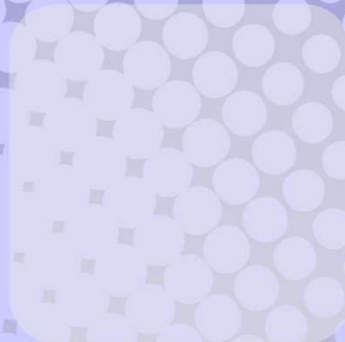


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TERRITORIAL DISPARITIES AND ECONOMIC PROCESSES IN HUNGARY EDITORIAL

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Abstract

The first part of the article outlines the unique development path of Central and Eastern European countries after their market economic transition, and its changing geo-economic framework conditions referred to as “externally-driven capitalism” or “dependent market economy”. The failure of regional policy to promote the settlement of new industries and sectors is explained by the fact that most regions in the countries under study belong to the most disadvantaged and lagging regions of the EU. The second part provides a brief summary of the articles included in the thematic issue that focus on the territorial disparities and economic processes of Hungary. The concluding section highlights the specific problems of peripheral regions that are lacking scale and visibility on the European level, stressing the need to construct their own non-metropolitan and non-FDI-driven development model, and to embark on a sustainable/rural alternative development path, one that represents a different perspective of the economy and competitiveness and does not set unrealistic goals.

Keywords: Hungary, regions, cities, economic transformation, regional science

INTRODUCTION

Inarguably, Central Europe has undergone a particularly dynamic transformation process over the past three decades. Having become the main beneficiary of global industrial relocation processes, industrial decline was followed by re-industrialisation, and economic restructuring has led to the emergence of a multi-layered spatial structure (Gorzalak, 2019; Lux & Horváth, 2017). The main specifics of the transition model, according to Gál and Schmidt (2017), are: a twofold shift in ownership (from state to private, from domestic to foreign) and a twofold shift in the systemic model (from state socialism to market capitalism, from industrial capitalism to financial capitalism). The externally driven and financed global economic integration of the region is not the outcome of autonomous development, hence the preoccupation of growing body of literature with mainstream theories and their limitations, their changing geo-economic framework conditions referred to as “externally-driven capitalism” or “dependent market economy” (Nölke & Vliegthart, 2009).

FDI represented the dominant type of foreign capital during the first phase of the transition (privatisation), with foreign bank capital overtaking the dominant role of FDI at the turn of the millennium. This process was spatially highly uneven, with capital cities, port cities and western regions bordering EU Member States being the first to be targeted by foreign investors offering lucrative investment opportunities. The concentration of investment in a few cities and regions during the initial period has produced a growing concentration of economic growth, securing a comparative advantage for these areas. Even though this tendency has been somewhat modified by the global economic crisis and later the pandemic, long-term trends have not been reversed. The penetration of advanced services has been shown to follow the urban hierarchy, with capital cities concentrating this sector in the majority of states. The dominance of capitals and metropolitan regions is a well-established phenomenon. Capital cities are virtually unavoidable players in the smaller countries or central locations. Furthermore, it should be stressed that capitals and second-tier cities represent different orders of magnitude in all respects (RÁCZ, 2019).

The countries of the region have begun their transition from the traditional to the new economy, but most of them are stuck somewhere in-between (SZAKÁLNÉ KANÓ & LENGYEL, 2021; ZSIBÓK & PÁGER, 2021). FDI-based economic development has not produced substantial (knowledge-based) catching-up, prompting a cautious revision of the model (GÁL & LUX, 2022). An important measure of innovation capacity is the level of R&D expenditure (necessary for achieving technological progress), whose substantial increase (to 3% of GDP at EU level) was the key objective of the Lisbon Strategy and later the Europe 2020 Strategy. However, in the peripheral regions of the EU, this is largely determined by external factors that are difficult to overcome. The Europe 2020 headline target of increasing the share of people aged 30-34 with a degree to a min. of 40% is also relevant for this study. This objective has been realised at the EU level, but Eastern EU Member States show mixed results (the Czech Republic, Poland and Slovenia have met these targets, while Croatia, Hungary and Slovakia are close to achieving them). Although the education system produces a significantly higher number of graduates than it did two decades ago, a part of these graduates have failed to meet the requirements of both the traditional and the new industries.

Regional policy must strive to attain a dual objective. First and foremost, the provision of jobs for the local, economically active population. Given the existing skills and retraining opportunities of the population, this requires mostly the preserving and strengthening of traditional industries and sectors (the tourism sector is an emblematic case in this respect). However, for a long time, regional policy has failed to meet popular expectations concerning

the settlement of new industries in the majority of regions. A major reason for this is that most regions in the countries concerned are among the most disadvantaged and least developed regions of the EU according to various statistics, such as GDP per capita, competitiveness rankings, the share of tertiary students, the number of employees in the science and technology sector or the level of R&D spending.

In most Central and Eastern European countries, the concentration of higher education and R&D in capital cities is outstandingly high relative to Western Europe. The large inequalities in the spatial distribution and sectoral structure of higher education are particularly problematic. Hungary, for instance, shows significant disparities in the disciplinary structure of higher education relative to Western Europe or the more competitive Central European countries. The gap in terms of the proportion of technical and science degrees has been persistently high for decades. Inarguably, the shortage of skilled workers is a major obstacle to reindustrialisation efforts. There is no simple or quick solution to sustained (or sustainable) regional economic growth. Its efficiency depends on the implementation of a long-term regional strategy that is based on the utilisation of local resources. However, luck is also a non-negligible factor, and it is worth noting that the competitive base in several regions has emerged as a result of the activities of the providential state over the previous decentralisation period. State-owned or monopolised industry can be a key factor of growth in many cases.

THEMATIC ISSUE

Our thematic issue gives a brief overview of the territorial disparities and economic processes of Hungary. It is a pleasure for the Guest Editors to introduce the new thematic issue of DETUROPE – The Central European Journal of Tourism and Regional Development. Our publication provides a selection of papers presented at the 19th Annual Meeting of the Hungarian Regional Science Association (HRSA) entitled New forms of territorial disparities and transforming regional policy. The conference was held at the Corvinus University of Budapest on 4-5 November 2021, with 180 participants. There were three plenary sessions, one round table discussion and a total of 23 sessions in three time slots. 140 papers were presented in 19 thematic sessions over the two days. Due to the large number of presentations HRSA offered participants four publication opportunities. In addition to the international journal DETUROPE, three others in Hungarian or English language, in the Hungarian scientific journals *Comitatus: önkormányzati szemle* (*Comitatus: local government review*, published by Comitatus Social Research Association since 1991), *Észak-magyarországi Stratégiai Füzetek* (*Strategic Issues of Northern Hungary*, published by University of Miskolc), and *Tér-Gazdaság-*

Ember (Space-Economy-Society, published by Széchenyi István University, Győr). The papers were selected in three steps. After the HRSA conference, session chairs were requested to propose the best presentations for publication. In the second round, the submitted English language abstracts were revised by anonymous reviewers. The authors of the best eight proposals were invited to submit a manuscript in the subject of the thematic issue of Deturope. The submitted manuscripts were reviewed by two anonymous reviewers. The accepted articles were revised and corrected according to the provided critical remarks. The current issue is the 8th thematic issue prepared with the cooperation of DETUROPE and HRSA. The members of the Association – as previous or potential authors – hereby express their gratitude to the journal and particularly its Editor-in-chief, Dr. Kamil Pícha. We hope that you will find inspiring ideas, research results or practical achievements in this collection. We wish you a good reading.

ARTICLES OF THE THEMATIC ISSUE

The first group of papers examines economic development in Hungary on various spatial levels (NUTS3, NUTS2, LAU2). The first original scientific paper of the thematic issue by Marianna Sávai, Gábor Bodnár, Ferenc Mozsár, Imre Lengyel and Izabella Szakálné Kanó addresses the spatial aspects of economic restructuring in Hungary between 2000 and 2019. In the early post-socialist years, Hungary faced numerous economic and political challenges. The performance of the Hungarian economy reached the pre-transition level by the turn of the millennium, while the labour market and the structure of economic sectors changed substantially. The study investigates how stable the developed sectoral structure proved to be in the following two decades and what territorial specificities the changes are characterised by. The main question is how further structural changes – besides the sector's performance (productivity) growth – contributed to the change in economic performance of territorial units. The analysis framework is provided by the counties (NUTS3 level). It can be established that the primary factor of productivity growth is the increase of performance within sector groups and not the change in the economic structure of counties. The impact of structural changes is smaller in magnitude and may even have a negative value in several cases, i.e., the economic structure of counties has shifted from higher-productivity sectors towards the ones with lower productivity. The authors recommend that the Hungarian regional policy be more attentive to the enormous investments that can change each region's economic structures. Moreover, they should encourage those developing projects which contribute to higher productivity (Sávai et al., 2022).

The paper of Zsuzsanna Zsibók and Ildikó Egyed presents the role of the foundational economy in the case of two peripheral cities in Central and Eastern Europe. This comparative research examines the changes in the economic position of two traditional regional centres, Cluj-Napoca (Transylvania, Romania) and Pécs (Transdanubia, Hungary) in the post-crisis period. The focus of interest is the sectoral structure of local economies in the light of the concept of the “foundational economy”. This empirical research covers data on the largest local firms in each of the two cities, as well as regionally aggregated data, analysed from a labour productivity perspective. The source of the data is the Orbis Europe enterprise database, supplemented by EuroStat data at regional level (NUTS2 and NUTS3). The results of the paper suggest that due to the large weight of the foundational economy in both cities, it should be considered an important driver of long-term territorial development and local well-being. There are several sectors in the local economy of the two cities where some activities of the foundational economy excel in productivity, thus the paper cannot establish a direct contradiction between the high weight of the foundational economy and lower efficiency. The regions of Cluj-Napoca and Pécs face somewhat different challenges, the former experiencing problems in integrating its rural surroundings, the latter struggling to attract external resources and to retain and generate endogenous resources (Zsibók & Egyed, 2022).

Zoltán András Dániel presents the labour market effects and changes among enterprises in free enterprise zones in Hungary. The aim of regional development and planning is to promote social and economic growth and to reduce significant economic and infrastructure disparities. Its role is to support community initiatives to this end, with a particular emphasis on helping lagging regions to catch up, reducing unemployment and supporting the regeneration of industrial and agricultural businesses. The legislation on spatial development made it possible to create in Hungary the Free Enterprise Zones in 2013. The list, having been extended twice since then, currently includes 1202 municipalities. Municipalities belonging to the zones create a favourable environment for investment, and businesses that invest and create jobs in the area can benefit from corporate tax relief and contributions payable by employers and are eligible for EU funding. The research examines the labour market processes taking place in the Free Enterprise Zones as a result of the inclusion of these municipalities in the zones. Drawing on official labour market and business-related regional statistics, the analysis takes a regional perspective and seeks to focus on temporality. The database contains data at the level of municipalities (LAU2 level) for the period under study (2012-2020). The study has found that the positive impact on labour market processes cannot be clearly justified, whereas for the operating enterprises, inclusion in the zone induced positive effects. A positive effect in terms

of average staff numbers is also visible. The results show that the use of development aid is more effective for enterprises within the zones than in other parts of Hungary. A stronger than medium positive correlation can be detected in terms of the amount of aid received by the enterprises, i.e., the objective of calls for proposals to attract more resources to the areas concerned has been achieved (Dániel, 2022).

The second group of papers examines socio-economic development in Hungary focusing on individuals. Tamás Sikos T., Tamás Kozák, Vanda Papp, Csaba József Kovács and András Kovács present the pandemic crisis challenges for customers and retailers. The paper undertakes an analytical evaluation of customer and retail responses to today's market- and non-market-related challenges in Hungary. The introduction provides a classification of crises and reviews the literature on the relationship between crises and consumption, then focuses on analyzing the effects of the COVID-19 pandemic and the Russia-Ukraine war on trade and consumption. Finally, the authors review the effects of the already mentioned crises on domestic trade and shopping behaviours, and examine the effects and new challenges of today's crises on retail strategies, identifying the main areas that, with proper management, can make commercial companies "crisis-resistant". The novel findings can be categorized into consumption-related challenges and retailer-related responses. As a conclusion of the study the authors note that in the turbulent decades of the 21st century, the overall approach, methodology and tools of retail trade are constantly changing, and business success depends on the extent and speed with which retailers manage to adapt to these market and non-market changes. In the third decade of the 21st century, commercial companies need to be able to face challenges not only of market origin but also non-market ones such as pandemics, wars, and climate change. This means that challenges and responses are different, as hitherto "unusual" phenomena such as the introduction of active state restrictive measures, oversupply markets, stock shortages, etc. need to be addressed. All of this makes it essential for retailers accustomed to operating in a very competitive market and oversupply to develop radically different conceptual and operational practices (Sikos et al., 2022).

The paper of György Málovics, Judit Juhász and Zoltán Bajmócy presents the potential role of university community engagement (UCE) in social justice and sustainability transformation through the case of the University of Szeged (Hungary). The aim of the paper is to reflect on the role of social justice orientated UCE in contributing to social justice and environmental sustainability transformations. The authors build on the social justice perspective on UCE; the transformative approaches to social justice and sustainability; and UCE models that deal with the transformative potential of UCE partnerships as theoretical frameworks. The researchers

use the UCE initiatives of the Research Centre of the Faculty of Economics and Business Administration at the University of Szeged as a case study to reflect on UCE in a Hungarian urban context in the city of Szeged. They analyse how power relations (partnerships) work and change within UCE; how UCE is able to change existing power relations within a specific urban social context; and how these changes in the social power of the marginalized might contribute to transformative changes in relation to social justice and sustainability. The paper shows that UCE initiatives carried out in the spirit of the social justice perspective on UCE might be in line with transformative social justice and sustainability theories, by emphasizing the need to support grassroots initiatives and work with communities and NGOs/CSOs outside power centres. However, even though the social justice perspective on UCE might be promising in supporting significant positive changes in the life of marginalized communities, there are still numerous factors that challenge its transformative potential (Málovics et al., 2022).

One of today's biggest challenges is digitalisation and automatisisation. In previous issues of the journal, this has been analysed mainly from the perspective of industry and transport. Socio-economic studies on self-driving vehicles are the newest in this area. The paper of Brigitta Gábor addresses the issue of self-driving vehicles awareness in a Hungarian context, in order to facilitate a better understanding of the Hungarian population's attitude towards autonomous vehicles. To this end, the paper presents popular attitudes towards autonomous vehicles by performing a series of analyses focusing on „rejection groups”, i.e. certain groups that are more critical about the technology. Autonomous vehicles can be seen as a radical innovation, which introduces innovative aspects in the mobility system that affect every part of people's lives. However, the empirical investigation of the social aspects of the use of self-driving cars is rendered difficult by the lack of direct experience in Hungary. The results obtained draw attention to the impact of social processes on innovation. The research demonstrates that the attitudes of rejection groups towards self-driving vehicles can be improved by providing them with newer and more detailed information (Gábor, 2022).

From a professional and scientific point of view, it is interesting to review who shapes and represents regional research in Hungary. The last original scientific paper in the special issue is a retrospect on the 20th anniversary of the founding of the Hungarian Regional Science Association. The aim of Judit Berkes and Zsuzsanna Zsibók is to provide a brief but comprehensive overview of these two decades in the light of quantifiable facts and results. HRSA is the professional forum of Hungarian regional science, an independent non-governmental organisation, which brings together professionals involved in regional research, development and governance. In the 20 years since its foundation, HRSA has achieved most of

its basic objectives that have remained unchanged over this period. This retrospective overview suggests that the HRSA has had a successful two decades since its foundation, it has already entered the mature stage of its development, as demonstrated by the stable and increasing number of its members and a sustained interest in the events organized by the Association. In the face of many years of external uncertainties in the domestic regional science arena, HRSA has been able to provide stability for the academic community (Berkes & Zsibók, 2022).

The last paper in the current issue presents a thorough report on notable Hungarian regional science conferences of 2022, prepared by Ildikó Egyed, Réka Horeczki and Szilárd Rácz. The 61st ERSACongress in Pécs took place in person and online from 22 to 26 August 2022 entitled „Disparities in a Digitalising (Post-Covid) world - Networks, Entrepreneurship and Regional Development”. The 20th jubilee conference of the Hungarian Regional Science Association entitled „Space and state” took place in person in Budapest from 6 to 7 October 2022.

The thematic issue is concluded with a book review by Zoltán Nagy on the *Thirty Years of Retail Transformation in V4 Countries* (Published by De Gruyter). The socio-economic and cultural changes that have taken place in the Visegrad countries over the last 3 decades have led to significant transformations in all areas of trade. The main contributions of the joint work of the authors (Josef Kunc, František Križan, Markéta Novotná, Kristina Bilková, Tamás Sikos T., Dariusz Ilnicki and Ryan Wyeth) from the four Visegrad countries provide a detailed description of the characteristics and features of each country, and facilitating a better understanding of the local context and the processes in the Visegrad region. The authors are professors, researchers and lecturers at Masaryk University, Comenius University in Bratislava, the Slovak Academy of Sciences, the University of Miskolc and the University of Wrocław. The theme is very Central European, which is linked to the fact that the special issues in recent years (Rácz & Egyed, 2020, 2021) have also typically focused on this macroregion.

CONCLUSIONS

In most countries, a multi-layered spatial structure has emerged after the change of regime. Capital cities have pursued a unique development path (metropolitan development model) in each country, similarly to advanced regions attracting industrial FDI. However, the majority of the territory of Central and Eastern Europe does not belong to this category, being dominated by peripheral rural (transition) regions that have accumulated multiple disadvantages, already present during their market economic transition. Incoming foreign capital has brought about spectacular changes, while further aggravating existing disparities. The newly settled foreign-

owned enterprises (sectors) are also characterized by heterogeneous performance in terms of productivity and knowledge utilisation.

An important feature of regional neighbourhood is the co-existence of peripheral regions along the majority of state borders, and the demand to mitigate this situation (from a bilateral perspective) is rather low. Infrastructure connectivity is a case in point, i.e. the construction of a motorway connection between the regions. Its timeliness and integration into trans-European systems is a clear illustration of European (industrial relocation) and national (foreign economic and cohesion) interests.

These peripheral regions need to construct their own (non-metropolitan and non-FDI-driven) development model, and embark on a sustainable/rural alternative development path, one that represents a different perspective of the economy and competitiveness and does not set unrealistic goals. The model of the new economy can define the character of regional re-industrialisation and structural transformation, but by itself it does not offer a universal or exclusive development path that could guarantee a sufficient growth potential for these regions. The spatial distribution and volume of these resources – most of all the intellectual base and (new) knowledge – is highly concentrated, and due to their limited availability, this exclusive growth occurs only in discrete points, typically at the highest level of the urban hierarchy (in a functional perspective, the spatial dispersion of new knowledge is also a function of absorption capacity). The nature of the settlement structure of a given region/country is therefore quintessential. The urban network underpinning all future aspirations is a stable system whose evolution is a lengthy process. Research and innovation are key to national and regional economic performance. Innovation is a main driver of long-term productivity growth and thus a key factor of competitiveness. Large cities typically host innovative milieus that foster the emergence of new ideas, products and processes.

In regions that are lacking a developed metropolis of a European scale, the stock of small and medium-sized cities fulfils a completely different type of intermediary role. The regime change has brought about a significant hollowing-out of the classical economic and employment functions of small and medium-sized cities located far from the core areas, European-scale metropolises and capital cities. Due to the highly concentrated nature of economic and employment functions, and the new economy in particular, the dependence of this category of cities on state and EU funding has significantly increased. This is particularly visible in the case of higher education institutions and research centres located in such cities. The outmigration of skilled labour has serious implications on cities located in peripheral areas

with a sparser spatial structure. This problem is a common characteristic of the region under study.

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SPATIAL ASPECTS OF THE RESTRUCTURING OF THE HUNGARIAN ECONOMY BETWEEN 2000 AND 2019

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Abstract

In the years following the regime change of 1989-90, Hungary faced numerous economic and political challenges. Apart from the dominance of privatisation, the '90s can definitely be described as a decade of transition. The performance of the Hungarian economy had reached the pre-transition level by the turn of the millennium, while the labour market and the structure of economic sectors had undergone substantial changes. In the present paper, we investigate how stable the developed sectoral structure proved to be in the two decades that followed and what territorial specificities the changes were characterised by. Our main question is how further structural changes – besides the sectors' performance (productivity) growth – contributed to the changing economic performance of territorial units in the period of 2000-2019.

In our study, we divide productivity change into a “between-sector” and a “within-sector” element. We regard the analysis as a relevant research question in general as well. However, the global financial crisis occurring at the “mid-term” of the studied period (2008) represents a special rupture. The analysis framework is provided by the counties (NUTS3 regions), we conduct our analysis in this context. It can be established that the primary factor of productivity growth is the increase of performance within sector groups and not the change in the economic structure of counties. The impact of structural changes is smaller in magnitude and may even have a negative value in several cases, i.e., the economic structure of counties has shifted from higher-productivity sectors towards those with lower productivity.

Keywords: productivity, restructuring, Hungary, NUTS3 regions

INTRODUCTION

The slowdown and stagnation of productivity growth were noted as early as the 1980s in developed economies. According to the Productivity Paradox coined by Robert Solow, the expansion of IT sector advances was not accompanied by productivity growth. Several research

papers have attempted to prove or reject this statement (Oliner & Sichel, 1994; Triplett, 1999; Lee & Perry, 2002; Thatcher et al., 2006; Brown, 2014).

Rapid changes are inevitable in the structure of production. Each sector has different innovation performance, the income elasticity of demand for different goods varies, comparative advantages change in external trade, etc. (Kuznets, 1973). These changes may emerge on corporate or industrial level, even independently of the macroeconomy in the short term, but they will definitely have an impact on aggregates in the long term. If there is a larger growth in an industry or sector in the long term, their share of total output will also increase, and the regional or national structure of the economy will transform (Streissler, 1982; Krüger, 2008a). According to Krüger (2008b), the effect of structural changes is manifested in industries with increasing productivity, and it explains a more significant part of productivity growth if total factor productivity is considered rather than only labour productivity. In this paper, we examine how structural changes have influenced productivity in the regions of Hungary in the past twenty years.

