking what is individually best to do.

Keywords: ecosystem services, environmental problems, economic policy tool

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In the recent stream of literature innovation is understood as an interactive and non-linear process, which does not take place randomly over space but mostly tends to occur in a few particular places and highly depends on the creation and diffusion of knowledge. However not the knowledge per se that really matters for innovation but industry-specific knowledge. In connection with industrial knowledge and knowledge bases a key theory that has been widely used in recent studies is the differentiated knowledge base approach proposed by Asheim and Gertler (2005) which identifies different types of knowledge that underlies innovation activities in different economic sectors. In this concept three types of knowledge bases are distinguished: (1) analytical, (2) synthetic and (3) symbolic.

These three knowledge bases differ in various aspects such as the creation and development of knowledge or the importance of geographical proximity in the innovation process. The analytical knowledge base is characterised by codified knowledge with relatively constant meaning between places. This type of knowledge is dominant in economic activities where scientific knowledge and formal models are important. Synthetic knowledge base depends on partially codified knowledge with strong tacit, context specific component. It combines existing knowledge in new ways. Mechanical engineering industries could be characterised by this knowledge base. The symbolic knowledge base accounts for creative or cultural industries and consist of very strong context specific, tacit knowledge.

Even though the above mentioned approach is one of the most cited one, other notions, like recombinant knowledge, are also exist yet rarely used or compared with. Furthermore, quite often these approaches stuck in a theoretical level and only few efforts could be find which make an attempt to make these concepts quantifiable. Thus, the aim of this paper is to review and compare the existing literature about the theory of industrial knowledge bases and to explore attempts that aimed to operationalise these notions.

Our paper investigates the topic on three different but highly interrelated levels. At first it makes an attempt to collect and analyse the distinct conceptual approaches in connection with industrial knowledge bases. Secondly, drawing on the comparison of conceptions, identification of differences in operationalisation is conducted. Based on preliminary research it could be said that most papers use case study methodology to study knowledge bases while very few tries to catch the notion by more systematic and formalised quantitative methods. Finally an attempt is made to collect empirical papers and present their results to provide an overview about the use of industrial knowledge base concept. This collection of paper is organised around the topic of economic growth since it seems to be widely accepted that in endogenous growth theory taking into consideration the role of human capital, thus knowledge, for regional development and growth is inevitable.

Keywords: knowledge, industrial knowledge base, economic growth

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**Sándor Juhász:** The impact of agglomeration economies and technological relatedness on firm survival – the transition economy case of Hungary

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It is often argued whether the spatial concentration (agglomeration) of firms that belong to the same industry (specialization) or the concentration of different industries (variety) is more beneficial for the economic performance of local firms. On the one hand, localisation economies arising from specialization are often associated with specialized local labour market, specialized local supply-chains and localized knowledge spillovers. On the other hand, urbanization economies are generally associated with the variety of industries and region size. Recent conceptual and empirical contributions concentrating on related variety showed that it is not specialization or variety per se that is beneficial for regional development but the presence of technologically related industries, i.e. those that can potentially be the sources of knowledge recombination and innovation.

While there is a growing body of literature on related variety in more developed regional economies, economies with different historical heritage are less well understood. In the case of the Hungarian economy, foreign direct investment played a crucial role in the economic transition from a planned economy to a market economy in the '90s. This development path resulted in the dual-economy structure of today with a technological gap between foreign and domestic-owned firms.

In this study we examine the impact of different agglomeration externalities and technological relatedness on firm survival in Hungary between 1996 and 2012. We wish to contribute to the literature in two ways. First, evidence linking related variety to the chance of survival at the firm level is scarce in the literature. Second, by seeing whether foreign or domestic firms benefit more from agglomeration externalities and related variety, we may better understand the role that FDI plays in economic transition. We set out to answer two questions: (1) how does agglomeration externalities and related variety affect the survival of firms in general; (2) are the survival chances of foreign and domestic firms affected differently?

To answer these questions, we used data on approximately 90.000 firms entering Hungarian urban agglomerations between 1996 and 2012. We focused on manufacturing firms with more than 5 employees. The dataset was provided by the Hungarian Central Statistical Office, constructed from yearly balance data of firms with double entry bookkeeping. To estimate the effect of agglomeration economies and related variety on firm survival we applied a Cox proportional hazards model, which is widely used for survival analysis. We expect that (1) localization economies, urbanization economies and related variety have a positive effect on firm survival; (2) the effect of related variety is stronger between ownership groups, than within and benefits primarily the domestic firms.

Keywords: survival analysis, agglomeration economies, technological relatedness, transition economy



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## Vojtěch Kadlec: University-Business Collaboration: Comparing and Contrasting the Two Innovative Czech Regions

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This paper compares the nature of academia-business collaboration in the two most innovative Czech regions. An analysis of the nature of collaboration between life-science researchers in two leading Czech universities and private companies has been performed to identify whether targeted support provided at the regional and university levels can make a real difference and can overcome hindrances from the national level. In particular, the paper investigates the motivation and approaches of leaders of life-science research teams to cooperation with private companies, the perceived barriers impeding such cooperation, including the strength of demand for innovation in both analysed regions.