Industrialisation, the expansion of industry (employment, GVA share), began about two centuries ago in the countries referred to as developed today (in Hungary, it started at the end of the 19th century). Over the last half-century, we can observe a reverse process (deindustrialisation) in the same countries (in Hungary from the 90s), which is a complex phenomenon (Nagy & Lengyel, 2016). Productivity growth, automation, and robotisation, even with unchanged performance share in the national economy, still decrease the employment share of industry. The mass outsourcing of certain activities (ICT, logistics, servicing, etc.) to the service sector recognises performances that were earlier registered in the industry officially in the tertiary sector. The spectacular expansion of the third sector itself decreases the relative weight of industry. The phenomenon of delocalisation also appears to trigger a process of deindustrialisation in developed countries, when certain activities – a typical example is assembling – are outsourced to countries with a more favourable wage offer (Lux, 2015, 2017; Lengyel et al., 2017; Molnár, 2016; Nagy et al., 2021).

The concept of reindustrialisation also emerged in the '80s as a term denoting a desirable phenomenon. Reindustrialisation is, of course, not identical to a mechanical reversal of deindustrialisation processes of the past decades. New industries emerge (software industry, health industry, etc.), and substantial restructuring is taking place within the industry for the benefit of subsections promising greater value added (motor vehicle industry, pharmaceuticals,

etc.). The basis and essence of reindustrialisation is growing productivity (Cristopherson et al., 2014; Tregenna, 2013).

Following the crisis of 2008 (and the decline of all indicators – GVA, foreign and domestic sales, productivity and number of employed workers), manufacturing industry started to grow in Hungary (Lengyel et al., 2017). The number of employed workers increased by 2.5% between 2009 and 2014 (from 649 thousand to 665 thousand). The number of workers employed in manufacturing overall increased by about 9% from 2014 to 2020. Considering the approximately 9% increase in total employment numbers over the same period, we cannot establish the expansion of manufacturing. At the same time, it is also noteworthy that in the past five years, each subsection of manufacturing has experienced “better times”. Therefore, employment – after an initial increase in the transition period – decreases. In 2020, compared to 2019, it decreased in every county. The same is true – with a few exceptions – regarding GVA data: GVA at current price (!) decreased in most cases in each section in 2020 compared to 2019.

The government aimed to achieve a 30% GDP share for industry. In 2019 – considering only manufacturing industry – this value was 24.1%, which meant the seventh place in the then EU28 (as opposed to the fourth place in 2014), practically sharing the same position with Slovakia, Germany, Romania, and Austria, relative to the EU average of 18.7%. At the same time, besides country shares, it is also worth noting that three-quarters of manufacturing performance in the EU was provided by five countries (Germany, Italy, UK, France, and Spain) over this period.

In the following section, we review the relevant literature, continuously narrowing space and timewise as we approach the time horizon of the current research. Then, following a methodological description, we present our results. We intend to describe the changes in the past period without value judgement and do not aim to formulate recommendations for economic policy.

THEORETICAL BACKGROUND AND LITERATURE REVIEW

Structural changes have been examined through various types of models. In the general equilibrium model (Mas-Colell et al., 1995), with the multi-sector endogenous growth model (Deaton, 1986; Blundell, 1988), in connection with industry life cycles (Agarwal, 1998; Agarwal & Audretsch, 2001; Klepper, 1997, 2002), based on development economics (Rostow, 1971; Syrquin, 1988) and evolutionary economics (Harberger, 1998; Pasinetti, 1993).

Furthermore, as demonstrated by the current paper, through the analysis of differences in reallocation and the development of productivity (Baily et al., 1996; Disney, et al., 2003; Foster et al., 2001; Fagerberg, 2000; Peneder, 2003; Krüger, 2008b).

Based on 17 years of data in 24 manufacturing industries of 39 countries, Fagerberg (2000) found that in most countries, within-sector effects defined the average increase of labour productivity in the industry, the between-sector effect was not strong, while the covariance effect was negative, i.e., the structural effects between industries did not really contribute to total productivity growth, only where the growth of the electronics industry was the basis of economic growth.

Studying manufacturing in the countries of the European Union (3-digit), Peneder (2003) found that structural changes have a weak effect on the average increase of labour productivity. There is no systematic connection between labour market restructuring and the growth of industries with higher productivity.

Ezcurra and Pascual (2007) studied the evolution of the spatial disparities of productivity in thirty-nine Central and Eastern European regions between 1992 and 2001. Their findings indicate that while regional disparities decreased, convergence between countries and divergence within countries could also be detected. The spatial differences of output per person¹ can be explained by the internal differences (for example, work morale, habits, social differences, location of industries, infrastructure and development potential in the region, etc.) between regions. The key factors playing a role in determining the size of regional disparities of productivity have the same effect on output per worker values. The composition of industry contributed to a relatively small extent to the average regional distribution of productivity. Thus, the relatively marginal effect of the structural component confirms the relevance of one-sector growth models in investigating regional disparities of income per capita. They emphasise that the national component and the connection between the economic behaviour of neighbouring regions have a significant role in explaining differences observed in the sectoral productivity levels of the Central and Eastern European region, even though these factors showed a decreasing effect over the 10-year sampling period. Geographical distance from the EU core countries and agglomeration economies are less important; however, these two

¹ Szakálné Kanó and Lengyel (2021) found that in the case of Central and Eastern European member states, there are severe disparities; the difference can even be threefold between the richest and the poorest regions (Szakálné Kanó & Lengyel, 2021).

variables became increasingly important during the 1990s, indicating a strengthening economic relationship between the Central and Eastern European region and Western Europe.

Martin et al. (2018) studied different productivity growth paths not at the level of industries but at the level of (85 British) cities between 1971 and 2014. They concluded that there was significant structural convergence between the cities, and the data indicated a general decrease in the level of specialisation. According to the decomposition analysis, structural changes had a negative effect on the increase of productivity, which was outweighed by the positive impact of within-sector changes, although it decreased in the examined 45 years and its extent differed from city to city.

Kiss (2007) notes that the Hungarian economy became firmly integrated into the global economy following the regime change. This had a dual consequence in terms of regional differences. On the one hand, it contributed to growth in labour productivity and employment in the affected regions, which could increase their manufacturing weight. On the other hand, it entailed a growing exposure to global economic processes (no substantial decrease was observed in the field of electricity, gas, steam, and water supply, where both demand and supply sides are domestic). Transformation was also observed in territorial restructuring; the centre of industrial production shifted to the northern parts of Transdanubia. 76% of foreign companies, 64% of foreign capital, and the majority of industrial export were concentrated in Central Hungary, Central Transdanubia, and West Transdanubia (one-third of the country's territory) in 2007. The most important sector was machinery, manufacturing transport equipment and electronics, in particular (Kiss, 2002, 2008a, 2008b).

Kiss (2012) also found that the crisis had the most unfavourable impact in the new central region of industrial production, primarily due to the substantially decreasing, but otherwise significant, share of exports in the region. Although the non-regional differences in industrial employment did not change as a result of the crisis, long-term unfavourable effects prevailed in disadvantaged parts of the country. The new spatial structure of the industry is very vulnerable. Rácz (2019) also points out that in the past decade, the role of working capital has been revalued, not only in the context of Hungary but the Central and Eastern European region as a whole that was unable to reduce the lag behind Western Europe. Moreover, the crisis has aggravated systematic vulnerability.

Lengyel et al. (2017) suggest that over the study period, in some counties, the increase of manufacturing employment and GVA can also be interpreted as reindustrialisation, although, based on the data, deindustrialisation can be seen in Baranya, Hajdú-Bihar, and Csongrád.

Interestingly, the latter phenomenon is linked to the outstandingly higher educational capacity of the relevant counties. Addressing the topic of reindustrialisation, Nick et al. (2019) also establish that in the case of Hungary, export-oriented production based on a labour market with high value added (especially automotive industry and related industries) contributes to the fact that industry has one of the largest GDP-proportionate share in the EU. Zsibók (2018) examined various scenarios with a GDP decomposition method, which outlines that, in most cases, regional differences are expected to increase by 2050 and can be significantly affected by the development of demographical changes.

DATA AND METHODS

In our work, we use one of the – perhaps most popular – measures of analyses related to spatial concentrations, the location quotient (LQ). It refers to the under- or overrepresentation of an economic activity in a particular territorial unit (NUTS3 regions) compared to the national economy (Lengyel et al., 2017). The location quotient is:

$$LQ_i = \frac{e_{is}/E_s}{e_i/E} = \frac{s_i}{x_i}, \quad (1)$$

where:

e_{is} – number of employed workers in territorial unit i , in a particular sector group,

e_i – number of employed workers in territorial unit i ,

E_s – number of employed workers in a particular sector group at national level,

E – total number of employed workers at national level.

Its interpretation is the following: territorial units with a value above 1 for a particular sector group can be characterised with more significant specialisation, and the sector group in these territorial units is present in increased concentration compared to the average. We can find opposing views in the literature (e.g., EC 2009), however, we accept that strong concentration is shown by sector groups having an LQ value above 1.5.

We are aware of the limitations of LQ. Due to its simplicity, however, it can be relatively easily interpreted to consider it appropriate to exploit this advantage of the measure, applying it in the investigation of labour productivity representing the subject matter of our work.

In our study, we divide the analysis of productivity change into the sum of a “between sector groups” and a “within-sector” element. As defined by Martin et al. (2018, 554) based on Krüger (2008b):

$$\frac{\Delta Y_{jt+k}}{Y_{jt}} = \frac{\sum_{i=1}^n s_{ijt} \Delta y_{ijt+k}}{Y_{jt}} + \frac{\sum_{i=1}^n \Delta s_{ijt+k} (y_{ijt} - Y_{jt})}{Y_{jt}} + \frac{\sum_{i=1}^n \Delta s_{ijt+k} \Delta y_{ijt+k}}{Y_{jt}} \quad (2)$$

where:

Y_{jt} is the real GVA per employee in territorial unit j at time t,

ΔY_{jt+k} is the change of real GVA per employee between t and t + k,

s_{ijt} is the proportion of employed workers in sector i within the total employment of territorial unit j,

y_{ijt} is GVA per capita in territorial unit j in sector i at time t,

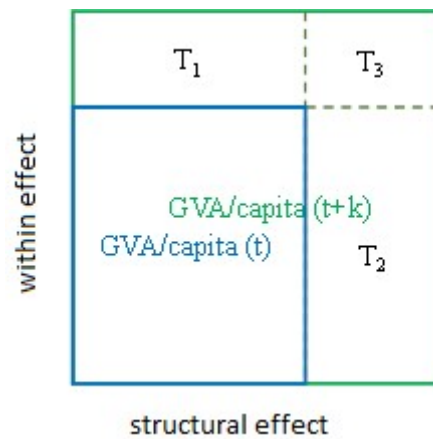
Δs_{ijt+k} is the change of the proportion of employed workers in sector i in territorial unit j between t and t + k,

Δy_{ijt} is the change of GVA per capita in territorial unit j in sector i between t and t + k,

$$Y_{jt} = \sum_{i=1}^n s_{ijt} y_{ijt} .$$

The first term of the right side of the equation (T1) can be interpreted as “within-sector effect”, which is the average of the productivity growth of the sector groups, weighted by the (assumed as given) employment share of the sector groups within the economy of territorial unit j. The second term (T2) quantifies how the economic structural change of territorial unit j contributed to the performance change of the territorial unit. Here we consider the initial differences in the productivity of the sector groups as given. This term of the equation takes a positive value if in region j: (1) sector groups initially performing above average show increasing employment shares between t and t+k, and/or (2) the employment share of sector groups with initially below average productivity decreases. It is negative if in region j: (1) employment shares of sector groups initially performing above average decrease, and/or (2) sector groups with initially below average productivity show increasing employment shares between t and t+k. The third term (T3) quantifies the combined effect of structural change and sectoral productivity growth over a particular period. It is certainly positive in region j if employment shares of those sector groups increase, for which the productivity changes favourably. The second and third terms collectively express the extent of the structural effect, or, in other words, the between-sector change within a particular territorial unit, in terms of productivity growth (Fig.1).

Figure 1 Structure of the model



Source: own compilation

All the data used in the analysis were obtained from the Eurostat database, where the data on Hungarian counties (NUTS3) between 2000 and 2019² are available, broken down by sectors (Tab. 1).

Table 1 Highest-level sector aggregates (hereafter referred to as sector groups)

Code	Name of the sector group
A	Agriculture, forestry and fishing
B-E	Industry (except manufacturing and construction)
C	Manufacturing
F	Construction
G-J	Wholesale and retail trade, transport, accommodation and food service activities
J	Information and communication
K	Financial and insurance activities
L	Real estate activities
M-N	Professional, scientific and technical activities; administrative and support service activities
O-Q	Public administration, defence, education, human health and social work activities
R-U	Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies

Source: Eurostat database

RESULTS AND DISCUSSION

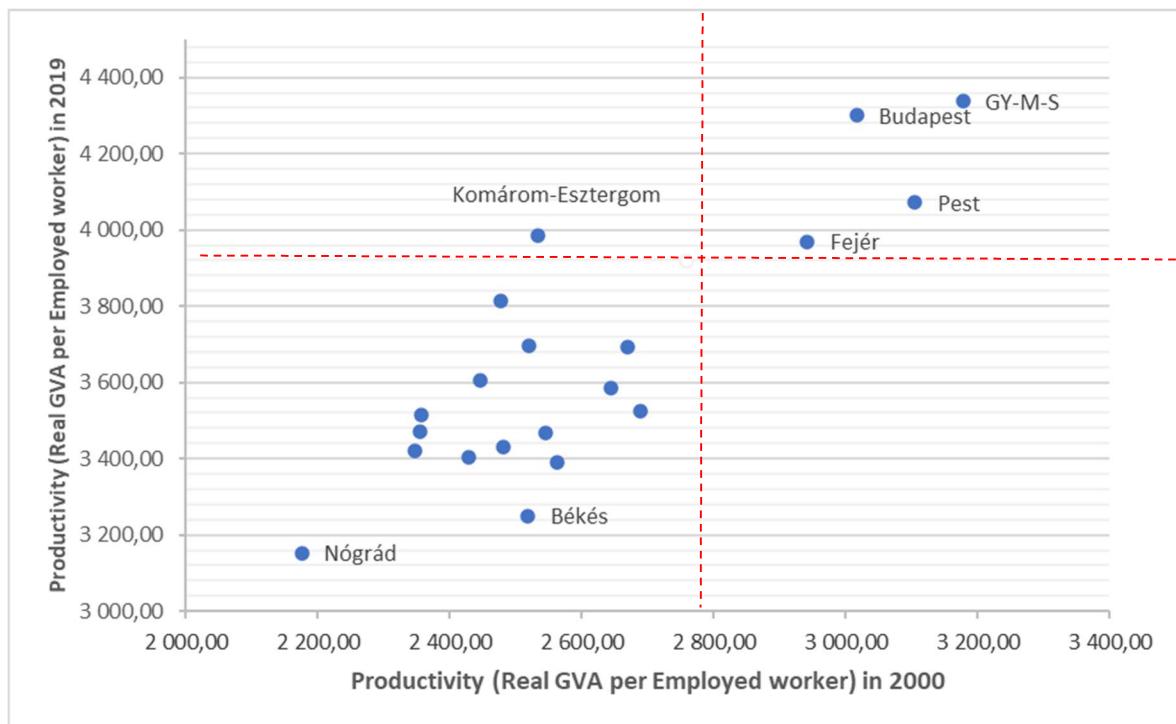
We considered it worthwhile to examine the 20 NUTS3 regions first. These regions represent the focus of our work in terms of labour productivity and its change (Fig. 2). The positive relationship indicates that there has not been drastic restructuring in the past twenty years, but smaller changes can be found.

² The most recent data at the time of the completion of the manuscript.

The mutually perpendicular lines located in the middle of the figure (Fig. 2) symbolise the average of 2000 and 2019. The counties located in the top right quarter are those which had a productivity value above average two decades ago and are still above average in this respect. Currently, Győr-Moson-Sopron (GY-M-S) is in the lead, with Budapest slightly behind, followed by Pest and Fejér. It can be seen that the capital was in the second place, and the surrounding county switched positions in the meantime.

The top left area includes only Komárom-Esztergom. This is the only county which was able to move forward since, based on the data of 2000, it did not reach the national average, while in 2019 it surpassed that. Komárom-Esztergom slightly precedes Fejér.

Figure 2 Change of labour productivity (Real GVA/Employed worker) between 2000 and 2019 among Hungarian NUTS3 regions, at prices of 2000



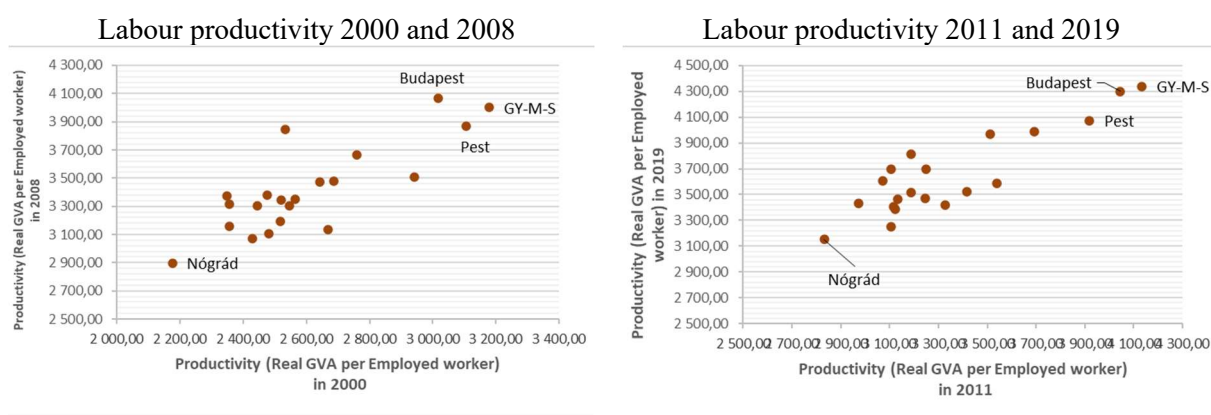
Source: own construction based on Eurostat database

There is not a single county in the “fourth quadrant”, i.e., there was no substantial relative decline. Fifteen territorial units are found in the bottom left quarter. These counties had a value below the national average in 2000, and their position has not changed since. The national average is the most closely approximated by Bács-Kiskun. Based on the data of 2019, Békés is the second last, which showed a relatively (albeit slightly) better performance two decades ago. Nógrád was positioned at the end of the list in both studied periods, whose handicap is conspicuous. The data description analysis corroborates the fact that regional differences exist

between regions (see Ezcurra & Pascual, 2007; Zsibók, 2018). Moreover, these differences are conserved over time.

The financial crisis of 2008 took place over the studied period, the effect of which is worthwhile to examine separately as well. We consider the years 2009 and 2010 – when the effects of the crisis were most visible in macroeconomic indicators – a sort of rupture; therefore, we provide a brief presentation of the period before and after within the entire studied period (Fig. 3).

Figure 3 Development of labour productivity (Real GVA/Employed worker) before and after the financial crisis



Source: own construction based on Eurostat database

At the beginning of the pre-crisis period, Győr-Moson-Sopron had the highest value in terms of labour productivity, followed by Pest, while Budapest ranked only third. The national average was also exceeded by Fejér. The handicap of Nógrád was already evident. Interestingly, at that time, Bács-Kiskun showed a relatively weak performance, and it was lagging behind Csongrád-Csanád and slightly behind Békés.

The order of the three South Great Plain counties (Bács-Kiskun, Békés and Csongrád-Csanád) was established by the end of this period, 2008, which is still prevalent, i.e., Bács-Kiskun took the lead, followed by Csongrád-Csanád, and Békés is the last in this respect. Prior to the crisis, Budapest had the highest value, slightly ahead of Győr-Moson-Sopron. At that time, Pest ranked third based on the examined indicator. Interestingly, only four NUTS3 territorial units surpassed the national average then, the difference being Komárom-Esztergom and not Fejér ranking in the fourth place.

At the beginning of the second period of analysis, in 2011, the values of 3 counties and the capital were above the national average, and their order did not change. 2019 is the first year

when already five territorial units are found above the national average. It is due to Fejér “clawing its way back”.

In line with the time horizon of our analysis, we also examined the location quotient at two points of time, in 2000 and 2019. As already mentioned, we considered the values over 1.5 as an indicator of a strong concentration of a particular sector group. Regarding the year 2000, it is found that, not surprisingly, most sector groups were already concentrated in Budapest. The LQ value of eight sector groups was above the national average, four of which showed exceptionally high concentration (Tab. 2).