The methodology of this study rests with a qualitative analysis based on in-depth interviews with leaders of life-science research teams in the science faculties in both Charles University in Prague and Masaryk University in Brno (South Moravia). The interviews were primarily designed to capture soft factors such as motivation, character and intensity of demand, barriers impeding collaboration between research teams and private firms, and the “atmosphere” surrounding such cooperation. The design of interviews allowed the specific processes and factors at play in both faculties to be placed in a regional and national context.

The leaders of research teams in both regions seem to be primarily motivated by a “feeling of satisfaction” from seeing the real-life impacts. At the same time, however, large group of life-scientists in both Prague and South Moravia consider technology transfer to be in conflict with the development of their research agenda and with the development of research at their universities in general. This aversion towards collaboration with the private sphere persists even in South Moravia, where substantive efforts to build partnerships between research institutions and private companies have been made for more than a decade. Thus, this finding demonstrates strong persistence of informal institutions and of underlying values (as argued by NORTH 1991) even after profound societal transformation, which CEE countries underwent since the collapse of state-socialism.

By contrast, a different perception of existing barriers by life scientists from both universities was documented. While researchers in South Moravia mostly referred to the improper system of R&D financing, scientists in Prague seemed primarily concerned with generally low corporate demand for innovation. This difference probably further vindicates the positive role of over a decade evolving innovation strategy in South Moravia. Researchers in South Moravia therefore no longer face barriers preventing the very emergence of desired cooperation with the business sector, but rather worry about obstacles that stand in the way of its more intensive development.

The study also confirmed a strong and enduring distrust between academics and private firms that severely hinders cooperation. This analysis showed that functioning of regional innovation systems emerging in the former command economies in CEE is not hindered by unique barriers that would not exist elsewhere, but, instead, by a particularly strong negative synergy among a number of barriers and thus there is a particularly strong need for renewed trust-building (BATHELT ET AL. 2004, RODRÍGUEZ-POSE 2013).

In a more optimistic tone, the second more general observation following from this comparative study seems to suggest a surprisingly high role of bottom-up initiatives, even though performed within unfavourable national institutional framework. The example of stable and relatively vigorous support provided for technology transfer via the regional innovation strategy in South Moravia shows what can be achieved by a limited number of deeply committed and knowledgeable people capable of sparking enthusiasm among other stakeholders. Thus, the recent emphasis upon the role of leadership in regional development seems to be well placed (SOTARAUTA 2010; SOTARAUTA AND MUSTIKKAMÄKI 2015).

Keywords: technology transfer, universities, barriers for innovation, innovation demand

In Central Eastern Europe (CEE) global leading firms have significant and accelerating role in production. Industrial and structural transformation is led by these transnational firms and they have strong effect on economic development and employment. Although, dual economic structures have formed, initially the relationship between transnational corporations and local firms was weak.

In the last decade firms already present in the region started to enlarge their activity owing to the relocation of different activities. As a result, in some sectors the major leading investors concentrate on more and more activities, creating local networks and cooperation with local establishments. The subcontractors strengthen their production in CEE due to continuous investments of the main “flag-ship” companies. There is growing evidence that reinvested FDI enhances technological change through technological diffusion.

At the same time, stronger competition created by Asian firms, and also the impact of economic crisis resulted in new structural transformation. In some industries relative competitiveness changed in a disadvantageous way and whole industries collapsed (e.g. footwear and clothing industry, low value added activities in electronics). The most work-intensive, simplest stages of production were relocated to developing countries.

On the other hand, in some industries (e.g. automotive industry) the growth of embeddedness has also been generated by main producers and/or the government. Regional clusters start to form around these main producers, and enlarge due to new investors and subcontractors who also relocate their activities to Hungary, utilizing the external effects.

As Hungary is becoming a significant vehicle and accessories producer, the territorial embeddedness of transnational companies is growing and interconnections with local firms are strengthening. Hungary is becoming a target area of European relocation decisions and the flagship firms are seeking the possibilities of interconnections with non-economic actors (e.g. universities, research institutions etc.).

After the millennium the motivation of the R&D location has changed. Since then more and more R&D centers of the TNCs have been established in Central Eastern Europe. The TNCs are playing growing role in the national innovation systems by deepening the cooperation with the local universities and research institutes. However, the further embeddedness of the R&D activities of the TNCs should be strengthened by economic policies.

My main questions are: How do GPNs affect economic development? In the long run, how could economic development be sustained in a delicate business environment in an extremely export-orientated country? How can we strengthen embeddedness based on endogenous growth factors within specific regions?

Keywords: embeddedness, relocation, global production network, transnational companies

The mobility of inventors has long been considered as the major source of knowledge flow across inventing firms. Mobility of inventors is important because firms benefit from the tacit or embodied knowledge of incoming productive inventors. It is also well understood that firms need to hire inventors who possess technological expertise distant from the hiring firm because then the firm obtains inflow new knowledge by the inflow. Furthermore, incoming inventors also bring their professional networks to the firm; thus, communication with previous colleagues can provide the hiring firm with additional access to external knowledge. The joint effect of inventors' mobility and their co-inventor networks is a very important though under-researched phenomenon; this is the niche we address in the recent paper.

Collaboration networks are crucial in understanding innovative success, in which the structure of the network and the position of the firm or the inventor determines the variety of knowledge access and therefore are considered as major underlying factors for innovation. The structural hole hypothesis is one of the most reflected propositions in this regard claiming that those firms or individuals –often called brokers– produce more radical innovations whose contacts represent non-redundant parts of the network. However, there is no clear evidence on the above theory because innovation can be produced in a cohesive network and also in a network with structural holes depending on the role of social capital in the process of innovation. On the one hand, the innovation output of the firm is found to depend more on the number of connections but structural holes were found to have a negative effect. On the other hand, Fleming et al. (2007) found a positive effect of brokering on innovation output of individuals.

Certainly, the mobility of inventors and the co-inventor networks are not independent from each other; the network is generated as the inventor moves from one firm to another. Networked inventors are more productive and therefore firms can be more motivated in hiring them away. However, evidence shows a reversed causality; mobility increases the productivity of inventors because they learn from job switching, whereas productive inventors and the likelihood. Therefore extra attention shall be paid for the endogen connection between mobility and network formation in an integrated framework.

In this paper we estimate a difference-in-difference inventor mobility model based on all IT-related patents from the harmonized OECD PATSTAT database that contains patents from 1977 to 2013. The dependent variable is the cumulative change of citations to the patents, which is closely associated with the value of innovations, owned by the hiring firm after the observing the inventor mobility. The two explanatory variables in the model are the number of connections (degree) and cohesion in the inventors' ego network (Burt's constraint indicator).

Our findings imply that the more contacts an inventor has in the network the higher impact she has on the value of innovation at the hiring firm. The model verifies the structural hole hypothesis as well; in general, those inventors have a higher impact on innovation value who have access to non-redundant knowledge and whose network is less cohesive. However, a closer look reveals a reverse U-shaped effect of Burt's constraint on innovation quality. Thus, there might be level of redundancy in the inventor's network, which is optimal for creating high quality innovations.

Keywords: degree, Burt's constraint, difference-in-differences, OECD HAN database, patent citations

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**István Máté Lengyel – Ernő Molnár:** Reindustrialization and path-dependence: ideas related to the spatial dynamics of the Hungarian industry

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In the course of examinations concerning the spatial structure of the Hungarian industry after the change of regime emphasis was primarily put on the changes, while less attention was paid to research topics related to elements representing unchangingness and their underlying factors in the background. However, certain longer-term tendencies – such as the recurrence of the traditional North-South diversification of industrial spatial structure, or the sectoral and technological links witnessed between the industries before and after the change of regime in the case of several major industrial locations – justify an approach that focuses on the elements representing continuity and enhances the integral role of development in the transformation process. Another underpinning argument of our approach is the apparently realized aim of shifting the Hungarian industry towards higher value-added activities, which implies the increasing appreciation of hardly-reproducible, place-specific, qualitative location factors emerging over a longer period of time. In order to embed our research into a theoretical framework we turn to evolutionary economic geography and one of its core concepts, the notion of path-dependence. In our view the effect of past events and decisions influencing present and future economic development can rather be interpreted by the dynamic approach of path-dependence - more open for changes - in the context of Hungary. On the one hand we do not intend to underrate the drastic external effects – particularly manifested in the form of foreign direct investments - that affected the economic transformation of the country and largely contributed to the renewal of the industry in both technological and organizational aspects. On the other hand, in the regions of the Hungarian Great Plain constituting the location of our empirical research, as far as we are concerned, an outstanding characteristic of the socialist heritage is definitely the lack of traditional industrial districts, due to which the static approach of path-dependence focusing on the problem of lock-in appears to be a less appropriate theoretical framework. Empirical investigations were carried out in small and big town environment, where significant differences were indicated not only in the volume and complexity of traditions of industrial activities, but also in the role of foreign direct investments determining the transformation of the industry after the change of regime. In the transformation of the industry of the small town – which forms a less attractive investment destination – the role of local determining factors is larger, the effects enforced by foreign direct investments are more constrained and they rather appear in a more indirect way through the connection of locally owned enterprises to supplier networks. The case study of the big town, however, focuses on an industrial park which serves as a greenfield location, where the emergence of the key actors can almost exclusively be connected to the recent foreign direct investments. Although in this case the role of local determining factors in the development of the industry is far more restrained, experience show the tangible influencing effect of endowments inherited from the past, the emergence of path-dependence.

Keywords: reindustrialization, path-dependence, Hungarian industry

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**Bradley Loewen:** Contextualising regional policy for territorial cohesion in Central and Eastern Europe