Table 2 Location quotients of Hungarian NUTS3 regions by industries in 2000

GEO/TIME	A	B-E	C	F	G-J	J	K	L	M-N	O-Q	R-U
Hungary	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Budapest	0.17	0.63	0.67	1.02	1.17	1.98	2.04	1.50	1.72	1.04	1.36
Pest	0.93	0.85	1.09	1.38	1.15	0.78	0.43	0.99	0.76	0.80	0.93
Fejér	1.18	1.53	1.55	0.92	0.65	0.53	0.45	1.61	1.22	0.71	0.69
Komárom-Eszt.	1.11	1.93	1.38	0.89	0.81	0.41	0.47	0.64	0.74	0.89	0.73
Veszprém	1.06	1.73	1.23	0.94	0.90	0.43	0.50	0.92	0.78	0.93	0.77
Gyor-M-S.	1.03	0.76	1.49	1.04	0.88	0.58	0.54	0.87	0.72	0.77	0.77
Vas	1.08	0.54	1.66	0.90	0.80	0.35	0.45	0.64	0.69	0.77	0.89
Zala	1.31	1.19	1.23	1.08	0.94	0.37	0.48	0.67	0.52	0.87	1.17
Baranya	1.57	1.43	0.83	0.99	0.91	0.72	0.66	1.05	0.63	1.19	1.03
Somogy	1.84	0.94	0.82	0.95	1.04	0.45	0.57	0.72	0.69	1.10	0.96
Tolna	2.00	2.53	0.96	1.13	0.78	0.36	0.51	0.59	0.76	0.94	0.75
Borsod-Abaúj-Z.	0.90	2.18	0.99	0.94	0.93	0.69	0.56	0.73	0.51	1.22	0.82
Heves	1.21	1.94	1.18	0.96	0.88	0.38	0.63	0.63	0.51	1.01	0.74
Nógrád	0.75	1.05	1.27	1.12	0.80	0.47	0.58	0.62	0.61	1.23	0.64
Hajdú-Bihar	1.88	0.91	0.91	0.87	0.94	0.64	0.53	0.58	0.63	1.16	0.88
Jász-Nagykun-Sz.	1.75	0.97	1.13	0.83	0.85	0.39	0.52	0.51	0.62	1.11	0.69
Szabolcs-Szatmár-B.	1.33	0.52	0.97	0.88	1.12	0.40	0.53	0.41	0.53	1.20	0.75
Bács-Kiskun	1.89	0.66	1.12	0.89	0.98	0.60	0.54	0.59	0.44	0.92	0.91
Békés	2.13	0.75	1.04	0.75	0.89	0.63	0.63	0.38	0.48	1.10	0.72
Csongrád	1.93	0.70	0.94	0.99	0.90	0.69	0.59	0.73	0.75	1.09	0.87

* Uppercase letters refer to the name of sector groups. See Tab. 1.

** Values over 1.5, representing extremely high concentration, highlighted by red

*** Values below .5, representing extremely low concentration, highlighted by orange

Source: own construction based on Eurostat database

These four sector groups included info-communication, financial, real estate, and professional, scientific and technical. It may even be logical that these sectors were concentrated in the capital at that time and still are. On the other hand, it is less fortunate that agriculture has significant concentration in eight counties. All three counties of the Southern Great Plain and South Transdanubia (Baranya, Somogy and Tolna) as NUTS2 regions can be listed here at the time

of observation. On the contrary, industry played a similarly important role in Central Transdanubia (Fejér, Komárom-Esztergom and Veszprém) already in 2000, i.e., this sector had substantial concentration in all three counties of the region. Interestingly, at that time, Fejér was the only one where three sectors were overrepresented.

Moving on to 2019, based on the location quotient (Tab. 3), there are no significant structural changes and structural effects; nevertheless, smaller, less noticeable changes appeared. In the capital, the same four sector groups we have previously mentioned are concentrated to a substantial extent. In Pest, the concentration of wholesale and construction can be regarded as excessive, while concentration in industry and real estate became less pronounced in the case of Fejér.

Table 3 Location quotient of Hungarian NUTS3 regions by industry in 2019

GEO/TIME	A	B-E	C	F	G-J	J	K	L	M-N	O-Q	R-U
Hungary	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Budapest	0.06	0.73	0.45	0.81	1.10	2.37	2.11	1.76	1.80	1.18	1.23
Pest	0.92	1.20	1.42	1.78	1.85	0.83	0.61	1.09	1.23	0.78	1.14
Fejér	1.05	0.90	1.62	0.98	0.76	0.26	0.37	0.82	0.79	0.69	0.81
Komárom-Eszt.	1.03	1.45	2.21	1.12	0.89	0.23	0.41	0.52	0.69	0.80	0.78
Veszprém	1.24	0.91	1.27	0.91	0.91	0.31	0.45	0.79	0.65	0.78	0.86
Gyor-M-S.	0.95	0.91	1.78	0.97	0.94	0.32	0.58	0.67	0.68	0.69	0.99
Vas	1.03	0.59	1.44	0.92	0.68	0.18	0.33	0.58	0.45	0.65	0.93
Zala	1.17	0.93	0.83	0.92	0.96	0.26	0.47	0.72	0.41	0.74	0.78
Baranya	1.58	1.20	0.71	0.91	0.76	0.49	0.56	0.59	0.58	1.20	1.04
Somogy	1.83	1.14	0.74	0.89	0.83	0.17	0.40	0.46	0.40	1.04	0.87
Tolna	1.72	3.32	0.84	1.75	0.70	0.36	0.49	0.37	0.61	0.86	0.70
Borsod-Abaúj-Z.	1.04	1.29	1.16	1.00	0.78	0.30	0.49	0.42	0.73	1.13	0.89
Heves	1.04	1.88	1.72	1.02	0.85	0.22	0.39	0.64	0.35	0.95	0.79
Nógrád	0.86	0.72	0.91	0.68	0.67	0.16	0.34	0.48	0.28	1.07	0.67
Hajdú-Bihar	2.11	1.03	0.77	1.13	0.98	0.68	0.65	0.67	0.70	1.12	0.96
Jász-Nagykún-Sz.	1.62	1.12	1.39	0.80	0.73	0.21	0.39	0.46	0.48	0.92	0.71
Szabolcs-Szatmár-B.	2.24	0.74	1.22	0.95	0.87	0.24	0.53	0.60	0.36	1.22	1.11
Bács-Kiskun	2.11	0.86	1.40	1.29	1.00	0.25	0.49	0.63	0.45	0.91	0.78
Békés	2.55	0.75	0.92	0.74	0.74	0.19	0.55	0.33	0.32	1.05	0.77
Csongrád	1.53	1.23	0.80	0.98	0.89	0.68	0.59	0.77	0.65	1.07	0.82

* Uppercase letters refer to the name of sector groups. See Tab. 1.

** Values over 1.5, representing extremely high concentration, highlighted by red

*** Values below .5, representing extremely low concentration, highlighted by orange

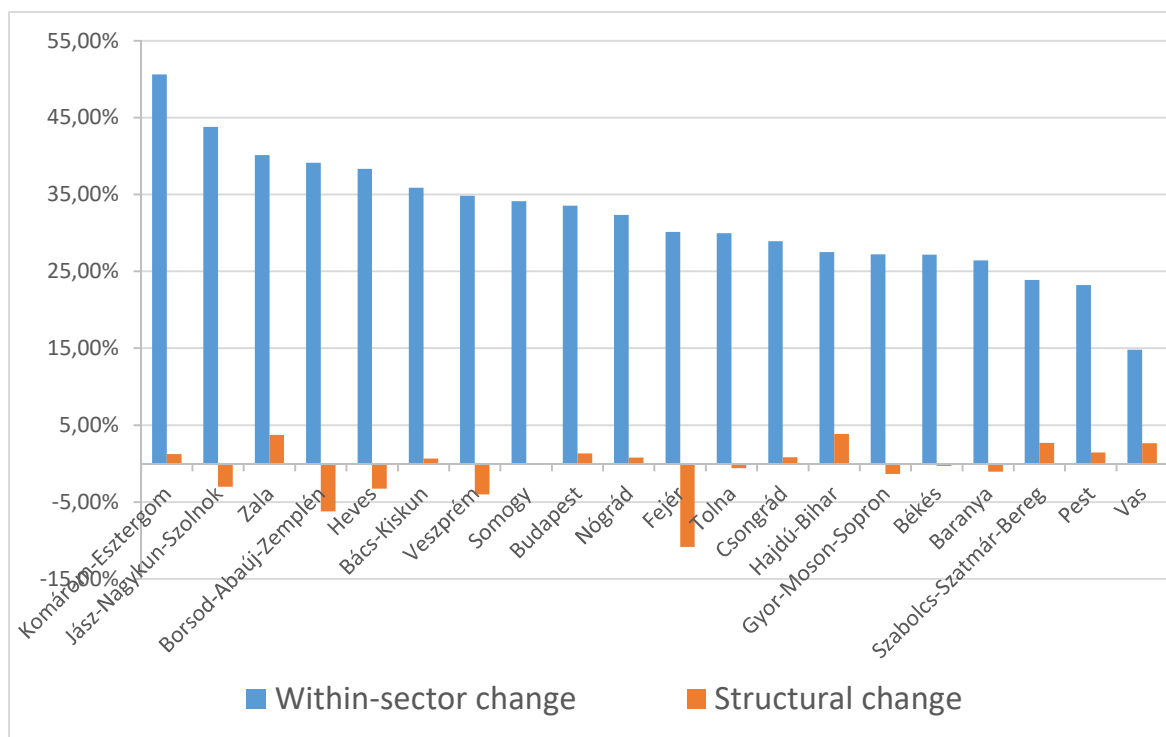
Source: own construction based on Eurostat database

In 2019 one county was also found to show a high concentration in three sectors. Agriculture had an outstanding concentration (above 1.5) in nine counties in 2019. In Tolna, besides agriculture and construction, industry also had a prominent position (due to the location of the only nuclear power plant in the country here). The latter value (3.32) is the highest regarding the two studied points of time and all counties.

Comparing Tab. 2 and Tab. 3, we can see that the number of counties with low LQ values increases in the Information and communication, Financial and insurance activities, Real estate activities and Professional, scientific and technical activities, administrative and support service activities sectors. This suggests that the counties are even more isolated from Budapest, and the dual structure has survived (see Kiss, 2007).

In our study, we divided productivity change into a “between-sector” and “within-sector” element. The sum of these two effects represents the total change in labour productivity (the change by counties between 2000 and 2019 is presented in Fig. 2). It can be found that over the studied period, in both shorter periods, the changes within sector groups were dominant, while the effect of structural changes is much smaller (Fig. 4 and Tab. 4).

Figure 4 Contribution to total change, 2000-2008



Source: own construction based on Eurostat database

Table 4 Breakdown of productivity growth of Hungarian NUTS3 regions, 2000-2008

	Within-sector change 2000-2008	Structural change 2000-2008	Total change (sectoral + structural) 2000-2008
Komárom-Esztergom	50.63%	1.25%	51.89%
Zala	40.11%	3.72%	43.83%
Jász-Nagykun-Szolnok	43.79%	-3.02%	40.78%
Bács-Kiskun	35.86%	0.65%	36.51%
Heves	38.33%	-3.27%	35.05%
Budapest	33.55%	1.33%	34.88%
Somogy	34.12%	0.04%	34.16%
Nógrád	32.35%	0.79%	33.14%
Borsod-Abaúj-Zemplén	39.11%	-6.24%	32.88%
Hajdú-Bihar	27.50%	3.86%	31.36%
Veszprém	34.82%	-4.02%	30.80%
Csongrád	28.94%	0.83%	29.76%
Tolna	29.97%	-0.58%	29.39%
Békés	27.16%	-0.31%	26.85%
Szabolcs-Szatmár- Bereg	23.87%	2.71%	26.57%
Győr-Moson-Sopron	27.21%	-1.33%	25.87%
Baranya	26.41%	-1.06%	25.35%
Pest	23.20%	1.46%	24.66%
Fejér	30.14%	-10.84%	19.30%
Vas	14.80%	2.65%	17.45%

Source: own construction based on Eurostat database

As it can be seen, the primary factor of productivity growth in the examined NUTS3 regions is the performance growth within the sector groups rather than the change of the economic structure of counties.

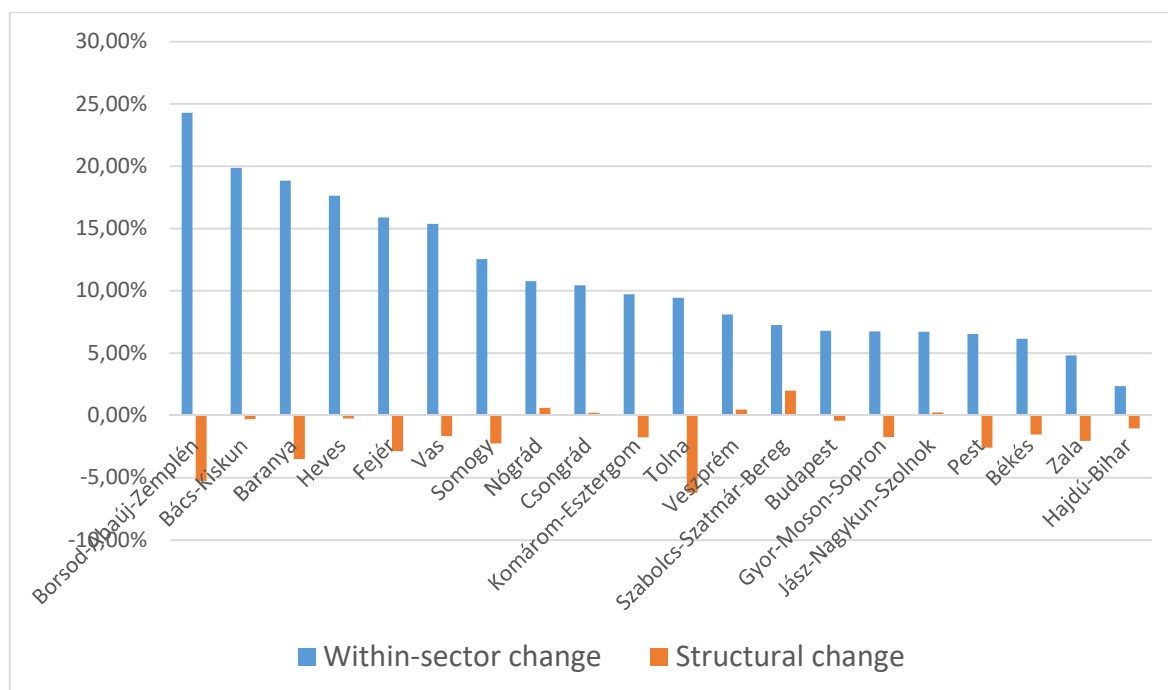
The effect of structural changes on performance growth is smaller than the sectoral effect in many cases; sometimes, it even takes a negative value. I.e., the economic structure of counties has shifted from sector groups with higher productivity to those with lower productivity. Although they studied other periods and focused on cities, Martin et al. (2018) obtained similar results for England.

The winner of the pre-crisis period is Komárom-Esztergom, for which the extent of within-sector change exceeds fifty per cent (Tab. 4). It is seven per cent higher compared to the second

Jász-Nagykun-Szolnok in this respect. In the case of the former, structural change shows a positive albeit minimal effect. The positive effect of structural change could be demonstrated in a total of eleven cases among the studied territorial units. This value was the highest in the case of Hajdú-Bihar (3.86%), closely followed by Zala (3.72%). It can be stated that the structural shifts increased the productivity of the counties to a lesser extent in the studied period compared to the change within sector groups.

Regarding total productivity change throughout 2000-2008, two Transdanubian counties (Fejér and Vas) are positioned at the end of the list. The weak performance of Fejér is particularly surprising in this respect. The effect of the changes within sector groups (+30.14%) is understandable; nevertheless, the negative value of the effect of structural changes (-10.84%) is surprising. The present paper does not focus on the in-depth analysis of the situation of each county, but several papers have found that it was the period when the North Transdanubian contiguous regions grew faster than the national average. However, after the turn of the millennium, many of these counties ranked last in terms of growth due to the exhaustion of earlier industrial dynamics. The still painful effect of the departure of IBM can also be mentioned in the case of Fejér and Székesfehérvár.

Figure 5 Contribution to total change, 2011-2019



Source: own construction based on Eurostat database

Moving on to the second period, it is striking that the period of 2011-2019 showed much more moderate growth rates (Fig. 5 and Tab. 5). Over this period, the labour productivity of Bács-Kiskun increased strongly, even though its extent did not reach twenty per cent (19.57%).

Considering total change, no substantial growth could be detected in the case of the territorial units positioned at the end of the list. For Győr-Moson-Sopron, the growth was only five per cent, and even lower for five counties, 1.3% in Hajdú-Bihar.

During this decade, structural change was less significant in terms of productivity change. It had a positive effect on labour productivity in four counties, but – except for Szabolcs-Szatmár-Bereg – all of them had values below 1%, which is, in fact, only a quantifiable value. The negative effect is occasionally stronger, especially in the case of Tolna and Borsod.

Table 5 Breakdown of productivity growth of Hungarian NUTS3 regions, 2011-2019

	Within-sector change 2011-2019	Structural change 2011-2019	Total change (sectoral + structural) 2011-2019
Bács-Kiskun	19.87%	-0.30%	19.57%
Borsod-Abaúj-Zemplén	24.30%	-5.25%	19.05%
Heves	17.64%	-0.24%	17.40%
Baranya	18.84%	-3.50%	15.34%
Vas	15.37%	-1.65%	13.72%
Fejér	15.88%	-2.88%	13.00%
Nógrád	10.77%	0.60%	11.37%
Csongrád	10.44%	0.21%	10.66%
Somogy	12.55%	-2.26%	10.29%
Szabolcs-Szatmár-Bereg	7.25%	2.00%	9.25%
Veszprém	8.09%	0.49%	8.58%
Komárom-Esztergom	9.73%	-1.75%	7.98%
Jász-Nagykun-Szolnok	6.72%	0.24%	6.96%
Budapest	6.79%	-0.43%	6.36%
Győr-Moson-Sopron	6.74%	-1.74%	5.00%
Békés	6.16%	-1.53%	4.62%
Pest	6.55%	-2.59%	3.96%
Tolna	9.44%	-6.20%	3.24%
Zala	4.83%	-2.04%	2.78%
Hajdú-Bihar	2.34%	-1.04%	1.30%

Source: own construction based on Eurostat database

Nevertheless, regarding within-sector changes, productivity growth in the above-mentioned Borsod-Abaúj-Zemplén was the most substantial (24.3%), ahead of Bács-Kiskun (19.87%), Baranya (18.84%), and Heves (17.64%). Over this time interval, productivity growth exceeded 10 per cent in only nine counties. Even the capital city of Budapest is positioned in the second half of the ranking.

Evaluating the overall picture of the two decades studied in our work, it can be established that the previously emerging differences – sectoral structures – have been preserved. In the first decade, some effects of economic restructuring were detected in terms of the development of counties, but these were obliterated with the financial crisis. There were territorial units showing more and less dynamic growth in the context of existing structures.

CONCLUSION

In our paper, we sought to explore the changes in the structure of the Hungarian economy in the past two decades (2000-2019) through the indicator of labour productivity. Within the studied period, over both shorter periods, within-sector changes were dominant, while the effect of structural changes was much smaller.

The primary factor of the productivity growth of NUTS3 regions (counties) was performance growth within each sector group. The significance of economic structural change is marginal in comparison, even negative in some cases (the economic structure of counties shifted from sector groups with higher productivity to sectors with lower productivity).

Based on our findings, we recommend that regional policy designers be more attentive to the enormous investments that can transform each region's economic structures. Moreover, they should encourage those development projects which contribute to higher productivity.

Since our findings focus only on Hungary, we cannot establish general results about structural changes. Therefore, we are planning to extend our research in two different directions. One of them is broadening the country list by adding Central-Eastern European countries to examine whether other regions show a similar pattern. Another is complementing the research with new variables that can represent particular driving factors of structural change in Hungary.

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THE ROLE OF THE FOUNDATIONAL ECONOMY: THE CASE OF TWO REGIONAL CENTRES IN CENTRAL AND EASTERN EUROPE

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Abstract

Our comparative research examines the changes in the economic position of two rural regional centres, Cluj-Napoca and Pécs, in the post-crisis period. The focus of our interest is the sectoral structure of the local economies in the light of the concept of 'foundational economy'. Our empirical research covers data from the largest local firms in each of the two cities, as well as regionally aggregated data, analysed from a labour productivity perspective with exploratory statistical methods. The source of our data is the Orbis Europe enterprise database, supplemented by EuroStat data at regional level. Our results suggest that due to the large weight of the foundational economy in both cities, it should be considered an important driver of long-term territorial development and local well-being. There are several sectors in the local economy of the two cities where some activities of the foundational economy excel in productivity, thus we cannot establish a direct contradiction between the high weight of the foundational economy and lower efficiency.

Keywords: labour productivity, foundational economy, regional growth, urban dynamics, Central and Eastern Europe

INTRODUCTION

The decade after the financial and economic crisis has brought new economic development challenges for Central and Eastern European countries and their sub-national territorial units. The slow growth of the post-crisis recovery period was replaced by a high-pressure economy in the middle of the 2010s (NBH, 2016), which was brought to an end by the coronavirus crisis. Capital regions have been the uncontested winners of this process, but non-capital regions have also been able to gain strength, albeit to a lesser extent. Territorial disparities peaked right after the global financial and economic crisis (in 2009 in Hungary and in 2011 in Romania), but their decline came to a halt after 2015.

An important change occurred during the 2010s, namely, that the unemployment problem in the Central and Eastern European countries, prevalent after the transition and the global financial and economic crisis, has turned into the reverse, with labour shortage becoming an increasing hindrance to growth. In addition to intensive job-creating investments (especially in the lower value-added segments), there has been an overall improvement in labour market

indicators across the regions, triggering remarkable inter-regional convergence in this respect. As a result, this situation leaves limited scope for further economic development and territorial rebalancing relying on labour market expansion (see Györi, 2021), and it necessitates a more focussed implementation of efficiency-oriented territorial development policies (NBH, 2022). Increasing productivity is crucial for the development of a region from the point of view of income generation and the well-being of its population. Unfortunately, evidence of the widening gap between frontier firms and the rest indicates that knowledge diffusion, especially in the services sector, cannot be taken for granted. The OECD's (2015, 3) document states that "Future growth will largely depend on our ability to revive the diffusion machine, both within and across countries [...] by more effectively allocating human talent to jobs". Evidently, urban dynamics play a pivotal role in the economic performance of regions, whereas second-tier or smaller cities could attempt to attain agglomeration advantages while mitigating the disadvantages through a different spatial structure in which their efforts and sizes are bundled (Ouwehand et al., 2022; Rechnitzer & Berkes, 2021; Tache et al., 2016).