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This paper presents the background and sets the future research agenda for part of a multinational research project examining regional polarisation and peripheralisation in Central and Eastern Europe -- ITN RegPol2 -- and more specifically the researcher's individual project, "Path dependence and path innovation of regional policy in old and new economy locations." The concept of path dependence has applications in both economic geography and institutional development. With a focus on regional policy in path dependent political-institutional contexts of CEE, the project consists of a comparative study of the Czech Republic, Estonia and Hungary, which also relies on an understanding of the relationships between regional policy, policymaking institutions, and path dependent processes of regional growth and decline in CEE from an evolutionary economic geography perspective. As background to the project, this paper discusses key instruments for territorial cohesion in CEE from a comparative historical analytical perspective amidst the neoliberalisation of EU Regional Policy, which has implications for the production and reinforcement of spatial inequalities in regional development. Territorial cohesion is viewed as a key objective of Regional Policy to counteract regional polarisation and peripheralisation. Nevertheless, the neoliberalisation processes unfolding in the different political-institutional contexts of CEE have implications for the movement, transformation and effectiveness of policies such as Regional Policy, complicating the holistic understanding of policy effects. Increasingly neoliberal regional policies across Europe and in the different path dependent political-institutional contexts of CEE in particular, raise questions about the effectiveness of Regional Policy to achieve territorial cohesion. Comparative historical analysis provides a method of inquiry into path dependent processes shaping institutions and affecting policy outcomes, and is therefore a useful approach for conceptualising regional political-institutional contexts and their implications for Regional Policy. Operational Programmes encompassed in national strategic documents from the Czech Republic, Estonia and Hungary over three programming periods are examined as the key instruments for the implementation of Regional Policy, the comparison of which reveals a difference in perspectives towards the common EU goals of competitiveness and growth as a means of achieving territorial cohesion. The research thus points to the need for deeper comparative understanding of the political-institutional contexts in the three countries in order to identify factors of effective policies and to tailor effective policy solutions to specific regional contexts, a task to be advanced in future studies of regional policy and political-institutional contexts of CEE. Furthermore, investigation into the path dependence processes of regional growth and decline from an evolutionary economic geography perspective is needed in order to contextualise regional policy in CEE.

Keywords: regional policy, territorial cohesion, Central and Eastern Europe

The role of networks in enhancing corporate performance has a wide spreading literature. Besides the existing foreign research results, there are many opportunities to expand our knowledge about its local aspects in Central and Eastern Europe, including Hungary. Our research is based on the dataset of a comprehensive competitiveness research made by Szerb et al. (2014). The authors investigated the competitiveness of around 800 Hungarian small and medium-sized enterprises (SMEs) along 10 competitiveness pillars (altogether 55 individual complex variables) for the period between 2010 and 2012. The pillars of competitiveness include human capital, financing, networking, product and product innovation, administrative routines and processes, competitive strategy, applied technology, marketing, internationalisation, and, finally, on-line presence and ICT tools. On the basis of the selected variables and competitiveness pillars, a competitiveness index was developed through several transformations in altogether 7 steps. When creating the Small Business Competitiveness Index (SBCI) a novel methodological technique was introduced according to which a special bottleneck penalty was used to balance the extreme pillar values regarding the 10 established pillars of competitiveness (so-called Penalty for Bottlenecks, PFB method).

The richness of the data base allows us to investigate the role of inter-firm cooperation in forming the corporate level competitiveness in case of the surveyed Hungarian SMEs with the help of various statistical analyses including multivariate tools. In the present research we intend to study that how intensive is the cooperation on its different levels in these cases, and whether there is any positive effect of these connections to the respective firm competitiveness and financial performance. Based on the international literature the higher the level and tighter the cooperation is, the higher firm performance can be achieved. Our data base provide us detailed information about the location of the surveyed SMEs on the basis of postal codes, which means that the geographical aspects of the inter-firm co-operations with a clear focus on competitiveness can also be analysed.

The findings of our research indicate that, in general, these connections are rarer and looser as suggested by the literature. The majority of the examined firms have no or only a few connections. These are typically associated with some subcontractors in outsourced professional operations. However, in those cases where we can register a higher level of cooperation, the positive effect to the competitiveness can be manifested. In the field of financial performance the picture is much more blurred. There is significant connection between the existence of cooperation and the better financial performance, and, at the same time, the literature suggests at least some connection between the two factors.

Keywords: small and medium-sized enterprises, competitiveness, co-operation

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**Zsuzsanna Márkusné Zsibók:** Regional decomposition of the NAGIS project's long-term macroeconomic forecast for Hungary: A methodological and literature review

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The project called „Long-term socio-economic forecasting for Hungary” within the frame of „Adaptation to climate change” programme aims to forecast the long-term socio-economic development path of Hungary until 2050, and to foster the adaptation to climate change. The results will be integrated into the National Adaptation Geo-Information System (NAGIS). As part of this project, a long-term macroeconomic forecast will be made on the basis of a neoclassical macro growth model. The geographical scale of the required forecast is the regional and micro-regional scale, and in some cases, a 10 x 10 km raster depending on the variable type. For this reason, the data obtained from the national level forecast of the macroeconomic model have to be regionally decomposed. During this exercise, first, the national data will be downscaled to the county level, and then in the second step to the micro-regional (járás) level, if possible. The forecasting project runs in the second half of the year 2015, and the modelling work is to be done in the remaining months of the year. Until this time, the literature review is done and the macro model is roughly designed, but domestic and foreign experiences give us little reference for the practical elaboration of the spatial decomposition, therefore our expected results will be preliminary.

The aim of our work is to review the literature available on regional disaggregation, as well as to summarise and evaluate the revealed methodological options, and, finally, to give recommendations on the most suitable methodology with respect to the project tasks.

Due to the fact that the relative economic development of the different regions (counties and micro-regions) is the result of the interaction of various factors, the allocation of the national level data between the regions should be made on the basis of a complex indicator. Of course, spatial downscaling with respect to economic variables has its reasonable limits. For example, it is theoretically problematic to estimate gross domestic product at a scale that is smaller than the county-level. Concerning e.g. employment data, such limitations do not apply. In the two steps of the spatial downscaling exercise, statistical interpolation techniques can be used which apply statistical relations between historical data at greater spatial resolution and smaller resolution.

Since the required time horizon of the forecast is quite long from a practical macroeconomic modelling point of view, we intend to use more than one possible scenarios. At least two alternative scenarios will be considered. The first describes a regionally neutral development path which presumes that the present spatial trends will continue and that implies rather a polarisation than a homogenisation process (a laissez faire regional policy), while the second one presumes a more active spatial development policy implying the catching up of lagging regions to the more developed areas. As common in climate economics literature, the first scenario can be regarded as a baseline, a so-called business-as-usual scenario, while the second one is the case of policy intervention. Future regional trends will, probably, be manifested between these two alternatives.

Keywords: regional disaggregation, macroeconomic forecast, long-term modelling

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**Balázs Páger:** The regional entrepreneurial activity influencing factors in the Central and Eastern European regions

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The importance of regional entrepreneurial activity has increased in the last years and many scholars have been starting to investigate different parts of this topic. New firms and enterprises may play a significant role in the regional economies due to their knowledge and novelties what they bring in the market. They may stimulate the competition, the division of labour and creating innovations (Glaeser et al. 1992, Acs–Armington 2004). A new firm may inject diversity onto the market and “entrepreneurship is an important source of diversity by transforming knowledge into economic knowledge that otherwise would have been remained uncommercialized” (Audretsch–Keilbach 2004, 608.). The regional level investigation of entrepreneurial performance and the effects of entrepreneurship on the regional development as research topics have emerged very fast since the last decade. Several studies showed that entrepreneurships are embedded in that socio-economic environment, where they continue their economic activity. The regional context may influence significantly the foundation of a new firm and its future.

This study focuses on the regional factors that may influence the foundation of entrepreneurships. We attempted identifying such factors that may characterize the regional socio-economic environment of the Central and Eastern European (CEE) regions. After reviewing the literature we collected different the data of different socioeconomic factors (like tertiary education, economic performance, employment and so on) that may influence the regional business activity. In order to measure the entrepreneurial activity we used the regional business demography data of Eurostat (the birth and death of entrepreneurships in a given year). First of all Western and CEE regions were compared regarding the business demography. It was important to see the position of them from this view. The business demography data could be accessed for 15 European countries.

For the CEE investigation we involved 190 NUTS 3 regions from 7 countries (Bulgaria, Czech Republic, Hungary, Poland, Romania, Slovenia and Slovakia). We conducted the analysis for all branches and also only for the industry sector (NACE 2 B-E classes). The regions were clustered according the number of born and dead firms per 1000 inhabitant for 2008 and 2009. We used discriminant analysis for repeat the classification of the regions with the socioeconomic factors. Discriminant analysis helps us to identify which socio-economic factors may be more important and which less concerning our analysis. After we have found the more important factors we attempted to measure their impact on the birth of firms. The results showed that the rate of higher educated people (tertiary education), the unemployment rate and the economic performance may influence the foundation of new entrepreneurships primarily.

Keywords: entrepreneurship, entrepreneurial activity, regional development, Central and Eastern European regions



The accession of the Central and Eastern Europe countries to the EU was associated with simplified mobility of capital and labour, which facilitated higher degree of migration and transfer of capital. Migration is believed to be an efficient mechanism for equilibrating regional labour markets in member states and together with the financial transfers towards the lagging regions under the EU cohesion policy instruments should reduce regional disparities. This reduction of regional disparities is one of the pillars of the EU regional policy, which finds its origins in the Treaty of Rome founding the European Economic Community in 1957. The founding signatories did declare their aim “to strengthen the unity of their economies and to ensure their harmonious development by reducing the differences existing between the various regions and the backwardness of the less favoured regions”. Internal migration in the post socialist countries has been under research during the 2000s. This research focused on the role of migration in the post socialist transformation process (FIDRMUC, 2005; GHATAK, MULHERN, WATSON, 2008; WHITE, 2007; PACI et. al., 2007; HUBER, 2007) however, changes in internal migration in the new Member States in terms of their integration into the EU are not yet the subject of in-depth research. This article aims to describe changes in the structure of internal migration in the Slovak Republic in the course of the integration process into the EU and assess these processes from the perspective of regional development. The purpose of this article is not to prove causality between the increasing level of integration and a change in internal migration. We use data from the Statistical Office of Slovakia, from the database of the registration records on internal migration during 1996 – 2011 which contain the information about the previous residence and new permanent residence, date of birth, marital status, education, nationality, citizenship and reason for migration. We have observed only slight overall increase of the internal migration rate in Slovakia, however there was a substantial structural change in the migration. Bratislava region dramatically increases the net population gain and this is almost exclusively attributable young working age population and accompanied by an upgrade of the level of education and attraction of female population. By calculating the eigenvectors of the interregional migration matrices we project the future long term stable population distribution based on the assumption that migration behavior will follow the same pattern as during the last decades. We also compare future spatial distribution of the population regarding the education and age structure.