Whereas the productivity challenges that appeared after the global financial and economic crisis (Askenazy et al., 2016) have a clear regional dimension (Tsvetkova et al., 2020), the corporate sector has an ultimate role in determining regional productivity. Proximity and granularity (Altomonte & Békés, 2016) mean that the economic fortune of regions and nations is increasingly driven by a handful of large firms. The privatization or dissolution of potential national champions after the regime change and the weakness of domestic mid-sized firms (Lux, 2020) leave scant alternatives for reindustrialization other than the FDI-driven model of the so-called "dependent market economies" (Bohle & Greskovits, 2006; Rácz, 2019). Foreign multinational enterprises are at the forefront of market-driven reindustrialization, the pattern of which is highly heterogenous across the regions (Lengyel et al., 2016).

The weaknesses of FDI-driven models (relying on low labour costs, skilled labour, tax advantages and proximity to the West) are manifest in the absence of domestic innovation-leading companies and headquarters, compounded by a shrinking working-age population (Galgóczi et al., 2015; Nick et al., 2019; Egyed & Rácz, 2020). The contribution of foreign affiliates to value added exceeded 50 percent in Romania and around 40 percent in Hungary in 2018 (Grieverson et al., 2021). However, compared to other urban centres in Romania, Cluj maintains a favorable balance between the corporate sector of foreign-owned firms (approx. 20%) and the local entrepreneurial sector (80%). Thus, the entrepreneurial environment relies significantly on local entrepreneurs, boosting the creation of 102 startups annually (SIDU Cluj 2021-2030). The dominance of manufacturing production by the automotive sector, accounting

for 15 percent of jobs in Romania and 13 percent in Hungary, places industrial diversification at the top of the agenda of domestic industrial policy. Muraközy et al. (2018) warn that not only the large productivity gap between the frontier firms (defined as the top 5% firms in terms of productivity performance) and the rest (i.e. the long tail of laggard firms) is a problem for the aggregate economic performance in Hungary, but also the generally weak productivity of the frontiers itself. A well-developed diffusion infrastructure (such as the much vaunted Fraunhofer Institutes in Germany) to help non-frontiers adopt innovation could prevent this gap from growing wider.

Monfort (2020) shows that in most European countries the contribution of labour productivity disparities to per capita GDP dispersion is above 90 per cent, because regional disparities in terms of labour productivity have increased while disparities in regional labour markets have decreased. Actually, Romania and Hungary are among the top countries in this respect (with well above 95 percent contribution of labour productivity to total per capita GDP disparities). From this it follows that in a labour-scarce environment labour market policies play a marginal role in further reducing regional disparities, while rebalancing labour productivity is of key importance. A large part of labour productivity disparities can be explained by structural effects, namely, that companies of larger size and foreign ownership have a significant productivity advantage over smaller, local companies (Muraközy et al., 2018). Domestic SMEs in Romania have an average productivity three times below the EU average, and display a lower capacity to absorb technology relative to foreign-owned firms, as highlighted by the EC (2022). The low level of immaterial investments by European standards, especially in manufacturing and ICT, undermines domestic firms' ability to access knowledge and skills vital for increasing their productivity. Furthermore, local productivity spillovers are weak due to the absence of local capacity for technology adoption (Éltető & Alguacil, 2020). Foreign-controlled companies accounted for 47.4% and 44.7% of gross value added in Hungary and Romania, respectively, in 2018, and foreign-owned firms have a productivity advantage of twofold over domestic firms regarding the value added per employee (HCSO, 2020). The distribution of foreign-owned, larger companies is highly concentrated in space in both Hungary and Romania: the capital city, Budapest accounted for 44.8 percent of the FDI stock (net liabilities) in Hungary and the Bucharest-Ilfov region accounted for 61.8% of the FDI stock in Romania in 2020 (HCSO, 2022 and Statista, 2022), however, Cluj shows a much better position than Baranya county in this respect. In line with the literature we assume that within-sector productivity differentials have a larger role than between-sector disparities. Andrews et al. (2019) state that aggregate productivity and differences thereof across countries are

increasingly being linked to the widespread heterogeneity in firm performance within countries and sectors.

However, we believe that the way through which productivity improvement is achieved is not indifferent to the long-term development of a region and the well-being of its inhabitants (just to mention, e.g. the role of inclusive growth, see OECD 2014). The spatial distribution of the most productive frontier companies will by their very nature not be even, so a broader approach to the economic development of all regions, both advanced and lagging, is worth considering. A similar approach appeared in the paper of Lux (2021) on the role of “hidden sectors” in the manufacturing industry of Pécs.³ A useful idea behind local and regional development models is the notion of the “foundational economy” developed by the Manchester School (Froud et al., 2018a). In this setting, the literature differentiates between the “tradable” economy consisting of competitive, R&D intensive, high-tech industries and the “foundational economy”, which is the “part of the economy that creates and distributes goods and services consumed by all (regardless of income and status) because they support everyday life” (Bentham et al., 2013, 7). The foundational economy “includes the provision of necessities by sectors such as health and welfare services, education, transportation, utilities, and food processing and retailing. The foundational economy approach also entails a different understanding of innovation, which is less focused on developing new technical innovations, but rather emphasizes the social consequences of innovations and the ways they are developed and diffused” (Hansen, 2021, 2).

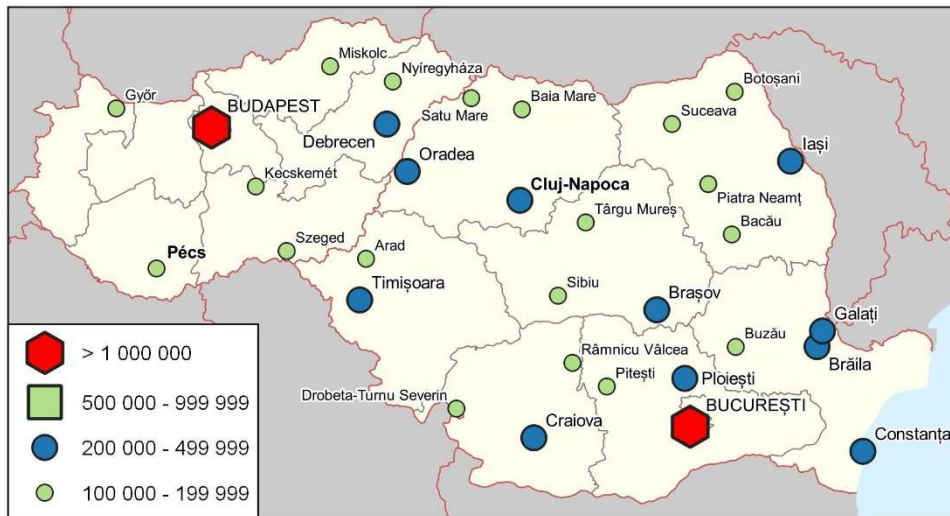
Our comparative research examines the changes in the economic position of two rural regional centres, Cluj-Napoca and Pécs, in the period following the financial and economic crisis, and highlights the role of the foundational economy. Our research aims to identify the main differences between the economic environment of the two cities and their respective regions and the development opportunities that are available for them in the middle and longer-term. We intend to analyse this question at the meso (regional) and the micro (firm) level.

Our research is a part of a multiannual research program that studies the local resource endowment of Pécs and Cluj-Napoca in a comparative approach (see also Zsibók & Egyed, 2022; Dragan, 2019). The main objective of the research programme is to promote knowledge exchange between the two collaborating institutions. The selection of these two cities can be justified for a number of reasons but it is not ideal from some other aspects. The economic development of post-transition countries is heavily dominated by the performance of the capital

³ The author refers to the hidden sectors as economic activities which are obscured by other, locally dominant development patterns.

cities, although second-tier cities, as growth poles, are also important development drivers, particularly in the case of Cluj-Napoca and to a lesser extent in Pécs. However, a major difference is the quasi-absence of the second level of the urban pyramid, – the category of large towns with a population of 300,000 to 500,000 in the Hungarian settlement network (see Fig. 1). Pécs is a medium-sized city according to EU standards with a population between 100,000 to 200,000 and is lacking scale and international visibility (Somlyódyne Pfeil, 2014). An important common feature of Pécs and Cluj-Napoca is their remoteness from the capital, which means that they economically stand out in an isolated way from their wider environment, nevertheless, their direct cross-border activities are not significant due to the economic weakness of their surrounding cross-border region. Cluj-Napoca and its region, Cluj county is the second most developed area after the Romanian capital city and it follows a stable growth path. The same cannot be stated for the deindustrialized, shrinking, rural university city of Pécs and its region, Baranya county, located in a weak economic environment, and its economy showing signs of stagnation rather than expansion (see e.g. Berkes, 2020). In this research we intend to gain insight into the development potential of second-tier cities, which are themselves developed, but whose regional hinterland is underdeveloped. The novelty of our research is that the Orbis Europe database has been in use for a relatively short time in the Hungarian academic community (see e.g. Muraközy et al., 2018), especially in the field of regional studies, although it has a longer history in international literature (Gal, 2013), and it allows us to dig deeper into productivity analysis than the standard regional-level data. Also, the foundational economy approach is not widely adopted in Central and Eastern European regional science literature (Hansen, 2021). An important starting point for a comparative analysis of the two cities is the fact that while the economy of one city, Pécs, relies heavily on the presence of the public sector, the private sector is stronger in the other, Cluj-Napoca. Our preliminary expectation is that this will also be reflected in regional or local productivity performance, and the contrast between the two regions in terms of the role of the foundational economy will become clearer.

In this article, we intend to study the above-described processes through several explorative statistics at the regional level and combine them with insights from firm-level data. The second section of our study summarizes the theoretical context. Then, we introduce our database and the methodology applied, and the results will be presented in the following section. The last section concludes and establishes the proposed directions of further research.

Figure 1 Towns and cities with population over 100,000 in Hungary and Romania, 2018

Source: created by Tamás Szabó (CERS IRS) based on Eurostat data

THEORETICAL BACKGROUND

As pointed out by Venables (2020), localization economies (i.e. knowledge spillovers, labour market pooling and specialized suppliers) in the production of internationally tradable goods generate two types of cities, those producing tradables (e.g. manufacturing) and cities specialized in non-tradable sectors (e.g. public sector or restaurants) that serve social needs. Bachtler et al. (2019) note that approx. two-thirds of EU economies are in non-tradable sectors, the majority located in large cities concentrating high value added sectors. Lacking the critical mass for specialized services, smaller cities and rural areas that only produce tradables show a limited scope of adjustment and greater vulnerability to globalisation shocks (see Hajdú et al., 2017). Local and regional development strategies aligned to the objectives of mainstream industrial policy focus on the tradable sectors of the economy, favoring leading edge firms in knowledge intensive sectors and advanced manufacturing, but neglect the residentiary economy that is more sheltered from competition and provides „stabilizers”, i.e. jobs in local production and services sectors. Countering the hegemonic notion of the disembodied and agglomerative “competitive city” or “entrepreneurial city”, alternative conceptualizations of the “grounded city” have been proposed, focusing on goods and services that are vital for daily life rather than luxury goods or non-essential services (Engelen et al., 2017; Hall & Schafran, 2017; Thompson et al., 2020; Essletzbichler, 2022).

Competitiveness strategies under the neoliberal agenda lead to a growing geographic concentration of prosperity and jobs in the most developed growth poles of the EU, accentuating spatial polarisation processes between wealthy agglomerations and the “rest” (see Feldman et

al., 2021). The erroneous assumption of earlier planning approaches, likened to spatial engineering, was that planning could determine where growth should happen and also stimulate it (Farágó & Lux, 2014). The shift from spatial planning and coordination in economic development policies to *competitive regionalism* led to the emergence of regions as economic, social, and political constructs, structured by big cities functioning as natural poles of growth (Keating, 2013). Unsurprisingly, competitive regionalism, i.e. decentralization without equalization and péréquation mechanisms, favors businesses in prosperous regions and not the traditional small business class in peripheral regions. Neo-mercantilist policies grounded in the same levers of growth produce a race-to-the-bottom by offering generous tax incentives and subsidies to attract inward capital, prioritizing business interests at the expense of local governments and the local population (Gál & Lux, 2022). This is increasingly evident in the prioritization of mega investments in the newly designated “special economic zones” (Government Decree no. 135/2020) in Hungary, a popular yet controversial state-financed industrial policy tool implemented in the least developed regions and extensively analyzed in the context of emerging and peripheral countries (see World Bank, 2017; ESPON, 2020; Szabó et al., 2021). The main role of SEZs, as specified by governmental discourse, is to foster priority investments to be successfully implemented in a given area, while surplus tax revenues may finance the development of the affected municipalities. A study on local governments’ role in FDI attraction (Kolin-Sabján & Kolin, 2021, 28) defines their *raison-d'être* as “ensuring the coordination of developments in a given area, the efficient organization of priority investments and to promote the development of supplier and innovative linkages, more generally, cooperation with firms and businesses”. In the case of the three SEZs to date in Göd, Fejér County and Mosonmagyaróvár that are home to greenfield investments of a min. of HUF 5 bn, county governments – as the quasi extended hands of the central state – are entitled to retain 20 percent of the professional tax collected from major taxpayers and spend the remaining part on territorial development. County-level fiscal péréquation may produce a higher level of territorial cohesion, yet the affected local governments, stripped of the right to collect professional taxes on the territory of the SEZ⁴, interpret the decree as a serious cutback on their autonomy and revenues. Similarly to their predecessors, SEZs are privileged tools of economic development, and, in line with the main tenets of competitive regionalism, assume the commonality of territorial interests targeting growth.⁵ Conversely, foundational approaches emphasize the socioeconomic foundations of urban economies, those essential services that

⁴ see Par. 7 of Government Decree 136/2020 (IV. 17.)

⁵ For a recent summary of local business and economic development tools see e.g. Horeczki & Mezei (2020).

generate social value and jobs over short-termist pro-business policies targeting productive sectors. Considering that future economic development is more and more dependent on the qualitative contribution of production factors instead of extensive growth, as explained in the introductory section, we do not believe that the public sector has a crowding-out effect with regard to private sector economic performance. Indeed, a well-functioning public sector, or in a broader sense, a “foundational economy“ (see Bentham et al., 2013 and Russell et al., 2022) is necessary for the whole regional and local economy to work efficiently (Birch & Cumbers, 2007).

The foundational approach breaks with the singular notion of „the economy“, arguing that there are multiple economies and zones of activities that show very different features. The foundational economy, covered only partly by major databases yet a source of roughly 40 percent of jobs in national economies in Europe, produces goods and services that provide the infrastructure of everyday life. These can be organized into the *providential* services of health and social care, education; and the *material* services that deliver “essential need satisfiers“ such as utility supply, public transport, telecommunications, food, or banking services, in modern market economies distributed through networks and branches. Foundation goods and services show a number of common features that include, among others: immobility, local delivery (they usually require face-to face communication), universality (all citizens consume them regardless of income, job or status). The foundational economy has a higher relevance for peripheral, left-behind regions, as demand for such services is non-cyclical. Research has also pointed to a negative relationship between the size of the foundational economy in regions and employment growth, moreover, a larger foundational economy was found to be more damaging for regions with increasing population than for depopulating regions (see Martynovich et al., 2022). The literature mentions a distinct but overlapping category, i.e. the „overlooked economy“ of low-tech services that are culturally defined as essential for daily life, such as haircuts, house repairs, holidays from work or a meal out (Berry, 2017). In a foundational perspective, Barbera F. et al. (2018) draw an analogy between the local commons and the civic infrastructure of goods and services that serve everyday needs, stressing the need for their de-commodification. Foundational liveability or the residual income after housing costs, as Froud et al. (2018b) puts it, should be the primary concern of economic policy as citizens’ well-being depends on the adequacy, affordability and continuous supply of foundational daily services. Stanley (2020) argues that these sectors are overlooked because society tends to undervalue reproductive labor.

The foundational approach resonates with Braudel’s tripartite division of society in which the economy is constituted by various autonomous and overlapping layers: the informal or

subsistence economy; the local economy of embedded institutions and SMEs; and the world economy of global exchange and large firms (Braudel, 1979; Thompson et al., 2020). The foundational perspective recognizes the role of other regulatory forms (e.g. reciprocity, mutualism and redistribution) besides market coordination, and, to avoid the local trap, it proposes a multiscalar and overlapping approach for the regulation of economic activities (local/territorial/national). Froud et al. (2018a) stress as its main virtue the potential to restore the social value of labor and the tacit skills of citizens (e.g. those employed in care). Contrary to the GDP methodology, it treats firms providing welfare critical foundation services as belonging to the public domain, regardless of ownership. The foundationalist strand helps overcome the shortcomings of previous territorial approaches to the management of local commons by demonstrating the benefits of social differences in the production of collective goods and services.

Bentham et al. (2013) treat the foundational economy as the basis of a new approach to employment creation aimed at *enhancing the quality of jobs* in so-called low value or “low-wage sectors“ and not simply on their numerical increase (see Forth and Rincon Aznar 2018). The failure of the desired high tech frontier firms to diffuse within and between regions has prompted calls to include overlooked sectors in economic development and industrial strategies. As noted by Morgan (2021), the EU debate was centred on the role of new industrial policies and increased state interventionism preceding the coronavirus crisis, largely overlooking the fate of regions and cities that fell outside the scope of mission-oriented industrial policies. The foundational economy, due to its socially and spatially inclusive nature, can deliver much benefit for left-behind regions and cities, saving them from the circular and mutually reinforcing spiral of deterioration (MacKinnon et al., 2021; see also Froud et al., 2020; Martynovich et al., 2022). Moreover, improving the productivity of “ordinary firms” in the everyday economy would result in more regionally balanced growth than an exclusive focus on frontier firms that are highly concentrated spatially (see Jacobs et al., 2017), as the regional productivity gap in the case of foundational activities is not at all significant. This would allow deindustrialized lagging regions to break out of the low innovation, low skills, low productivity equilibrium that they are trapped in, and also to avoid getting into a race-to-the-bottom situation.

The social welfarist orientation of the foundational economy, with its emphasis on human capital and social investments, is particularly well-suited to the needs of shrinking cities facing a loss of jobs, companies and population (see Bowman et al., 2014). The debate on shrinking cities originated in Germany, as did the twin notion of “perforated cities”, a new urban development model under the specific conditions of shrinkage, combining urban decline and

sprawl (Lütke-Daldrup, 2001). Pécs is emblematic of this fate, having endured shrinkage, both economic and demographic, since its post-socialist transformation. Cluj-Napoca, on the other hand, is among the top youngest cities in Europe, with a third of its population being students. Situated in one of Romania's most dynamic urban regions, Cluj is a large and fast growing city⁶ recording high rates of income and employment growth (Fina et al., 2021; SIDU Cluj 2021-2030). In fact, the surrounding areas of Cluj-Napoca have been much less affected by external migration than rural areas that are far from large cities (World Bank, 2019). The phenomenon of urban shrinkage is attributed, among others, to factors such as deindustrialization (Popescu, 2014; Mihail et al., 2021), parasitic urbanization or counterurbanization (Berry, 1977), political changes (post-socialism) (Oswalt, 2005), technological change, increasingly footloose capital and ever shorter innovation cycles (Fol & Cunningham-Sabot, 2010). Haase (2016, 90) describes this downward spiral as the place-specific interplay of economic transformation, suburbanization and demographic change that lead to population decline, producing what Castells (2000) refers to as "black holes", i.e. peripheral places isolated from the global circuits of capital, labour mobility and knowledge exchange, within their national and the global urban network (Hadjimichalis, 2011).

As an alternative to inward investment strategies using public resources to attract foreign-owned branch plants, cohesion policies targeting economic revitalization in peripheral areas under RIS3 aim to connect local business networks to international knowledge networks, often through a reconfiguration of value chains. With the introduction of the Smart Specialization approach, EU policy under the 2014-20 cycle has come to be seen as a growth-driven policy or regional innovation policy aimed at increasing local business competitiveness through strategic diversification in under-performing regions. As Froud et al. (2020) note, regional or industrial policies aimed at raising productivity are of little relevance in the context of foundational or mundane activities characterized by low skills and low productivity. Hansen (2021) suggests that the meaning of development itself should be reconsidered in the context of the foundational economy, as its aim is to directly contribute to raising social standards rather than producing more competitive industries. Due to the unequal distribution of the benefits of innovation-led development, widening productivity differentials between dynamic core and peripheral lagging regions should result in lower social standards for the latter. However, research has pointed to

⁶ The Cluj Metropolitan Area recorded a 7.7% population growth between 2014 and 2020, while at the national level it decreased by 0.8%. The population growth of Cluj Metropolitan Area was almost double that of the Bucharest-Ilfov region (+4.2%), attributable to the positive balance of internal migration (see SIDU Cluj 2021-2030).

a growing disconnect between productivity-driven regional growth (as measured by GDP) and wages and living standards, as a result of the massive redistribution of regional revenues linked to retirement, welfare, and lifestyle migration processes in the context of counter-urbanization.⁷ This highlights the greater potential of the foundation sectors to contribute to regional economic rebalancing than reindustrialization through developing locally-based manufacturing, though without incrementing GDP (Davezies, 2009; Bailey et al., 2015).

DATA AND METHODS

Our empirical research covers data on the largest local firms (in terms of operating revenue and employment) in each of the two cities, analysed from a labour productivity perspective. We take into account the 200 largest enterprises from both cities. The source of our data is the Orbis Europe enterprise database, supplemented by EuroStat data at regional (NUTS2 and NUTS3) level (Tab.1). Our aim is to assess local trends not only in cross-section but also in terms of their dynamics over time, we therefore analyse the data for the period between the two crises. Firm-level data are available for the 2013 to 2020 period. Due to the incomplete data coverage, we considered those companies that have available data for the year 2020, but the time-series are not complete for the previous years. In 2013, around 40 percent of the data are missing, and the coverage improves with time to around 90 percent in 2019 in both cities (and the coverage is full for the year 2020). The extracted information includes the company name, the 4-digit NACE Rev. 2 core code, the operating revenue in US dollars and the number of employees.