Keywords: internal migration, regional development, population projection

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**Ágnes Roboz: Towards Linking the Concepts of Ecosystem Services and Environmental Justice:  
A Hungarian Waterfront Development Case Study**

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To interlink the concept of Ecosystem Services and Environmental Justice is new frangled in national and international level also. Some example and case study can be found but they are elementary, mostly they start to framework the connection of this two concepts. This paper tries to present a Hungarian case study in connection to the second biggest river of the country which called Tisza. The issue based on freshwater ecosystem services and that the different social classes how to access them in Szeged city which found in the Great Hungarian Plain. An environmental justice issue linked to the river bank, because the governance of the city started a river side development project within the framework of it, there will be a lot of change in the landscape of the city, in the use and in the accessibility of the river coast. This development is about to renew the water wall of the River Tisza. This project is already finished, but there are other urban landscape plans. The water wall project mainly financed by the European Union but also by the city of Szeged. The decision makers of Szeged commissioned some experts to design and carry out the project. There are expert of water management, architects and landscape architects also, who are mainly the top-middle class inhabitants of the city. They see this project only through their glasses, but do not think about the poorer middle class or the minority of the city. In Szeged some of the ecosystem services are available for everybody independently of social class or income, because they are free. Those services which are available for the most part of the middle class or the elite are those which for the people have to pay. There are some special cases what are connect to the river Tisza nearby Szeged and there are some differences between them independently of the state of the development. In the pre-development state, before the water wall construction started mostly all social class used the river bank in different ways. There are some floating houses witch function as fancy restaurant, café or nightclub for the elite. Also they have private holiday or floated houses in the river side. There is a paying but trimmed beach. For the poorer classes there are some free beaches where they can swim in the summer time, but all of them are illegal. For this classes the before mentioned entertainment facilities are too expensive not to mentioned the marginalized groups for example the homeless people whom are lived under the bridge or car ramp or in the scrubs forest near by the river. After the development project these slight quantity of the opportunities will narrow because the aim of the governance not only innovate the water wall, but the whole river stage. They would like to be favours for the well-to-do classes with more fancy floating houses or restaurants in the river side, with a beautiful walking side and park without enjoy themselves teenagers or sleeping homeless people because the governance already criminalized these activities. Consequently we can see that not only the marginalized or poor social classes could to exclude from the benefits of the nature. For the fair distribution of the goods and services it is necessary to study all social classes not only the marginalized ones as it is usual in environmental justice cases.

Keywords: Ecosystem Services, Environmental Justice, Waterfront Development, Qualitative Research Methods

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People decide about a place of living and working not only looking at wages available in a given city, but also by the cost of living there. In particular, property costs may hamper benefits of higher wages in expensive areas, while available of cheap housing may attract people to less prosperous regions. Our aim is to describe the relationship between real estate prices and economic development of the area the property is located at using a cross section of data for years 2013-2014.

In our research we use transactional data of the Hungarian housing market which covers the entire country and is based on purchase-and-sell transaction data of residential real estate. The key variables beside price and area are the type of the property (detached or terraced house, condominium, large block of flats), the location of the lot (based on zip code areas) and the year of purchase.

The database comprises of two parts which differ slightly in both data content and precision. Our work is hindered by the suddenly decreasing transaction number after 2007 which is due to the market slowdown and stricter data protection rules. The database contains some more problems including irrelevant price values and incomplete area data, the latter varies regionally and by settlement type. Mean and median price per square meter is calculated for each settlement after various data cleaning steps. The biggest issue here is the problem of villages: a large part of the observations must be filtered out, and in addition to that average prices significantly rise.

For some parts of the analysis, we use a modified NUTS4 level regional raster, called Modified Micro Regions (MMRs). We take the regional system of 174 subregions, and divide 39 of them to create an urban center and a rural periphery. We argue that this is a crucial distinction for real estate markets.

Our exercise will focus on comparing two pieces of real estate that are similar in many ways but differ in terms of location. To this purpose we build a settlement-level database where variables concerning first geography amenities, earnings, transport infrastructure, urban structure and non-market services are presented. Previous studies suggest that housing price is largely determined by the natural environment of a house so we define a closeness to water surface and mountainous area dummy variable as first geography variables. Then the determinants of housing prices in Hungary are estimated by using regression analysis.

Keywords: Real estate prices, amenities, settlement-level, data cleaning

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**Ondrej Slach – Jan Ženka:** Economic performance of Central European non-metropolitan regions from an evolutionary perspective

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The paper discusses several evolutionary theoretical approaches to regional economic performance with particular emphasis on non-metropolitan regions in Central Europe. In doing so, the above-mentioned theoretical concepts will be discussed and confronted with the special features of non-metropolitan regions. Current economic performance of non-metropolitan regions may be heavily influenced by their past specialization, which tends to be highly persistent, reproducing and reinforcing itself over decades. This is valid especially for mature, low- and medium-tech manufacturing industries in small and medium-size cities, which have tended to develop mostly in localities with a historical concentration of these particular industries and a related stock of accumulated knowledge. Combinations of localisation economies, the predominance of incremental technological innovations, and orientation towards mature industries are powerful sources of regional path-dependence with the possibility of both positive and negative development trajectories. Although we have highlighted the importance of industrial legacy and persistence of the specialization patterns of non-metropolitan regions, there are certain limits to the applicability of the concepts of evolutionary economic geography for explaining regional development in Central Europe. The post-1989 radical socio-economic transition from centrally planned economy towards a market-driven one has been a discontinuity that calls for specific contextualization. We use the concept of rupture and rebundling as probably the most relevant framework for dealing with the development paths of Central European regions. In accordance with the four rebundling scenarios identified by Bathelt (2013), we argue that the most common scenarios of economically well performing Czech microregions were the ongoing and radical rebundling. The key to success was either FDI-driven upgrading of local industries through coupling regional assets with the strategic needs of large foreign-owned TNCs (see MacKinnon 2012 for a very similar concept of strategic coupling) or FDI-driven transplantation of new technologies into the regions (see Martin & Sunley 2006 for scenarios of escaping regional lock-in). The above-mentioned theoretical concepts will be more discussed and confronted with the special features of non-metropolitan regions in Czechia. We propose a case study of a peripheral former industrial region Jeseník situated in north-eastern part of Czechia, which has surprisingly maintained his original industrial base despite dramatic ruptures after 1989.