Table 1 Summary of the data and methods used

Level of analysis	NUTS3	Municipality
Data source	Eurostat, AMECO	Orbis Europe, AMECO
Time span	2009-2020	2013-2020
Indicators	Gross value added, employees	Operating revenues, employees
Calculation of labour productivity	GVA/employed persons	Operating revenue/employees
Sectoral disaggregation	NACE alphabetical codes	4-digit NACE Rev. 2 codes
Spatial coverage	Baranya, Cluj	Pécs, Cluj-Napoca

Source: Authors' elaboration

⁷ Particularly in the case of amenity regions. A main priority area of the Pécs pole quality of life (2005) programme was to create a competitive advantage for the region based on its complex environmental, cultural and health assets, to capture alternative sources of revenues for the regional economy from a specific cohort of the silver economy (wealthy retirees in search of alternatives to metropolitan living), which restores the value of the foundational economy.

Eurostat publishes gross value added (GVA) data and employment data at the NUTS3 level in a sectoral decomposition for the period between 2000 and 2020.⁸ Also, the available firm-level data allow us to distinguish between the different sectors in which the firms operate. In order to study the working of the foundational economy in each region and city, we need to identify those economic activities that belong to the different “zones“ of the economy. A detailed classification published on the website of *The Foundational Economy collective*⁹ will help us to do this. The classification assigns to each economic activity identified by the NACE Rev. 2 codes their type according to which part of the economy they belong. The three categories within the foundational economy are the material activities, the providential activities and the overlooked economy, which are supplemented by the tradable economy. In the case of the broader sectoral classification which is available at the NUTS3 level (at the section level of activities, marked by alphabetical codes from A to U¹⁰) the distinction between the activities is not clear, therefore, in this case we can only make a very rough distinction.¹¹ Also, we do not differentiate between material, overlooked and providential activities within the foundational economy in the case of NUTS3 level analyses, but treat them together, and classify the sectors as foundational and tradable activities. We propose that the foundational economy include sectors A, B-E, F, G-I, O-Q and R-U, while sectors J, K, L, M-N may belong to the tradable economy. It has to be kept in mind that employment and output are supply side measures, but the foundational economy is best defined from the consumption side, through the use of the products or services (considering household expenditures).¹²

When calculating temporal dynamics, it is useful to evaluate GVA and revenue data at constant prices. For this purpose, we use the GDP deflator published in the AMECO database which is available at the national level. It is common in the literature that regional price levels are approximated by their national-level counterparts due to data limitations (see e.g. Rokicki

⁸ Gross value added at basic prices by NUTS 3 regions (online data code: NAMA_10R_3GVA) and Employment (thousand persons) by NUTS 3 regions (online data code: NAMA_10R_3EMPERS).

⁹ <https://foundationaleconomy.com/activity-classification/>

¹⁰ The codes and labels of the activities according to NACE Rev. 2 at the section level are as follows (see European Communities, 2008): A: Agriculture, forestry and fishing; B-E: Industry (except construction); F: Construction; G-I: Wholesale and retail trade, transport, accommodation and food service activities; J: Information and communication; K-N: Financial and insurance activities; real estate activities; professional, scientific and technical activities; administrative and support service activities; O-Q: Public administration, defence, education, human health and social work activities; R-U: Arts, entertainment and recreation; other service activities; activities of household and extra-territorial organizations and bodies.

¹¹ Moreover, detailed GVA data are not available for the sectors K, L, M-N in Romania at Eurostat, only data aggregated to K-N together.

¹² see the above-cited resource

& Hewings, 2019). With the deflator we convert the values so that the price level in the year 2015 represents 100.

Labour productivity at the regional level is measured as the ratio of regional GDP (or GVA) to the number of persons employed. Unfortunately, we do not have data for the hours worked and cannot distinguish between full-time and part-time employment. In parallel, as an approximation for labour productivity at the firm level we use the ratio of revenues to the number of employees. Gal (2013) considers total revenue based labour productivity as the most widely available measure, whose major weakness is that it does not control for intermediate input usage. A company with substantial reselling activity (e.g. retail companies) will probably rank very high in this measure. Value added based labour productivity takes care of this problem, as value added in itself is the difference between output (sales or revenue) and intermediate inputs (including resold goods, typical in retail trade). However, labour productivity does not control for differences in capital intensity across firms, therefore, in order to control for capital intensity, total factor productivity (TFP) should be calculated. In this phase of our research we use revenue-based labour productivity at the firm level, because otherwise we would have to give up nearly half of our database.

RESULTS AND DISCUSSION

During the 2010s, the external and internal economic environment supported the convergence of Central and Eastern European countries and regions towards the EU average level of development (measured in GDP per capita). However, this convergence was not accompanied by a tangible reduction in territorial disparities, as territorial convergence, having mostly been driven by a reduction in disparities between nations, came to a halt in 2015, while territorial disparities within countries have remained persistently high (Monfort, 2020; Benedek, 2019; Norton et al., 2022). In this section we first focus on the relative position of Baranya county and Cluj county with respect to the capital cities and the national averages between 2009 and 2019.¹³ The main variables of interest are employment, gross value added and labour productivity. Then, in the second part of the section, we shift our focus to the two cities and analyze the same aspects at the firm level. As mentioned above in the data description, at the NUTS3 level we can only distinguish the activities of the foundational economy in a very approximate way, but at the firm level we can analyze it in more detail.

¹³ NUTS3 level data for Romania are available until 2019; in Hungary, the latest available data are for 2020.

Evidence from the NUTS3 level

Tab. 2 shows the relative labour productivity of the different territorial units with respect to the country-level average, as well as their relative shares within the total national economy by sectors. The regional-level analysis indicates that in terms of labour productivity (measured by the GDP per employees at the NUTS3 level), Baranya is well below the Hungarian average level, while Cluj is above the Romanian average. In the sectors related to the foundational economy differences are similar, albeit smaller, while in the tradable economy the relative labour productivity levels are much closer to the national average in all spatial units. Baranya seems to have a relative advantage in the sectors related to the tradable economy, but in Cluj these sectors are lagging behind with respect to productivity. The distribution of production and employment is more concentrated in Hungary, the capital city having a higher share of the national output and employment than in Romania. In the foundational economy, the distribution of gross value added and employment is slightly more balanced, but the activities related to the tradable economy are highly concentrated in the capitals in both countries (Tab. 2). The foundational economy (according to our approximate definition) seems to be much more evenly distributed in Romania among the non-capital areas.

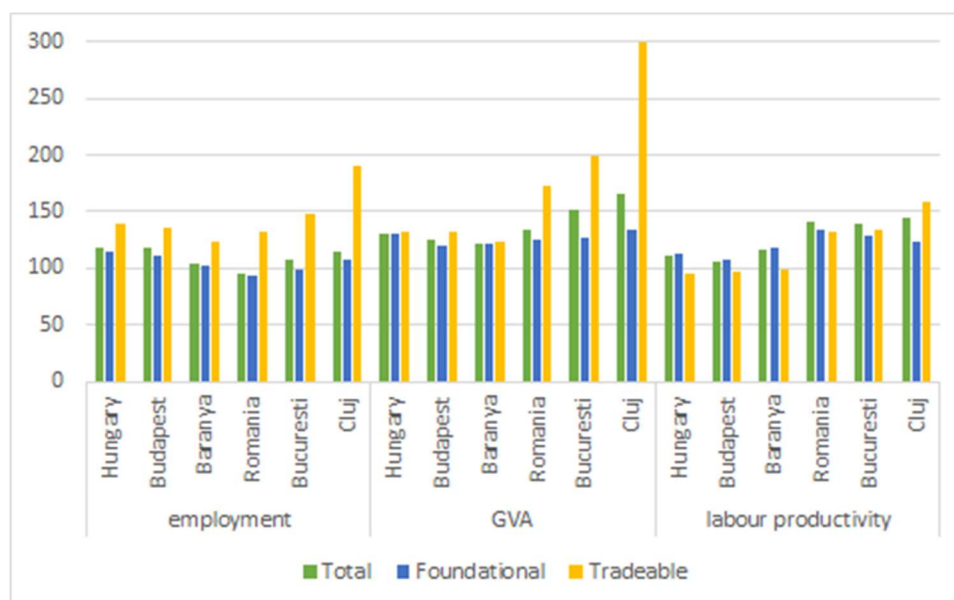
Regarding the economic dynamics, Hungary and Baranya has an advantage in employment growth over Romania and Cluj in the total economy and the foundational economy, but Cluj has a large advantage in the tradable sectors (Fig. 2). However, employment growth has not been coupled with productivity improvements in Hungary, therefore Romania and Cluj are well ahead in this respect, and Hungary's labour productivity is, indeed, stagnating, especially in the tradable sectors. These differences are observable also in the GVA.

The sectoral structure is quite different between the analysed spatial units (Tab. 2 and Tab. 3). The most striking finding is that in Baranya, the public sector (O to Q) is overrepresented in terms of both employment and GVA. The sectoral distribution of production is much more balanced in Cluj, but these differences are not obvious if we regard only the foundational *versus* tradable distinction of the “zones“ of the economy (Fig. 3). The weight of FE activities are around the same in Baranya county and Cluj county with respect to employment, but in GVA, in Cluj the FE activities have a higher weight within the total economy.

Table 2 Selected economic indicators at the NUTS3 level in Hungary and Romania by sectors, 2009-2019

	labour productivity, country average = 100								
	Total			Foundational economy			Tradable economy		
	2009	2014	2019	2009	2014	2019	2009	2014	2019
Budapest	113.3	111.8	109.0	106.9	105.5	101.8	93.5	99.0	96.0
Baranya	83.9	84.0	88.6	86.1	84.0	90.2	98.4	103.5	102.8
Bucharest	200.3	206.3	199.1	193.7	188.2	186.0	107.0	113.3	109.3
Cluj	121.3	122.2	124.9	124.8	120.4	115.0	87.6	93.6	105.2
	GVA shares, country total = 100								
	Total			Foundational economy			Tradable economy		
	2009	2014	2019	2009	2014	2019	2009	2014	2019
Budapest	38.8	37.0	37.2	31.3	29.4	29.0	57.8	58.0	57.6
Baranya	2.7	2.4	2.5	2.9	2.6	2.7	2.1	2.0	1.9
Bucharest	22.2	23.9	24.9	18.5	18.1	18.8	36.4	41.0	41.8
Cluj	4.1	4.5	5.0	4.1	4.2	4.4	4.0	5.2	6.9
	employment shares, country total = 100								
	Total			Foundational economy			Tradable economy		
	2009	2014	2019	2009	2014	2019	2009	2014	2019
Budapest	34.3	33.1	34.1	29.3	27.9	28.4	61.9	58.6	60.0
Baranya	3.2	2.9	2.8	3.4	3.1	3.0	2.1	1.9	1.9
Bucharest	11.1	11.6	12.5	9.6	9.6	10.1	34.0	36.2	38.3
Cluj	3.3	3.7	4.0	3.3	3.5	3.8	4.6	5.6	6.6

Source: Authors' elaboration based on Eurostat data

Figure 2 Employment, GVA and labour productivity growth at the national and the NUTS3 level by sectors (2009 = 100)

Source: Authors' elaboration based on Eurostat data

Table 3 Distribution of GVA between the different sectors at various spatial levels in Hungary and Romania in 2019, percentages

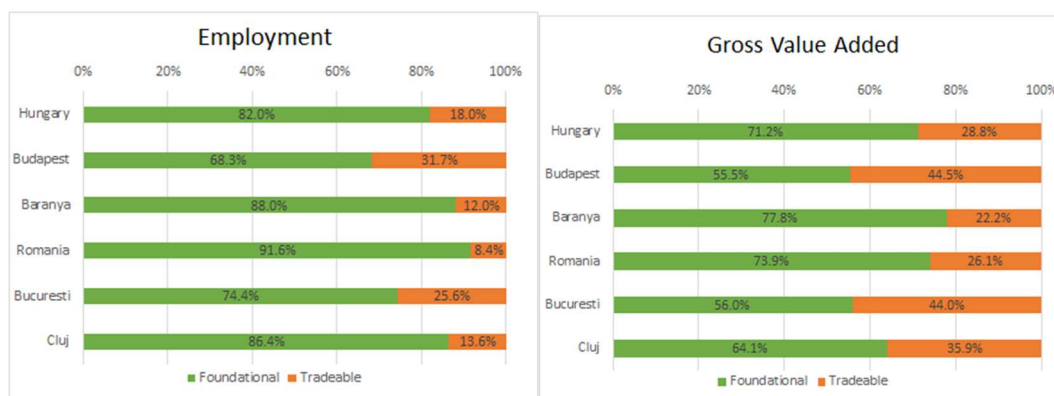
	A	B-E	F	G-I	J	K-N	O-Q	R-U
Hungary	3.9	23.6	5.7	18.3	4.9	23.8	16.7	3.0
Budapest	0.2	11.6	3.7	20.6	9.5	35.0	15.7	3.6
Baranya	8.2	19.1	6.6	15.4	3.0	19.2	24.9	3.6
Romania	4.6	23.3	6.5	20.3	6.3	19.8	15.7	3.5
Bucuresti	0.5	12.9	6.4	18.9	14.1	29.9	12.6	4.6
Cluj	1.7	19.2	6.5	18.7	15.5	20.4	14.1	3.9

Source: Authors' elaboration based on Eurostat data

Table 4 Distribution of employment between the different sectors at various spatial levels in Hungary and Romania in 2019, percentages

	A	B-E	F	G-I	J	K-N	O-Q	R-U
Hungary	4.0	20.8	7.6	24.0	3.3	14.7	21.0	4.6
Budapest	0.2	9.0	5.7	25.2	7.2	24.5	22.7	5.5
Baranya	7.2	18.5	8.0	20.5	1.9	10.0	28.6	5.2
Romania	22.3	21.5	8.3	23.1	2.0	6.3	13.6	2.9
Bucuresti	0.4	8.8	9.0	30.6	8.6	17.0	20.1	5.5
Cluj	8.7	21.4	8.8	29.6	3.0	10.6	15.3	2.6

Source: Authors' elaboration based on Eurostat data

Figure 3 The distribution of employment and gross value added between the different sectors, 2019

Source: Authors' elaboration based on Eurostat data

As a result of the uneven sectoral distribution of employment and gross value added, labour productivity also differs between sectors in the analysed spatial units. Since we evaluate gross value added in national currencies, we analyse the data in relative terms and not in absolute numbers. Tab. 5 and Tab. 6 indicate the relative sectoral labour productivity values *vis-à-vis* the national average and the total economy's average, respectively. Our calculations (Tab. 5) show that Baranya has a slight relative advantage over national-level productivity in the

financial, real estate, professional, scientific, administrative activities (sectors K to N), and a parity in the primary sector (A), but it lags far behind in the industrial sector (B to E) and in comparison to the total economy as well. Cluj has a considerable advantage over the Romanian average labour productivity in the info-communication sector (J) and the arts and entertainment sector (R to U), as well as the primary sector (A) and the construction sector (F). It falls below the average in the financial, real estate, professional, scientific, administrative sectors (K to N), but has an astounding overall advantage in the total economy. Regarding our proposed distinction of the different “zones” of the economy, the foundational economy is less productive than the national average in Baranya, but the tradable economy performs comparably. Cluj has a larger productivity advantage in the foundational economy with respect to the national average than in the tradable sectors.¹⁴

Table 5 Relative sectoral labour productivity relative to the national average (=100) at various spatial units in Hungary and Romania, 2019

	Total	A	B-E	F	G-I	J	K-N	O-Q	R-U	FE	TE
Hungary	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Budapest	109.0	88.5	124.8	94.3	116.4	97.1	96.1	94.5	114.2	101.8	96.0
Baranya	88.6	100.6	81.2	98.0	86.6	92.7	104.4	97.1	94.6	90.2	102.8
Romania	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Bucuresti	199.1	1256.0	269.5	180.1	140.2	103.8	112.0	108.4	138.2	186.0	109.3
Cluj	124.9	118.0	103.5	117.7	90.0	203.3	76.9	99.9	152.0	115.0	105.2

Note: FE refers to foundational economy, TE refers to tradable economy

The primary sector (“A”) in Bucharest seems to be an outlier, since until 2015, gross value added were around or below 100 million RON, but afterwards it increased more than tenfold by 2019. Meanwhile, the employment in this sector remained at around its previous long-term trend. These unusual trends are due to the fact that companies often set up their headquarters in Bucharest for business considerations, but carry out their activities in other parts of the country.

Source: Authors’ elaboration based on Eurostat data

Table 6 Relative sectoral labour productivity relative to the total economy (=100) within various spatial units in Hungary and Romania, 2019

	Total	A	B-E	F	G-I	J	K-N	O-Q	R-U	FE	TE
Hungary	100.0	99.8	113.0	75.2	76.6	148.5	162.3	79.6	63.8	86.9	159.7
Budapest	100.0	81.1	129.4	65.1	81.8	132.4	143.1	69.0	66.9	81.2	140.6
Baranya	100.0	113.3	103.6	83.1	74.8	155.3	191.1	87.2	68.1	88.4	185.3
Romania	100.0	20.5	108.6	78.3	87.9	314.2	311.8	115.4	121.6	80.6	312.4
Bucuresti	100.0	129.1	147.1	70.8	61.9	163.8	175.4	62.8	84.4	75.3	171.5
Cluj	100.0	19.3	90.0	73.7	63.3	511.4	192.0	92.2	148.0	74.2	263.1

Note: FE refers to foundational economy, TE refers to tradable economy

Source: Authors’ elaboration based on Eurostat data

¹⁴ At first sight, one would expect that the average values of FE and TE fall around that of the Total economy, but the values of the territorial units are evaluated against different national-level averages of the FE and TE activities. The actual results depend on multiple factors, including the relative weight of the FE and TE activities within the total economy and the weight of the territorial units within the national economy.

Tab. 6 shows the relative labour productivity values obtained from a comparison of sectoral performances within the different spatial units. Baranya has a significant relative advantage in the financial, real estate, professional, scientific, administrative activities (sectors K to N), and the info-communication sector (J), and some advantage in the primary sector (A) and the industry (sectors B to E). In Cluj, by far the highest relative labour productivity *relative to* other sectors in this region is measured in the info-communication sector (J), and it has also a relative advantage in the financial, real estate, professional, scientific, administrative sectors (K to N) and the arts and entertainment sector (R to U). Other sectors are relatively less efficient in this NUTS3 region. Our proposed distinction to foundational and tradable sectors reveals large differences between these two kinds of activities. The sectors classified in the tradable economy show a large advantage over the foundational activities within the different spatial units, and these differentials are wider in the Romanian territorial units. Overall, tradable activities are much more productive in both Baranya and Cluj than those belonging to the foundational economy.

Evidence from the firm-level

Based on the Orbis Europe database we have calculated the share of the cities' economic performance within their county's economy, restricted to the 100 leading enterprises (in terms of employment and revenue) in 2019. As indicated by our results, Cluj-Napoca concentrates a larger part of Cluj county's economy than Pécs within Baranya county. 76 out of the 100 largest employer firms in Cluj county are located in Cluj-Napoca, representing 81% of their employees, and 75 out of the 100 largest companies in terms of revenue are located in Cluj-Napoca, generating 82% of their revenues. From the 100 largest employers of Baranya county only 51 are headquartered in Pécs, representing 70% of their employees, while 48 out of the 100 largest companies in Baranya in terms of revenue are located in Pécs, generating 60% of their revenues.

The Orbis Europe database listed a total of 41,574 companies in Pécs and 70,219 companies in Cluj-Napoca, respectively. In this study we restrict our analysis to the two hundred largest firms, where firm size is evaluated by revenues and the number of employees. Therefore, two company rankings are analysed in parallel. Of course, there are some overlaps between the two ranking lists: 76 out of the 200 largest companies in Cluj-Napoca and 84 out of the 200 largest companies in Pécs can be found in both lists. The other companies are among the largest ones either on the basis of their employees or revenues, but not on the basis of both measures together. The largest companies included in our analysis account for a total of 34,700 employees in Pécs and 76,800 employees in Cluj-Napoca (in the employment-based ranking), and 2,841

million dollars operating revenue in Pécs and 9,108 million dollars operating revenue in Cluj-Napoca (in the revenue-based ranking, based on the data from 2020). These numbers indicate that the economic strength of the two cities (and their regions) differs in magnitude.

The firm-level analysis points to important differences in the size of the economies of the two cities, and we have found a critical mass of high economic potential to be available in Cluj-Napoca, but absent in the case of Pécs. The most striking difference is that among the 200 largest companies, Pécs shows a clear dominance of the public sector, while Cluj-Napoca has only 1 such company (Tab. 7). However, this is partly due to shortcomings of the Orbis database, because the reporting system of public institutions is different in Romania and in Hungary. This fact has to be kept in mind while assessing the results. Pécs has no company of national or international significance, while Cluj-Napoca hosts such companies, e.g. the MOL. At the firm level, Pécs has a productivity advantage in the public sector (O-Q), while Cluj-Napoca's uncontested productivity advantage is in the private sector (Tab. 8). Concerning the distinction based on the FE-approach, the providential activities have a larger weight in the economy of Pécs than that of Cluj-Napoca¹⁵, while material activities are dominant in Cluj-Napoca, and the weight of the tradable activities is not that different in the two cities.

The highest average revenues, employment and labour productivity were measured in the material activities in Cluj-Napoca, in the largest firms by employment, but according to the revenue-based firm ranking, the largest labour productivity is in the tradable activities (see Tab. 8, Fig. 4). These data indicate that there is no full coverage between the two groups of companies according to the different measures of company size. The providential activities perform well among the largest employer firms, but the overlooked firms have a higher productivity among the companies according to the revenue-based ranking list.