Keywords: economic performance, lock-in, path-dependency, rebundling, non-metropolitan regions, peripheral region, Jeseník

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**Izabella Szakálné Kanó:** Spatial concentration of Hungarian knowledge intensive manufacturing sectors in city regions 1996-2012

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It seems to be widely accepted that regional development extensively depends on two types of agglomeration economies. On the first hand there are urbanization economies, namely regions with diverse economic environment, these provide firms with opportunities to grow and improve their technologies. On the second hand there are localization economies, which mean regions gaining from specialization because firms enjoy presence of suppliers, specialized labor and knowledge spillover among co-located partners. This is especially important in case of knowledge intensive industries.

Knowledge-intensive industries have attracted a great attention nowadays in researches because of their contribution to the development of knowledge driven economy. They generate positive effects on the regional economy and have increasingly high importance in less developed regions, like Hungary. The identification of spatial distribution, the geographical co-location of knowledge-intensive economic activities is substantial to define potential leading industrial branches in regions. Our argument is closely connected to the recent emphasis of European Union on smart specialization.

Several different methods can be found in the literature measuring the specialization of regions and the concentration of industries. These two phenomena build two scopes of localization economies, the geographical and the sectorial ones. Our paper addresses the spatial distribution of Hungarian manufacturing industries computing raw concentration index EG G and spatial concentration index EG gamma proposed by Ellison and Glaeser (1997) as measures of internal and external economies of scale. Computations are based on the number of employees for a 17 years period covering early stage of Hungarian transition economy, the EU access and the economic crisis (1996-2012).

Our investigation is based on two different types of territorial units: city-regions and subregions (LAU 1 level). In order to apply regional development strategies in regions, one has to consider nodal regions, i.e. functional regions established from labour commuting zones with a powerful centre: the 23 city-regions. Labour commuting zones often extend beyond the borders of subregions (175), but latter are still well applicable for investigation of concentration. (city-regions and subregions) and two different level of industrial classification (NACE 2 and 4-digits).

Based on our calculations we compared 1. measured spatial concentration of knowledge intensive industries and that of non-knowledge intensive ones. 2. measured spatial concentration based on city regions and subregions. 3. measured spatial concentration of NACE 2-digits and NACE 4digits industries by computation of co-agglomeration index (EG gamma). We also investigated change of employment, firms and average firm size of industries over time.

Our preliminary results indicate emphasized geographical concentration of knowledge intensive industries compared to non-knowledge intensive ones. The vast majority of cases, this concentration arises from the external economies of scale and it is even more present in case of city-regions than in case of subregions.

Keywords: specialization, geographic concentration, manufacturing industries

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**Zsófia Vida:** Science collaborations at the level of countries – A case study a “hard” physical geography and a “soft” economics science field

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Science collaboration is a widely studied science area in the recent decade (Acosta et al. 2011; Boschma, 2005). Several types of proximities help to build up science networks and the intensity of collaborations. In this study I would like to examine Science Collaboration in an aspect of country-country collaborate. Boschma distinguishes five types of proximities (geographical, cognitive, institutional, organizational, and social). I focus on geographical and social proximity. I would like to answer the question whether the countries which have a lot of co-authored relations are the same countries which are in relations in the aspect of historical, sociological and economical. In this relation are there any differences between “hard” and “soft” science fields? The centrum countries of the collaboration network are the economical centums as well?

Data and methods: In this study I examine two fields of science, a “soft” economics and a “hard” physical geography. First of all, I collect journals at the Web of Science from the chosen fields. To reach higher number of journals I not only use the tighter Web of Science Category. I use those WCs which are in strong relation with these WCs. The chosen WCs: economics: agricultural economics & policy; business, finance; economics; physical geography: geography, physical; geosciences, multidisciplinary; imaging science & photographic technology; remote sensing; engineering, geological

I examine the journals which belong to the chosen WCs. I use the deviation of countries to each journal. I compare the similarity of the deviations. So we can see how much international a journal across the authors who publicize in a journal. From the deviation of countries, I build up a collaboration network where the nodes are the countries and the edges are the possibility that two countries publicize together in one journal. I examine the clusters of the network. I compare the two chosen science fields. I investigate the differences between the two fields? For example the “hard” science needs more infrastructures, and at the level of co-author, the numbers of relations between co-authors are higher than “soft” science fields. Whether this correspondence is the same at the level of countries?

I also create a rank of the journal. I can compare the internationality with the journal rank. I am interested in weather higher journal rank position correlate with wider range of collaborate countries? Through journals I can show the relations between countries. I would like to answer the question that the countries which are in a cluster, which collaborate to each other are the countries that belongs the similar socio-economic groups also. The clusters which are determined from the network are similar with the groups of countries which belong to one journal?