The highest average revenues and labour productivity were found in the material activities in Pécs according to both types of firm size rankings. Among the largest employers, overlooked activities and tradable activities also have a good performance with respect to labour productivity, but this is not traceable in the revenue-based ranking list, where providential activities are more productive than the overlooked or tradeable activities (Tab. 9, Fig. 5).

¹⁵ taking into consideration the limitations of the database

Table 7 The distribution of the number of firms, their revenues and employees between sectors in Cluj-Napoca and Pécs in 2020 among the 200 largest companies

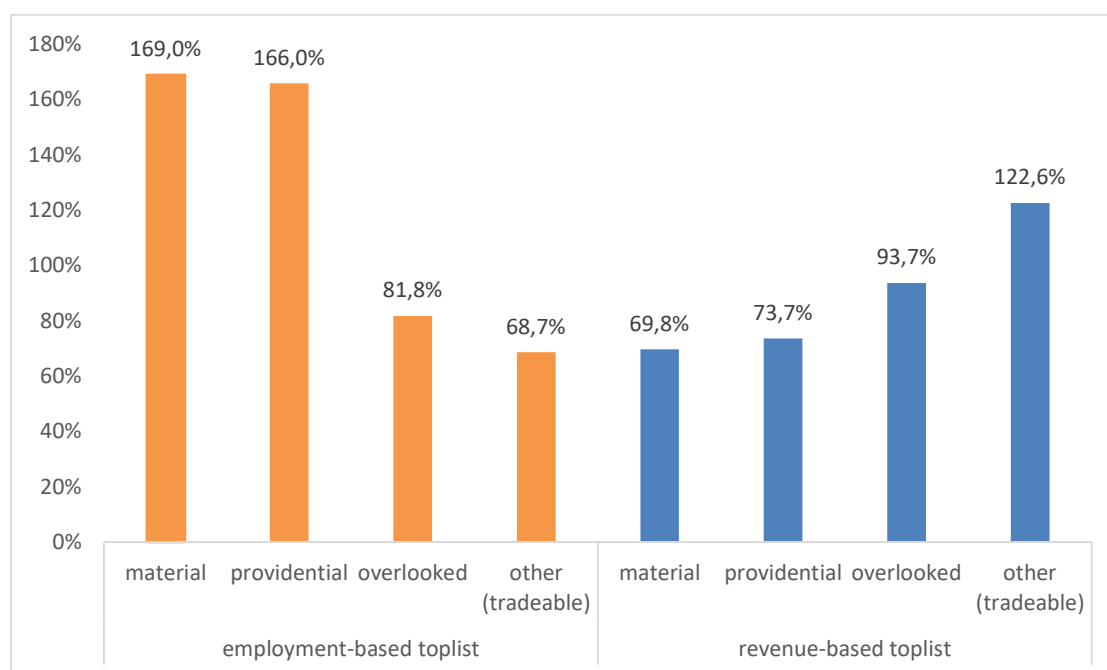
Cluj-Napoca						
Sector	Employment-based toplist			Revenue-based toplist		
	Number of firms	Revenue	Employees	Number of firms	Revenue	Employees
A	1	0.7%	0.7%	1	0.6%	0.8%
B-E	49	17.8%	29.9%	36	16.5%	30.2%
F	23	8.3%	6.8%	35	10.0%	7.4%
G-I	51	40.9%	15.9%	78	44.6%	17.6%
J	43	13.8%	20.9%	26	11.2%	20.2%
K-N	29	18.2%	24.8%	20	16.4%	22.8%
O-Q	1	0.1%	0.1%	1	0.2%	0.1%
R-U	3	0.3%	0.8%	3	0.4%	0.9%
Total	200	100.0%	100.0%	200	100.0%	100.0%
material	54	55.6%	42.2%	57	51.3%	46.0%
providential	3	1.5%	0.6%	4	1.5%	0.7%
overlooked	42	10.9%	10.8%	45	13.1%	9.6%
other (tradable)	101	32.1%	46.4%	94	34.0%	43.7%
Total	200	100.0%	100.0%	200	100.0%	100.0%
Pécs						
Sector	Employment-based toplist			Revenue-based toplist		
	Number of firms	Revenue	Employees	Number of firms	Revenue	Employees
A	1	1.0%	0.9%	2	0.9%	1.1%
B-E	58	36.2%	21.4%	52	36.6%	21.4%
F	18	3.2%	2.3%	24	3.5%	2.5%
G-I	43	26.0%	13.2%	64	26.4%	14.3%
J	4	0.3%	0.7%	6	0.8%	0.5%
K-N	35	5.1%	8.9%	24	5.3%	6.7%
O-Q	30	26.9%	49.9%	24	25.9%	51.9%
R-U	11	1.3%	2.6%	4	0.7%	1.7%
Total	200	100.0%	100.0%	200	100.0%	100.0%
material	35	35.0%	18.8%	51	38.4%	20.8%
providential	31	27.1%	50.0%	31	26.9%	52.2%
overlooked	52	10.1%	8.8%	40	9.8%	6.1%
other (tradable)	82	27.8%	22.5%	78	25.0%	20.8%
Total	200	100.0%	100.0%	200	100.0%	100.0%

Source: Authors' elaboration based on Orbis Europe data

Table 8 Revenues, the number of employees and labour productivity relative to the total economy average by sectors in Cluj-Napoca in 2020

Employment-based toplist					Revenue-based toplist				
sector	firms	revenue	employees	labour productivity	sector	firms	revenue	employees	labour productivity
A	1	135%	144%	74%	A	1	117%	164%	16%
B-E	49	73%	122%	58%	B-E	36	92%	168%	59%
F	23	72%	59%	115%	F	35	57%	43%	137%
G-I	51	160%	62%	218%	G-I	78	114%	45%	125%
J	43	64%	97%	56%	J	26	86%	155%	19%
K-N	29	125%	171%	28%	K-N	20	164%	228%	139%
O-Q	1	10%	29%	28%	O-Q	1	33%	22%	33%
R-U	3	19%	54%	24%	R-U	3	30%	58%	22%
Total	200	100%	100%	100%	Total	200	100%	100%	100%
material	54	206%	156%	169%	material	57	180%	162%	70%
providential	3	97%	41%	166%	providential	4	77%	33%	74%
overlooked	42	52%	51%	82%	overlooked	45	58%	43%	94%
other (tradable)	101	63%	92%	69%	other (tradable)	94	72%	93%	123%
Total	200	100%	100%	100%	Total	200	100%	100%	100%

Source: Authors' elaboration based on Orbis Europe data

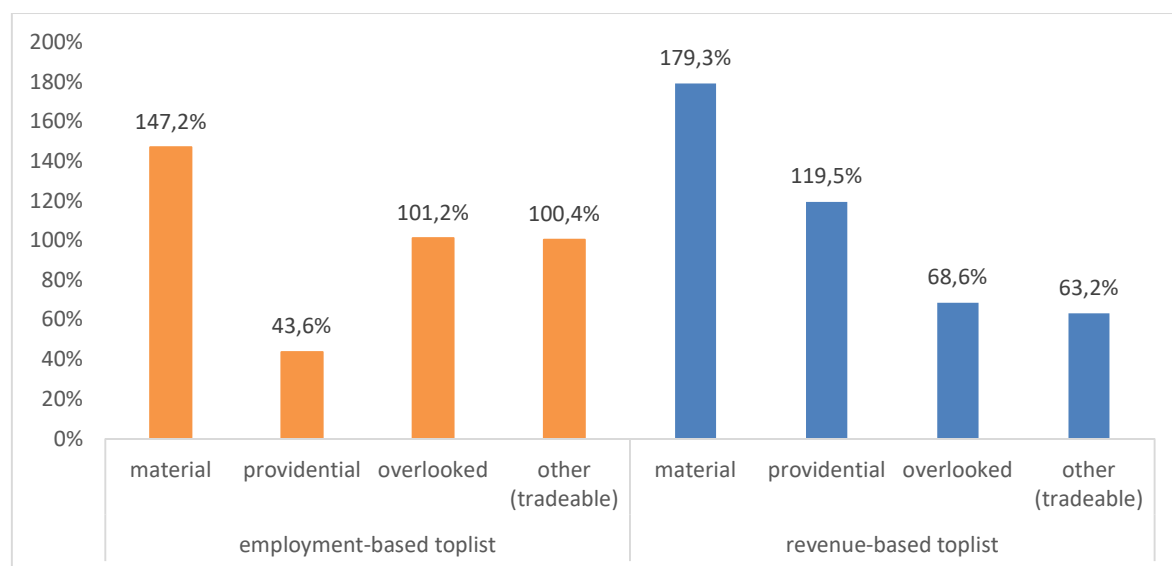
Figure 4 Relative labour productivity by sectors in Cluj-Napoca in 2020 in the largest firms according to employment and revenue (total economy = 100)

Source: Authors' elaboration based on Orbis Europe data

Table 9 Revenues, the number of employees and labour productivity relative to the total economy average by sectors in Pécs in 2020

sector	Employment-based toplist				sector	Revenue-based toplist			
	firms	revenue	employees	labour productivity		firms	revenue	employees	labour productivity
A	1	192%	181%	82%	A	2	85%	101%	27%
B-E	58	125%	74%	98%	B-E	52	141%	84%	132%
F	18	36%	26%	109%	F	24	29%	21%	48%
G-I	43	121%	61%	199%	G-I	64	82%	43%	98%
J	4	17%	35%	39%	J	6	28%	18%	46%
K-N	35	29%	51%	56%	K-N	24	44%	53%	90%
O-Q	30	179%	332%	39%	O-Q	24	216%	490%	140%
R-U	11	23%	48%	40%	R-U	4	34%	78%	11%
Total	200	100%	100%	100%	Total	200	100%	100%	100%
material	35	200%	107%	147%	material	51	150%	87%	179%
providential	31	175%	322%	44%	providential	31	173%	366%	120%
overlooked	52	39%	34%	101%	overlooked	40	49%	30%	69%
other (tradable)	82	68%	55%	100%	other (tradable)	78	64%	50%	63%
Total	200	100%	100%	100%	Total	200	100%	100%	100%

Source: Authors' elaboration based on Orbis Europe data

Figure 5 Relative labour productivity by sectors in Pécs in 2020 in the largest firms according to employment and revenue (total economy = 100)

Source: Authors' elaboration based on Orbis Europe data

To check these results in a more formal way, regression analyses were carried out. Our regression models included cities and sectors as explanatory variables in the form of dummy variables, and employment, revenue and productivity as outcome variables. The variable “city” is a dummy variable with two outcomes, Pécs and Cluj-Napoca, and the variable “sector” is a categorical variable with four outcomes: material, providential, overlooked and tradable. The categorical variable was converted to three dummy variables. That is, our models test whether the differences in the level of employment, productivity and revenues are significant between the two cities and/or the four sectors. Due to the data coverage issues, at this phase of the research we chose to analyse only the data of 2020 with the highest data availability.¹⁶ Based on the three outcome variables and the two sets of explanatory dummy variables we built six different regression models and ran them on both the employment-based toplist (Tab. 10) and the revenue-based toplist (Tab. 11); in effect, altogether twelve regressions were run. The first three regressions (Model set 1 and 4) test whether the city has a significant impact on employment, revenue or productivity.

Table 10 Regression results in the employment-based toplist

Dependent variable	Model set 1			Model set 2			Model set 3		
	employment	revenue	productivity	employment	revenue	productivity	employment	revenue	productivity
city									
Cluj-Napoca	210,52 <i>0,007</i>	28280,48 <i>0,004</i>	47,97 <i>0,124</i>				244,12 <i>0,002</i>	26683,62 <i>0,008</i>	37,23 <i>0,248</i>
sector									
material				199,44 <i>0,046</i>	40817,52 <i>0,001</i>	95,16 <i>0,018</i>	186,05 <i>0,06</i>	39354,48 <i>0,002</i>	93,12 <i>0,021</i>
overlooked				-116,99 <i>0,233</i>	-5673,77 <i>0,643</i>	7,30 <i>0,853</i>	-91,33 <i>0,348</i>	-2869,21 <i>0,814</i>	11,21 <i>0,776</i>
providential				285,70 <i>0,048</i>	3950,76 <i>0,826</i>	-34,76 <i>0,548</i>	398,89 <i>0,007</i>	16323,34 <i>0,377</i>	-17,49 <i>0,77</i>
constant	173,27 <i>0,002</i>	11149,09 <i>0,104</i>	82,81 <i>0,000</i>	237,36 <i>0,000</i>	17204,95 <i>0,016</i>	86,86 <i>0,000</i>	102,63 <i>0,152</i>	2477,93 <i>0,782</i>	66,31 <i>0,023</i>
N	400	400	400	400	400	400	400	400	400
R2	0,02	0,02	0,01	0,03	0,03	0,02	0,05	0,05	0,02
R2-adj	0,02	0,02	0,00	0,02	0,03	0,01	0,04	0,04	0,01
F	7,4	8,54	2,38	3,88	4,51	2,41	5,33	5,23	2,14
Prob > F	0,0068	0,0037	0,1236	0,0094	0,0040	0,0667	0,0003	0,0004	0,0750
Source:	Authors' elaboration			based on			Orbis	Europe	data
Note:	p-values are in <i>italic</i>								

¹⁶ In case of the revenue-based toplist, revenue data in 2020 are available for all companies, but there are 14 missing employment data.

Table 11 Regression results in the revenue-based toplist

Dependent variable	Model set 4			Model set 5			Model set 6		
	employ- ment	revenue	produc- tivity	employ- ment	revenue	produc- tivity	employ- ment	revenue	produc- tivity
city									
Cluj-Napoca	179,4 <i>0,027</i>	31338,56 <i>0,001</i>	153,87 <i>0,319</i>				225,58 <i>0,006</i>	32899,21 <i>0,001</i>	160,59 <i>0,313</i>
sector									
material				160,08 <i>0,108</i>	31235,19 <i>0,009</i>	64,76 <i>0,735</i>	157,08 <i>0,112</i>	31851,52 <i>0,007</i>	62,62 <i>0,743</i>
overlooked				-111,49 <i>0,292</i>	-4867,54 <i>0,704</i>	-86,54 <i>0,67</i>	-110,25 <i>0,293</i>	-4304,97 <i>0,734</i>	-85,66 <i>0,673</i>
providential				323,14 <i>0,037</i>	3621,35 <i>0,840</i>	-3,18 <i>0,991</i>	416,11 <i>0,008</i>	17841,24 <i>0,327</i>	63,00 <i>0,836</i>
constant	163,26 <i>0,005</i>	14203,08 <i>0,037</i>	462,21 <i>0,000</i>	211,25 <i>0,001</i>	22156,34 <i>0,003</i>	542,89 <i>0,000</i>	89,17 <i>0,234</i>	4176,54 <i>0,644</i>	455,98 <i>0,002</i>
N	386	400	386	386	400	386	386	400	386
R2	0,01	0,03	0,00	0,02	0,02	0,00	0,04	0,05	0,00
R2-adj	0,01	0,02	0,00	0,02	0,01	-0,01	0,03	0,04	-0,01
F	4,91	10,62	1,00	3,26	3,00	0,15	4,38	5,11	0,37
Prob > F	0,0272	0,0012	0,3191	0,0216	0,0305	0,9286	0,0018	0,0005	0,8305

Source: Authors' elaboration based on Orbis Europe data

Note: p-values are in *italic*

The next three regressions (Model set 2 and 5) test this impact with respect to the sectors, and the last three regressions (Model set 3 and 6) test the joint impact of both the city and the sectors on either employment or revenue or productivity. In the case of the variable “city” we chose Pécs as the reference city and in the case of the variable “sector” the reference is the tradable sector. As a result, the slope coefficients show the differences in comparison to these reference categories.

In the case of the regressions regarding both ways of firm size measures, those regressions were significant (based on the F-tests) where the dependent variable were either employment or revenue. This means that productivity differences between cities or activities cannot be captured by this method because of their high variance. The regression results confirm the significant advantage of Cluj-Napoca in terms of employment and revenues (Model set 1, 3, 4 and 6). With regard to the FE-related activities, material activities have an advantage in general (according to the employment-based firm ranking), and also providential activities proved significant in terms of employment (Model set 2,3, 5 and 6). In the revenue-based firm ranking, material activities have a significant advantage only in terms of revenues.

Our firm-level analysis shows that there are large differences in the performances of the different activities according to the two types of firm size measures, and these patterns are not the same in Cluj-Napoca and in Pécs. Rechnitzer and Berkes (2021) classifies Pécs as a

'wayfinding' city where, despite its favourable conditions in several aspects of territorial capital, the directions of future development are unclear. A typology by Lengyel et al. (2016) characterizes Pécs as an efficiency-driven, follower-type potential knowledge region where engineering is supplanted by the role of research-intensive industries (e.g. pharmaceuticals) connected to the medical faculty of the University of Pécs. However, as a mid-range university its role as a "regional university knowledge center" capable of promoting intensive cooperation with the business sector, strengthening the R&D activities of local businesses and thus advancing the technological and economic development of its region is contested (Gál 2022). In fact, boosting R&D may exacerbate the European paradox, i.e. the failure to convert strong R&D outputs into innovations due to weak demand by the local business sector and a mismatch with local needs (OECD, 2010; Barzotto, 2019). As a further evidence of its university-led local development vision, Pécs was among the first to launch "national laboratories" in 2020, whose role is to promote knowledge transfer in collaboration with business and academia, and to become internationally visible scientific hubs capable of producing radical innovations. Thanks to its prestigious universities, offering training in fields such as AI and nanotechnology, Cluj-Napoca has the most educated workforce among Romanian regional centres. As a metropolis dedicated to startups and home to the first AI unicorn in Romania, (UiPath), Cluj is also the epicentre of cluster-based development in the Nord-Vest region (e.g. Transylvanian Furniture Cluster, Cluj IT Cluster, Romanian New Materials cluster), hosting around 500 entities in regional priority sectors (SIDU Cluj 2021-2030).

Due to the adverse international, public finance and macro environment we do not expect the high-pressure economy prevalent before the Covid-19 crisis to recover in the short term despite governments' attempts to stimulate the economy (or at least to avoid a recession). An enduring challenge arises from the persistence of labour market tightness, leaving limited scope to exploit additional labour reserves. As a result, the key issue for future regional economic growth is productivity improvement relying on the improved efficiency of local SMEs.

The inflow of EU funds is a critical issue, but mainly for overall national economic growth, because their interregional rebalancing effects are not evident due to the highly centralized management of these financial sources in the two countries. The external environment for private investment has become highly uncertain in the medium term.

Cluj-Napoca has a good chance of avoiding the regional development trap (Diemer et al., 2022), but for Pécs and its wider region, it remains a serious challenge. The further increase in the role of the public sector is undermined by the unsustainable finances of the municipal government, but the university still remains an important development factor. Nevertheless,

reindustrialization efforts are necessary to hold Pécs on a development path based on the utilization of its endogenous resources (Rácz et al., 2021; Lux, 2021; Bodnár et al., 2022).

CONCLUSION

Our comparative research examined the changes in the economic position of two rural regional centres, Cluj-Napoca and Pécs, in the period following the financial and economic crisis. We examined the sectoral structure of the two cities and their surrounding regions from a “foundational economy” approach. Our results suggest that productivity challenges are a long-term issue at the firm and the regional level alike, and that their resolution cannot be postponed, as in a labour-scarce environment in the 2020s, extensive employment expansion can no longer fuel economic growth. The regional level analysis reflected somewhat standard results: Baranya county relies more on the foundational economy in employment, while this share is lower than the national average in Cluj county. Regarding the distribution of gross value added, Cluj has a higher weight of the tradable economy, but in Baranya, this is lower than the national average. In both regions, the tradable economy performs better in terms of labour productivity.

When we turn to the firm-level analysis, we see a more nuanced picture and a finer distinction between the different “zones” of the economy. Around half of Cluj-Napoca's largest firms belong to the material activities, and the providential activities do not feature prominently in this city. Among the largest firms of Pécs, material and providential activities represent more than half of the total GVA and employment, while tradable activities are weaker in their weight. Depending on the way we measure firm size (employment or revenues), either the material and providential activities or the tradable activities excelled in Cluj-Napoca in terms of labour productivity. The material sector performed best in terms of productivity in Pécs according to both firm size measures. In sum, due to the large weight of the foundational economy in both cities, it should be considered an important driver of long-term territorial development and local well-being. There are several sectors in the local economy of the two cities where some activities of the foundational economy excel in productivity, thus we cannot establish a direct contradiction between the high weight of the foundational economy and lower efficiency. The regions of Cluj-Napoca and Pécs face somewhat different challenges, the former experiencing problems in integrating its rural surroundings, the latter struggling to attract external resources and to retain and generate endogenous resources.

The main limitation of our research is its relatively short time coverage with respect to the firm-level data. The cross-sectional coverage of the Orbis Europe database is not complete

either. Future research directions include the extension of our database to cover a wider range of CEE second-tier cities and regions with various sectoral structures, as well as to include additional variables in the firm-level analysis, e.g. to estimate total factor productivity and foreign direct investments.