Keywords: science collaboration, collaboration networks, proximity, centrum and periphery relation

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**Adam Whittle:** The Evolution of Regional Knowledge Typologies: The Role Structural Branching and Knowledge Transfer Mechanisms within Ireland’s Knowledge Economies.

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The primary concern of Evolutionary Economic Geography (EEG) is that of the spatial evolution of the firm, and how experiences and competencies acquired over time determine present configurations as well as future regional trajectories (Kogler, 2015). Evolutionary theorists have long considered the importance of history in explaining regional development, as it provides a framework for understanding the uneven spatial distribution of socio-economic realities as a path dependent phenomenon characterized by the recombination of related activities (Dosi and Nelson, 2010). While significant attention has sought to understand the process of knowledge production in a spatial scale, e.g. regional innovation systems (Cooke, 1992), learning regions (Florida, 1995; Asheim, 1996) and industrial clusters (Porter, 2000). Significantly less attention has been directed to understanding the actual types of knowledge produced within space and how firms translate this knowledge into a form of competitive advantage through which they seek to make a profit. These shortcomings are worrisome considering that most national and international policy discourse is aimed at promoting regional structures akin to a “knowledge based economy” or an “innovative / smart economy” without any empirical evidence as to what such an economy should look like.

Due to the tacit and cumulative nature of knowledge, Cohen and Levinthal (1990) amongst others have argued that firms are more suited to adapt and implement sources of knowledge that are closer to their current knowledge base. Ceteris paribus economic activities are best described as a branching process, whereby successive innovations see that industries do not simply diversify into any industry, but, rather, branch out into technologically related industry. These findings advocate a theory of knowledge transfer based off a measure of technological relatedness through which local and non-local sources of knowledge are transmitted (Frenken and Boschma 2007; Boschma and Frenken, 2009; Neffke et al., 2013).

While recent advances in EEG advocates the importance of external or extra-local sources of knowledge for fostering new economic paths, EEG as a whole remains silent on what exactly constitutes an extra-local source of knowledge. Advancing our knowledge on such an important issue, the current investigation focuses on the successes and limitations of Foreign Direct Investment (FDI) as an extra-local source of knowledge and how FDI can influence the evolution of an indigenous knowledge space.

The specific focus of this paper is on the transfer of technological knowledge from non-local to local firms within Ireland through the process of firm diversification (Rigby 2013; Essletzbichler 2014). The period of analysis is 1980-2010, but unlike previous works, the current analysis centres on the dynamics of FDI. Given Ireland’s topical relationship with FDI, as a source of competitive advantage the current investigation has broader policy implications for similar market economies.

Lacking precise accounts on the creation and diffusion patterns of knowledge, academics frequently invoke proxies to measure the inputs and outputs of knowledge creation. Patent data are perhaps the most frequently used form as they measure the inputs of knowledge production (citations) along with their outputs (processes of economic value). Utilising the recently published European Patent Office (EPO) database the primary aim of the current analysis is to create an Irish Knowledge Space based off of patent co-classification and technological relatedness measures (Kogler et al., 2013; Rigby, 2013; Boschma et al., 2014).

Keywords: Knowledge Transfer Mechanisms, Patent Data, Foreign Direct Investment

In this paper we focus on the effects of industrial specialization and diversity on economic performance of non-metropolitan regions in Czechia. There are several arguments supporting the expectation that the high per capita value-added microregions will be those with specialized production structure than those diversified. First, compared to large metropolitan areas, non-metropolitan regions are less likely to capitalize on urbanization economies stemming from urban scale and economic diversity. Second, the specialized industrial structure and high economic performance of non-metropolitan regions may be a result of the presence of a single large firm or branch plant. Therefore, neither Marshall-Arrow-Romer spillovers nor Jacobian externalities are the key driver of regional economic performance. Third, the current economic performance of non-metropolitan regions may be strongly influenced by their inherited industrial specialization, which can be highly persistent. On the other hand, negative economic effects of industrial specialization in non-metropolitan regions can be attributed to lower adaptability and higher potential vulnerability to external shocks. Non-metropolitan regions are more susceptible to lock-in.

In order to explain current disparities in value added per capita at microregional (LAU2) level we employed spatial regression models testing the effects of current and inherited industrial specialization, dependence on manufacturing, population size, firm size structure and several other control variables. Instead of analysing only isolated cities, we included also their commuting hinterlands. Most of the data were available for entire administrative regions, not for the city itself. Moreover, in non-metropolitan regions a relatively large portion of economic activities such as those in industrial zones and logistics centres can be located in suburban areas outside of the city borders. Our main conclusions are that:

First, our analysis confirmed the key role of regional dependence on manufacturing, strongly positively associated with high economic performance of Czech non-metropolitan regions. Second, effects of current industrial specialization/diversity are conditional on the degree of dependence on manufacturing of that particular regional economy. For the Czech microregions with a high share of manufacturing employment, the specialized industrial structure is positively associated with high per capita value added. Third, the most specialized and economically best performing microregions were generally dominated by a single large manufacturing branch plant rather than by Marshallian industrial districts. Fourth, we did not find any significant relationship between past industrial specialization and current regional economic performance. Nevertheless, most Czech regions with the highest per capita value added showed very strong persistence in their core industrial specialization and, continuity of the largest local manufacturing firms.

Keywords: microregions, specialization, diversity, regional economic performance, Czechia