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LABOUR MARKET EFFECTS AND CHANGES AMONG ENTERPRISES IN FREE ENTERPRISE ZONES IN HUNGARY

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Abstract

The aim of regional development and planning, as defined in the 1996 Spatial Development Law, is to promote social and economic growth and reduce significant economic and infrastructure disparities. Its role is to support community initiatives to this end, with a particular emphasis on promoting the catching up of lagging regions, reducing unemployment and supporting the regeneration of industrial and agricultural businesses. This legislation enabled the creation of the Free Enterprise Zones in Hungary in 2013. The list, which has been extended twice since then, currently includes 1202 municipalities. Municipalities belonging to the zones create a favourable environment for investment, and businesses that invest and create jobs in the area can benefit from corporate tax relief and contributions payable by employers and are eligible for EU funding. According to the hypothesis of our research, the number of jobseekers in the municipalities of FEZs (compared to other municipalities) has decreased significantly, while the number of enterprises has increased. Furthermore, counties with a higher proportion of FEZ municipalities were presumed to have received more EU funds. To demonstrate this, we examined the labour market processes within FEZs due to the effects of their inclusion in the zones. Drawing on official labour market and business-related regional statistics, the analysis takes a regional perspective and seeks to focus on temporality. The database contains data at the level of municipalities (registered jobseekers, public employees, active enterprises, number of employees, subsidies) for the period under study (2012-2020). In addition to labour market processes, a further focus of the analysis was the inclusion of the SME sector to uncover mutually positive effects. According to the findings of our research, the positive impact on labour market processes cannot be clearly justified, whereas for the enterprises, inclusion in the zone induced positive effects. A positive effect was also found in terms of average staff numbers. The results show that the use of development aid is more effective for enterprises operating within the zones than in other parts of Hungary.

Keywords: Free Enterprise Zone, SME sector, Hungary, labour market effects

INTRODUCTION

The Law on Spatial Development and Planning was adopted in 1996 (Act XXI of 1996). Since then, the law has undergone minor amendments, which first mentioned the concept of a free enterprise zone in 2012 and enshrined its operation in law. Article 68 of Act CCVII, adopted in 2012, defined the concept of a free enterprise zone and provided for the designation of zones as of 1 January 2013. The introduction of free enterprise zones by national spatial development policy, according to the original concept mentioned by the NDTC (National Development and Territorial Development Concept), serves three purposes: catching up, promoting cross-border

economic links, and high-tech knowledge industries. Government Decree 27/2013 (12.II.) classifies the municipalities of the most disadvantaged regions as free enterprise zones, in accordance with the provisions of Government No. Decree 311/2007 (17.XI.) of the Ministry of Regional Development on the classification of beneficiary regions. The purpose of the law is to establish the basic tasks and rules for spatial development and planning and to create the necessary institutional framework. The aim of spatial development and spatial planning is to promote social and economic growth and to reduce significant economic and infrastructural disparities (Hoffmann, 2018). Its role is to support community initiatives to this end, to promote the catching up of lagging regions, to reduce unemployment and to support the regeneration of industrial and agricultural enterprises. The legal definition of free enterprise zones is: 'an area designated by the Government, coordinated by a regional economic development organisation, delimited by administrative boundaries or by parcel numbers, meeting various conditions, and treated together for development purposes, or, in a beneficiary area, a sector of the economy, defined individually by the Government, which is of national economic interest, and which provides specific advantages for the development of the area' (1996. Law XXI of 1996) "The society and economy of a country are also territorially structured, and there are very significant regional differences between the various territorial units and municipalities (...) A minimum territorial size is a prerequisite for the importance of the territorial question and of policies aimed at influencing territorial processes." (Forman & Szaló, 2013, 111).

THEORETICAL BACKGROUND

Each region faces different problems arising from its historical, economic, and infrastructural past. The starting point is always to identify the real situation, for which the EU development guidelines provide a good basis. The use of urban enterprise zones is a common practice worldwide, including in the UK. The provision of a greater concession to encourage enterprise is of great help, as shown by a study of Peter S. Fisher (1997) demonstrating its benefits through practical examples. The IPSCO Steel Corporation has negotiated with several states in America about the opening of a new plant. The state of Iowa has promised several tax breaks and assistance to build the plant there. This was not only beneficial for the company, but also for the state, as the state's workforce, infrastructure and economy benefited from this investment. As this practice has proved successful, more and more countries around the world have started to encourage investment and entrepreneurship in a similar way (Fisher & Peters, 1997).

Initiatives such as the domestic free enterprise zones can be found all over the world, as one can find areas everywhere that are considered disadvantaged in one or more aspects and therefore need economic policy incentives. In response to these, several governments – in the UK, the US and more recently France – have set up enterprise zone programmes. These place-based policies generally provide tax incentives for businesses to stimulate investment, employment and ultimately improve the social and economic conditions of the residents of the targeted zones. However, the effectiveness of such enterprise zones remains controversial. First, the results of evaluations of different enterprise zone programmes are inconclusive (Kline & Moretti, 2014; Neumark & Simpson, 2015). Second, there is still much debate about whether ‘place-based policies’ or ‘people-based policies’ should be implemented (Glaeser & Gottlieb, 2008).

In the United States, the creation of enterprise zones was already preceded by strong expectations in the 1980s, with 695 areas in 21 states designated as areas where businesses could receive benefits. Most of these designations were in Arkansas (252) and Florida (138). Businesses locating in these areas typically received corporate, personal, and local tax breaks (Rubin, 1985). Opinions are mixed on the success and effectiveness of enterprise zones. Studies using different methodologies report different results in different states. Positive impacts have been observed in Texas (Freedman, 2013), for some federal initiatives (Busso et al., 2013 and Ham et al., 2011), and in the Tennessee Valley (Kline & Moretti, 2014). However, there are also analyses of ineffectiveness and negative impacts in California (Elvery, 2009) and Indiana (Papke, 1993).

In France, the Economic Zone (EZ) programme has been introduced at the national level, but opinions on its success are mixed. An analysis of Givord et al. (2017) concluded that job creation under the EZ programme has a higher per unit cost than otherwise, and Rathelot and Silard (2009) reached a similar conclusion in their study on the impact of the EZ programme on the reduction of employment taxes.

In addition to the above, there is a wealth of research on the functioning of enterprise zones in all regions of the world. The following table summarises some of them by region, others by the models developed to measure their impact, and a group of them by their long-term impact. Research on the impact on the workforce has been collected separately.

Table 1 Literature review on Special Economic Zones

United States	Bartik, 1985 Birch, 1980 Erickson, 1991 Lavation & Miller, 1992 Litser, 1990 Lynch & Zax, 2010 Wilder & Rubin, 1996
Asia	Aggarwal, 2012 and 2019 Leong, 2013 Wang, 2017 Yeung et al., 2009
Western Europe	Herrera, 2011 Püle & Innuse, 2017 Killingsworth, 1983 Larkin & Wilcox, 2011
Eastern Europe	Ambroziak & Hartwell, 2018 Gulbis, 2018 Dorozynski et al., 2017 Smetkowsky, 2002 Ezmale & Rimsane, 2013 Stojcic et al., 2020 Franczak, 2015
Impacts measuring models	Alibergovic et al., 2019 Gokhan & Crittle, 2008 Wong & Buba, 2017
Long-term effects	Freedman, 2013 Givon et al., 2018 Jensen & Winiaczyk, 2014 Rubin & Wilder, 1989
Labour market effects	Boarnet, 2001 Cizkowicz et al., 2017 Givord et al., 2017 Jensen, 2018 O'Keefe, 2004

Source: Author's own edition, based on relevant literature

The fundamental objective of the European Union is the economic “integration” of its member states, and it is therefore important that territorial fragmentation is blurred or minimised. This was the first time that economic criteria were also stipulated for the candidate countries, with the aim of achieving not only political/democratic development but also economic development (Forman & Szaló, 2013). For this competition, all regions of Hungary were expected to have a developed economy, jobs, and companies, and to overcome the shortcomings accumulated during state socialism (Rácz, 2019). This requires both qualitative and quantitative enterprise development. It is in the government's interest to create as many fast-growing enterprises as possible. Free enterprise zone subsidies address the quantitative issue first and the qualitative one second. Therefore, the division of Hungary into appropriate strategic planning regions

(NUTS) and their subdivision into smaller units, which is a common practice among EU Member States, was already outlined during the accession negotiations. Furthermore, it is most relevant for countries with significant differences between regions, such as Italy (Finta, 2014). But at the global level, we also see countries where territorial development is not centrally regulated, such as the United States.

After EU accession, EU funds (Molnár & Molnár-Barna, 2019) were opened to Hungarian micro, small and medium-sized enterprises, but members of this sector often failed to qualify for tenders. However, these resources influence the financing of businesses and provide them opportunities for development. In addition to their development, their competitiveness must also be boosted, and to this end, it is important to encourage companies in the same region to cooperate, to make joint purchases and carry out joint technological development.

A report¹⁷ published by the European Commission in 2017 shows that 4 Hungarian regions are still among the poorest in the EU (Northern Great Plain, Northern Hungary, Southern Transdanubia, Southern Great Plain). Most of the designated zones are located in these regions, with numerous peripheral areas where research shows that living conditions are underdeveloped and intervention is needed (Lipták, 2019). However, it is also clear from the report that 3 of these 4 regions have already improved their position, with the help of free enterprise zones. The most underdeveloped areas of Hungary are in the regions of Gömör and Ózd, where high unemployment and the lack of schooling are the biggest problems. Territorial balance can be examined on both theoretical and practical levels. What constitutes balanced territorial development differs from country to country, but in all cases, territorial policy goals should be set that are in line with the idea of balance (Józsa, 2016). “The catching-up of disadvantaged regions and the reduction of regional disparities have only partially been alleviated by the ROP¹⁸ funds, despite the high disbursement and utilisation rates, but they have helped several regions, such as the Southern Great Plain, Northern Great Plain, and the Northern Great Plain. However, in the case of two regions, North Hungary and Central Transdanubia, the regional development gap and the gap in GDP production relative to the national average continued to widen.” (Varga, 2018). In Hungary, the Law on Spatial Development and Planning distinguishes 6 regions that are significant from the point of view of spatial development, which are defined in the Act:

- Regions: territorial planning statistical units consisting of several counties. Practically identical to the NUTS2 regions defined earlier and described above.

¹⁷ Eurostat news release 52/2017: <https://ec.europa.eu/eurostat/documents/2995521/7962764/1-30032017-AP-EN.pdf>

¹⁸ ROP – Regional Operative Programme – Regionális Operatív Program

- Priority area: an area covering one or more counties or parts of their territory to be managed together from a socio-economic-environmental point of view (e.g. Balaton Priority Holiday Area, Budapest Agglomeration).
- Lagging areas: areas where economic, infrastructural and social indicators are significantly below the national average.
- Beneficiary area: an area supported by financial and economic incentives in the context of territorial development.
- Free enterprise zone: an area clearly delimited by the government, which provides specific benefits to entrepreneurs in a coordinated way by the regional economic development agency.
- Industrial parks and other development units: development units created by municipalities or associations of municipalities.

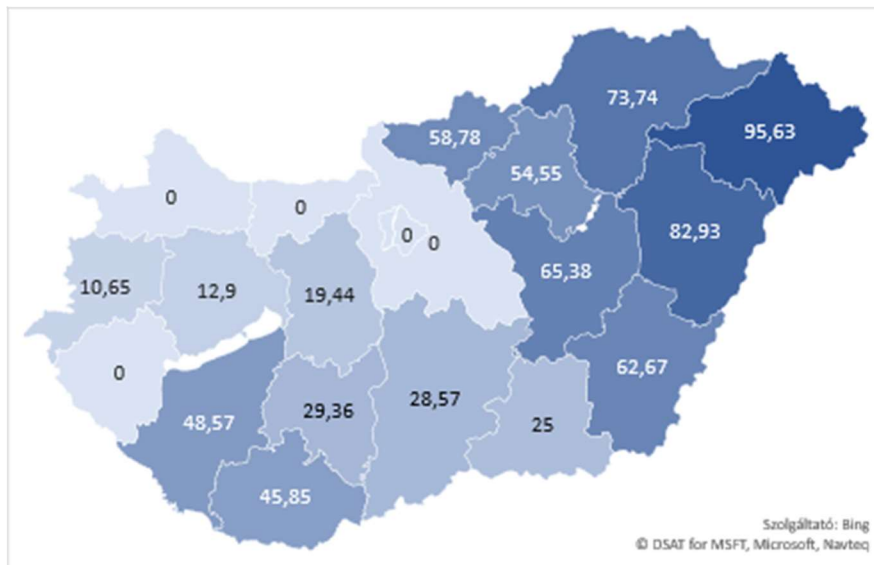
“One of the region's fundamental assets is its geographical, economic and cultural diversity. This diversity permeates the sub-region, and these opportunities add up, but this requires the sub-region itself to develop qualitatively in terms of cooperation. This is significant, not least because the multiplication of advantages is just as true in reverse: disadvantages can also be cumulative and mutually reinforcing.” (Bende, 2014). Csaba Varga, a sociologist, has defined a complex concept of a micro-region, which is divided into ten points. A micro-region is, first, an ecological space; second, a local social space; third, a local community consciousness; fourth, an economic space; fifth, a local information and communication space; sixth, a micro-regional self-government and administration space; seventh, a historical space; eighth, an integrated planning and development space; ninth, a space of action; tenth, a technological space. In summary, it can be called a quality-of-life space. Its complexity is reflected not only in its concept, but also in its development, which always requires specific development at the spatial level. Despite the availability of many subsidies, simple programmes and capital injections, the development of regions cannot be schematised (Varga, 2011). The Baltic Sea Strategy and the Danube Regional Strategy have been such macro-level developments. These developments have not only been conceptualised at macro level, but also at micro level, and sometimes several micro-level developments have been transformed into a single macro-level development.

In Hungary, the Free Enterprise Zones were designated in 2013. The aim was to reduce unemployment and to boost investment. Research on the effectiveness of Free Enterprise Zones is relatively scarce. A 2019 study (based on data from 2017) showed that municipalities under

this classification experienced higher growth in terms of the number of businesses, business outcomes and average statistical headcount compared to other municipalities (Dániel & Takács, 2019). The increase in the number of businesses may have been influenced by the tax credit, which has a motivating effect (Dániel et al., 2018).

The following map shows the areas that are most affected by the designation of Free Enterprise Zones. The designation is based on the level of development and thus closely linked to the development indicators of counties and regions (Majerova, 2018).

Figure 1 Proportion of municipalities belonging to a free enterprise zone in each county



Source: Author’s own construction based on Hungarian Central Statistical Office data

DATA AND METHODS

After reviewing the domestic and international literature on Free Enterprise Zones, the paper examined the potential positive changes arising from the designation of domestic Free Enterprise Zones. The objective of the research was to contribute to the literature presenting the FE zones in Hungary and to conduct a quantitative study looking for medium-term effects.

The research was seeking to answer the following questions:

- 1, If a relationship between the variation in the number of jobseekers registered in each type of municipality can be detected and whether the municipality is in an FEZ
- 2, If a relationship between the variation in the number of jobseekers registered in each type of municipality can be detected and whether the municipality is in a “pure” or “mixed” FEZ.

- 3, If a relationship between the variation in the number of jobseekers at county level and the proportion of FEZ municipalities can be detected in the given county.
- 4, How did the FEZ classification impact the number of businesses in each municipality?
- 5, How did the classification of FEZs impact the average number of employees of enterprises in each municipality?
- 6, What characterizes the relationship between the classification of FEZs and the amount of EU funds received?

The table below shows the analyses carried out to answer the research questions.

Table 2 Summary of data and methodologies used

Step	Analysis	Used data variables	Methodology
1	Change in the number of registered jobseekers in the municipalities	Registered jobseekers	Pivot table, grouping by municipal status and FEZ/Non-FEZ, t-test, F-test
2	Change in the number of registered jobseekers by municipality	Registered jobseekers	Pivot table, grouping by municipal status and pure area/mixed area, t-test, F-test
3	Change in the number of registered jobseekers by county	Registered jobseekers, share of FEZ municipalities	Map representation
4	Change in the number of active enterprises	Number of active enterprises	Correlation
5	Change in the average number of employees in enterprises	Number of enterprises, number of employees, minimum wage	Pivot table, grouping by municipal status and FEZ /Non-FEZ, t-test, F-test
6	Relationship between EU aid and municipalities in the FEZ	Amount of EU subsidies, share of FEZ municipalities	Pivot table, grouping by municipal status and FEZ /Non-FEZ, correlation, t-test, F-test

Source: Author's own construction

As the Enterprise Zones have been in place from January 2013, their impact was examined over the period 2012-2020. To ensure the availability of sufficient statistical data (data from 2021 was incomplete), year 2012 was identified as the starting year, being the last year before the introduction of the zones, and 2020 as the end of the analysed period. The data were downloaded from the Hungarian Central Statistical Office, which provided data at the municipality level. The data were then categorized by assigning Free Enterprise Zone status to each municipality, and by the status of the given municipality. The analyses were conducted along these groupings.

The evolution of the number of registered jobseekers was examined over this period, assuming that the rate of decline was higher in the Free Enterprise Zone municipalities. Another objective of Free Enterprise Zones was to encourage the establishment of businesses, the study

therefore measured the change in the number of operating businesses compared to other municipalities.

Since one of the objectives of development zones (or rather catching-up zones in Hungary) is to increase the number of employees, the study also looked at the change in the number of employees. Pivot tables were used, and samples were tested using Student's t-test. The two-sample mean test is used to compare the means of two samples. The first step in a two-sample t-test is to verify if there is a significant difference between the variances of the samples. The Fisher F-test provides an opportunity to test this. The value of F can be calculated from the relationship $F = \frac{S_1^2}{S_2^2}$, the ratio of the two variances is compared to the value in the F-distribution table for the 95% probability level. If the resulting value is greater than the value in the table, then there is a statistically significant difference between the variance quotients at the 5% significance level. In this case, the t-test to be used is the test for equal variance squares.

$$t'' = \frac{|\bar{x} - \bar{y}|}{\sqrt{\frac{\sum_{i=1}^n (\bar{x} - x_i)^2 + \sum_{i=1}^m (\bar{y} - y_i)^2}{n+m-2} \cdot \frac{n+m}{nm}}}$$

where n and m are the element numbers of the samples. The value of the resulting t is compared to the probability level of the distribution t. If the value is larger than the value corresponding to the probability level, there is a verified difference between the means, it is not due to chance (Molnár, 2015).

The study of the structure and conditionality of calls for EU co-financed SME funds revealed that municipalities belonging to Free Enterprise Zones had a higher aid score with higher aid intensities. The resource absorption capacity of SMEs operating in these municipalities was also examined, in order to determine whether the more favourable conditions would result in higher scores. For this purpose, in addition to the data on the resources received in each municipality, data on the number of operating enterprises were also analysed.

RESULTS

The **first step** of the analysis was to look at the change in the number of registered jobseekers. To do this, municipalities were grouped primarily by Free Employment Zone and secondarily by municipal status. The following table (Tab. 3) shows the type of municipality with the largest decrease.

Table 3 Change in the number of registered jobseekers, 2012-2020

	Change in the number of registered jobseekers, 2012-2020 (2012=100%)
Municipality in a Free Enterprise Zone	-39.31%
Parish	-38.62%
county seat, city with county rights	-29.75%
large village	-44.20%
City	-43.35%
Non-FEZ municipality	-40.81%
metropolitan district	-58.62%
municipality	-40.36%
city with county rights	-51.60%
county seat, city with county rights	-42.87%
large village	-39.76%
City	-42.52%

Source: Author's own calculation based on Hungarian Central Statistical Office data

Contrary to our preliminary assumption, municipalities in the Free Enterprise Zones experienced a smaller decrease on average. However, as the Non-Free Enterprise Zone also included data from Budapest districts, the analysis was also carried out by type of municipality. It can be observed that the decline is lower in the Free Enterprise Zones in terms of municipalities, but more positive in the large municipalities and cities. Given the higher economic potential of the districts of the capital and the county capitals and cities with county status, the average change was also analysed after excluding the above-mentioned areas from the second phase of the analysis. Their exclusion was also justified by the fact that these municipalities really stand out, while small towns are treated on an equal footing with municipalities with less than 5,000 inhabitants when allocating economic development funds (Horeczki & Egyed, 2021). Although the gap between the two groups has narrowed, it is still higher for municipalities not belonging to Free Enterprise Zones.

In the **second step**, municipalities and sub-regions containing municipalities were re-grouped according to whether they contain only one type of municipality, i.e. whether they contain only municipalities belonging to a Free Enterprise Zone or only municipalities not belonging to a Free Enterprise Zone. These areas are considered as “pure” and those areas where both Free Enterprise Zone and non-FEZ municipalities can be found are considered as “mixed”. The previous analysis was also carried out for the above groupings and the results are shown in the following table (Tab. 4).

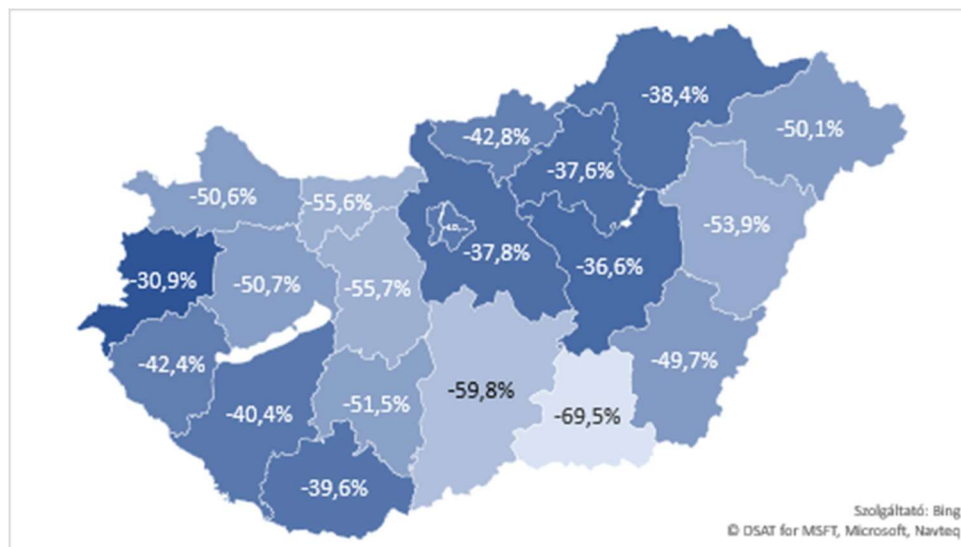
Table 4 Change in the number of registered jobseekers between 2012 and 2020 in small regions

	Change in the number of registered jobseekers between 2012 and 2020 in small regions (2012=100%)
“Mixed” sub-region	-49.13%
Municipality of FEZ	-44.95%
Non-FEZ municipality	-50,12%
“Clean” micro-region	-44.15%
FEZ municipality	-43.28%
Non-FEZ municipality	-44.71%

Source: Author’s own calculation based on Hungarian Central Statistical Office data

The municipalities of the “mixed” sub-regions studied performed better, but the municipalities not belonging to a Free Enterprise Zone also stood out in this grouping.

In step three, analyses were conducted on the registered jobseekers. The graph below (Fig. 2) shows the change in the number of registered jobseekers. The aim was to determine the existence of a relationship in the proportion of municipalities in Free Employment Zones at county level, but the values obtained do not show a significant relationship.

Figure 2 Change in the number of registered jobseekers between 2012 and 2020

Source: Author’s own construction based on Hungarian Central Statistical Office data

In step four of our analysis, the change in the number of active enterprises was examined, as described above. According to the statistical methodology, an enterprise is considered to be an active enterprise if it had a turnover or more than zero employees in a given year. This is a narrower set than registered enterprises, i.e. enterprises with a legal status, but it is more relevant and more accurate for the purpose of the analysis. The results show that the number of enterprises in the municipalities in the Free Enterprise Zones shows a higher change than the increase in the number of enterprises in unclassified municipalities. The number of enterprises in small settlements has increased significantly. After filtering out the data for large

municipalities, the municipalities in the Free Enterprise Zones also showed a higher rate of growth (Tab. 5).

Table 5 Change in number of active enterprises, 2012-2020

	Change in the number of active enterprises, 2012-2020 (2012=100%)
Municipality in a Free Enterprise Zone	38.75%
Parish	42.16%
county seat, city with county rights	1.84%
large village	25.51%
City	15.05%
Non-FEZ municipality	35.30%
metropolitan district	37.49%
Municipality	21.50%
city with county rights	12.65%
county seat, city with county rights	25.66%
large village	21.51%

Source: Author's own calculation based on Hungarian Central Statistical Office data

In step five, we examined whether the statistical number of persons per enterprise had increased and whether the increase was higher in municipalities in Free Enterprise Zones. Tab. 6 shows that the statistical headcount has decreased, and that this decrease is higher in the Free Enterprise Zones, contrary to our assumptions.

Table 6 Change in the average number of employees per enterprise, 2012-2020

	Change in the average number of employees per enterprise, 2012-2020 (2012=100%)
Municipality in a Free Enterprise Zone	94.54%
Parish	95.01%
county seat, city with county rights	85.85%
large village	90.57%
City	92.15%
Non-FEZ municipality	95.21%
metropolitan district	96.18%
Municipality	79.88%
city with county rights	92.58%
county seat, city with county rights	88.64%
large village	89.58%

Source: Author's own calculation based on Hungarian Central Statistical Office data

This decrease can be attributed to the increase in the minimum wage, as a negative relationship between the size of the minimum wage and the average statistical headcount can be observed.

The correlation calculation carried out shows a strong negative (-0.894) relationship at a significance level of 0.1 for the years under study (Table 5).

Table 7 The relationship between the minimum wage and the average number of workers

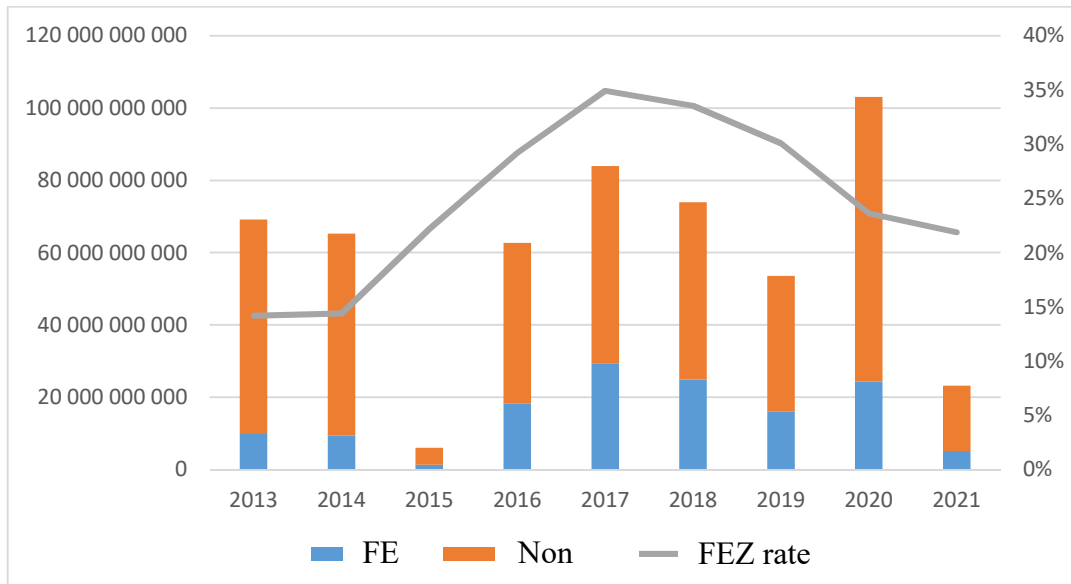
		MINWA G	AWEEM P
MINWAG	Pearson Correlation	1	-.894**
	Sig. (2-tailed)		.001
	N	9	9
AWEEMP	Pearson Correlation	-.894**	1
	Sig. (2-tailed)	.001	
	N	9	9

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Author’s own calculation based on Hungarian Central Statistical Office data

In the last step of the analysis (**step six**), we looked at the evolution of the share of aid to enterprises in the municipalities belonging to Free Enterprise Zones in the years under review. Fig. 3 shows the amount of aid allocated per year and the proportion of aid allocated in Free Enterprise Zones. This proportion is slightly above 35%. In the study, 38% of the municipalities in the sample were in Free Enterprise Zones.

Figure 3 EDOP¹⁹ and EDIOP²⁰ funds disbursed in Free Enterprise Zones and beyond



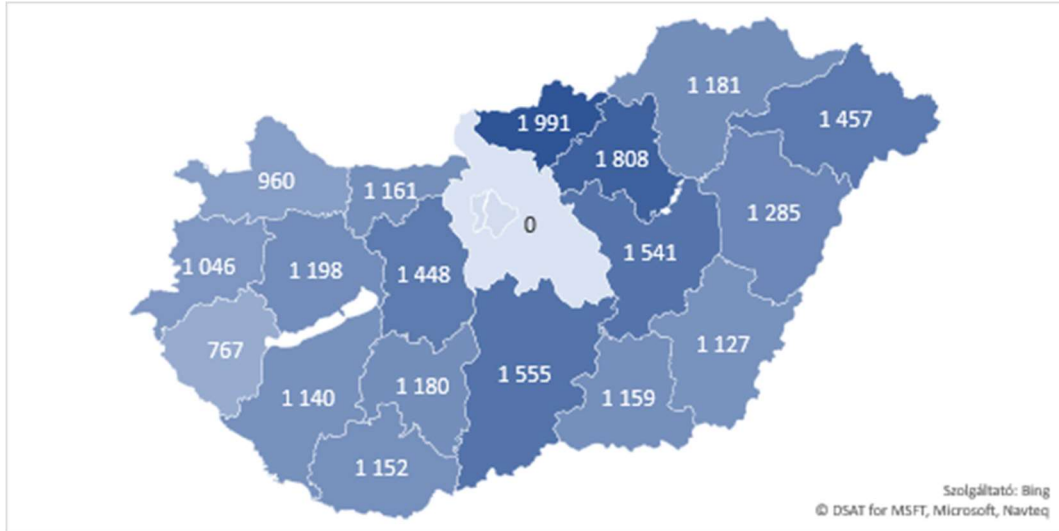
Source: Author’s own construction based on Hungarian Central Statistical Office and palyazat.gov.hu data

¹⁹ Economic Development Operational Programme (GOP – Gazdaságfejlesztési Operatív Program)

²⁰ Economic Development and Innovation Operational Programme (GINOP – Gazdaságfejlesztési és Innovációs Operatív Program)

Fig. 4 shows data on the relative aid at county level, i.e. the average amount of aid per active enterprise in each county.

Figure 4 EDOP/EDIOP aid per enterprise (thousand HUF)



Source: Author's own construction based on Hungarian Central Statistical Office and palyazat.gov.hu data

Comparing these values with the proportion of municipalities belonging to the Free Enterprise Zones already presented in each county, we found a stronger than medium (0.01% significance level) relationship with a coefficient of 0.577.

Table 8 The relationship between the rate of FEZ municipalities on county level and medium funds/enterprise obtained

		FZRAT	MEDFUN
FZRAT	Pearson Correlation	1	.577**
	Sig. (2-tailed)		.008
	N	20	20
MEDFUN	Pearson Correlation	.577**	1
	Sig. (2-tailed)	.008	
	N	20	20

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own construction based on Hungarian Central Statistical Office and palyazat.gov.hu data

CONCLUSION

In conclusion, our assumptions were only partially confirmed by the obtained data. No link could be found between the inclusion in enterprise zones and the reduction in the average number of jobseekers in the municipalities, i.e. the positive effect of the inclusion in the zone on the number of workers could not be demonstrated. The results of the study are in line with

international research that has reported similar results (Boarnet & Bogart, 1996; Hanson, 2009; Lynch & Zax, 2011).

According to our findings, the change in the number of registered jobseekers is lower in FEZ municipalities than in those not classified under zones. A similar finding was obtained by dividing the areas into mixed (FEZ and non-FEZ) and pure zones. In these cases, too, the number of jobseekers decreased more in non-FEZ municipalities. Moreover, no significant relationship was observed at the county level between the proportion of FEZ municipalities and the change in the number of registered jobseekers. Similar results were obtained when the average statistical headcount was examined, but no positive effect was found. In contrast, the classification of a municipality had a positive effect on the number of active firms. Similar results have typically been reported in the Anglo-Saxon region (Greenbaum & Engberg, 2004; Bondonio & Greenbaum, 2007).

A Hungarian specificity is that there is a stronger than medium positive correlation in terms of the amount of aid received by enterprises, i.e. the objective of the calls for proposals to attract more resources to the areas concerned has been achieved.

In summary, the first eight years of the FEZs have mainly resulted in an increase in the number of enterprises, with no demonstrable positive impact on the labour market. The research has therefore partially confirmed our assumptions. The analysis, after examining the medium-term effects, could be performed in the future, complemented by an examination of other factors affecting the labour force.

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CRISIS CHALLENGES FOR CUSTOMERS AND RETAILERS IN HUNGARY

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Abstract

Our paper gives an analytical evaluation of customer and retail responses to today's market- and non-market-related challenges. In the first part of the study, we deal with the classification of crises and review the international literature on the relationship between crises and consumption. We then focus on analyzing the effects of the COVID-19 pandemic and the war between Russia and Ukraine on trade and consumption. In the third main part of the study, we review the effects of the already mentioned crises on domestic trade and shopping behaviours. Finally, we examine the effects and new challenges of today's crises on retail strategies and identify the main areas that, with proper management, can make commercial companies "crisis-resistant". In the paper mixed methods (primary and secondary data collection and analyses) are used for reaching a best-possible insight into these fast-altering consumption and retail processes. Our novel findings can be categorized into consumption-related (demand-side) challenges and retailer-related (supply-side) responses. In our research on consumption the impact of fear from infection, price sensitivity, age and some other factors on shopping behaviour are examined, along with shop- and delivery preferences based on online surveys conducted during the COVID-waves. In the supply-side analysis the possible retail measures and responses are summarized based on secondary data collection and analysis.

Keywords: crisis, retail, customers, shopping behaviour, COVID-19

INTRODUCTION

The last two decades of the 21st century have been marked by a number of economic, social, environmental, and geopolitical crises. From the turn of the new millennium onwards, major, and long-lasting crises of various nature followed one another: the attacks of 9/11 in 2001, the credit and economic crisis of 2008-2011, the new challenges posed by global climate change (tsunamis, droughts, extreme temperatures), the COVID-19 pandemic in 2019 and the war between Russia and Ukraine in 2022 are just a few of the more important examples.

It can be stated that the new business challenge of recent decades is how companies are able to respond to new situations caused by a wide variety of economic and non-economic crises,

and the extent to which they are able to adapt their corporate strategies to new situations (Sikos T., Kozák, & Kovács, 2019).

The aim of our research is to show how different crises can be characterized and classified, and how all of these have / can have an impact on corporate strategy.

In our study, we focus on commercial companies and their strategic responses, because these organizations play a key role in consumption, thus ensuring the functioning of the society and the economy, and on the other hand, they are significantly affected not only by economic anomalies but also by social, environmental, and political crises. In our research – after synthesizing the relevant literature – by means of data analysis and content analysis based on secondary sources, we analyze the crisis strategies of international and Hungarian commercial companies and their adequacy. We included several retail companies of different sizes and areas of activity in our study in order to point out the role and importance of strategic planning and flexible adaptability for both SMEs and large Hungarian and international companies.

THEORETICAL BACKGROUND

Classification of crises

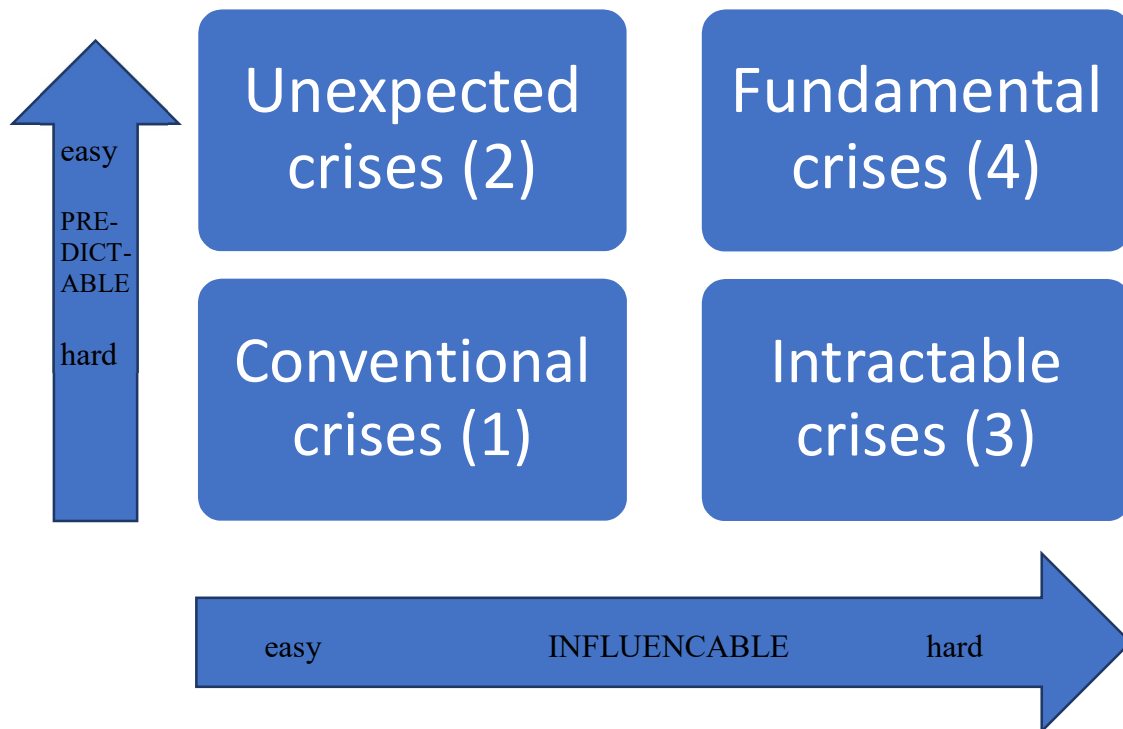
Before discussing the relationship between crises and corporate strategies, it is important to clarify what we consider to be a crisis and what classifications exist for different crisis situations. This clarification is essential because, in terms of their nature, size and impact, different crisis situations can show very different signs.

The oldest classification of crises distinguishes the so-called “natural” and “man-made” crises (Rosenthal & Kouzmin, 1993). However, the classification today is not so clear, in many cases human and non-human factors appear together, and the causes and victims of the crises are both people. Another important issue in relation to crises is their predictability and impact, as Gundel points out in his work in 2005 (Gundel, 2005).

The Gundel classification distinguishes 4 types of crises along the two dimensions mentioned earlier (influence and predictability):

- Conventional crisis (1): e.g., significant power outage
- Unexpected crisis (2): e.g., Titanic
- Intractable crisis (3): e.g., Chernobyl
- Fundamental crisis (4): e.g., 9/11, 2001 WTC attack

Figure 1 Crisis-matrix by Gundel

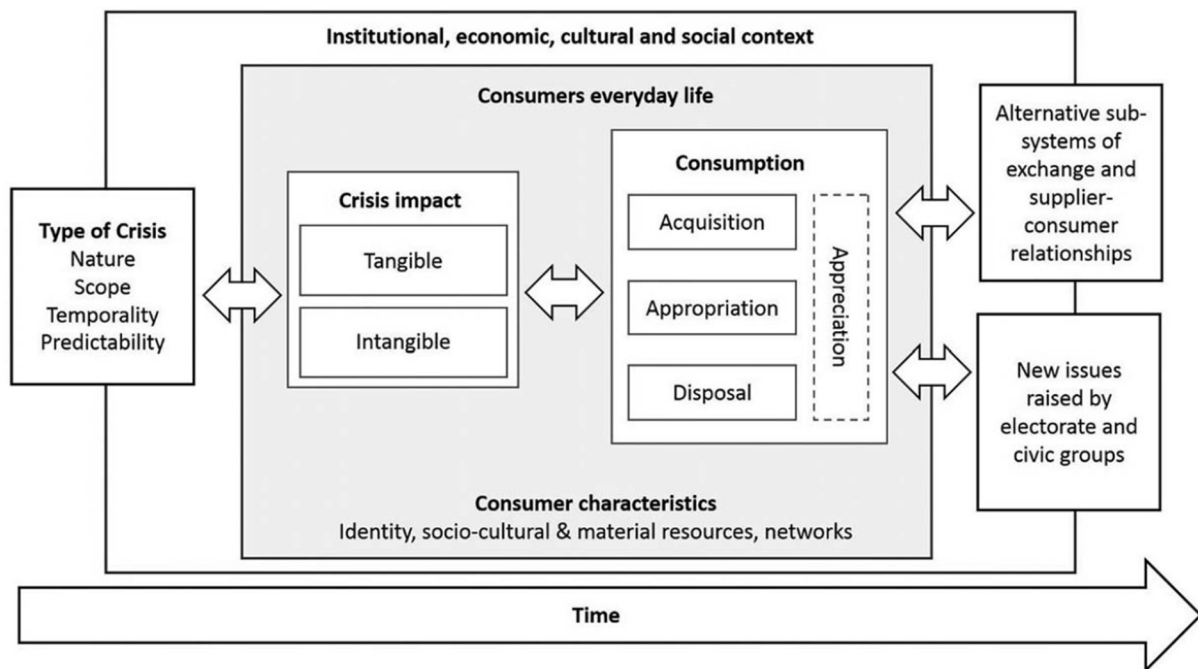


Source: Gundel, 2005

The various consumption-related crises analyzed in our study belong to the type of the most significant, persistent, and fundamental crises with long-term effects and have a significant impact on consumption (financial crisis in 2009, COVID-19, Russian-Ukrainian war). Due to the above factors, international literature on crisis management is very extensive, crisis management puts great emphasis on public policy planning, corporate management in environmental protection, geopolitics, and many other fields. The scope of this article does not allow for a comprehensive presentation of crisis management, so we will focus on our narrower topic: consumption and crises.

Crisis-related challenges and responses in consumption

In the following, we rely on the interpretation of the impact of crises on consumption based on the model published by Koos and co-authors in 2017. We highlight the most important features of the model and later interpret our own empirical research results based on them (Fig. 2).

Figure 2 Conceptual model of crisis and consumption

Source: Koos et al., 2017

One of the key findings of the Koos model is that it distinguishes between tangible and intangible crisis effects. While the former can be clearly seen in economic statistics such as declining incomes or employment and unemployment statistics, the latter can be much less linked to measurable variables on consumption: such as the psychological factors, feelings of uncertainty that affect (in the case of crises negatively) consumption trends (Alonso et al., 2015). The second important aspect of the model is that it shows the impact of crises on the acquisition, retention / use of goods and their disposal. This process affects every detail, the nature of access to the products (purchase, preparation, gift), the quantity and quality of the purchase, the purchase costs, price preferences, store selection, etc. (Pech & Kopová, 2022). However, not only the purchase and the use of goods change, but also the time and quality characteristics of getting rid of them: we use certain products for a longer period of time, we repair damaged tools, we recycle them, and so on. At the same time, the way in which members of society value certain elements of their consumption may change with norms and values (Kubičková & Holešinská, 2021), such as nationalist attitudes and the development of local preferences in consumption (Lekakis, 2017) (domestic products may be appreciated while members of society may boycott products from other countries – cf. Russian-Ukrainian war and gas purchases).

Koos and co-authors also emphasize the macroeconomic, social, and socio-cultural components of the crisis, highlighting the selective impact of crises on individual members of

society. The subjective financial and income situation, the individual's abilities, and his/her social network (embeddedness) all have an influence on the development of consumption in a crisis (Bourdieu, 1984).

As the formerly presented Gundel model and also Koos and co-authors point out, the impact of different features of the crises (i.e. the location, size, time, its predictability) has a great significance for consumption, just like central political rules, regulations and systems that are changing in the midst of the crisis – see the changing system of bank loans and the connected regulations during the 2008 economic downturn, or restrictions on retail during the COVID-19 pandemic (Kincses & Tóth, 2020).

In addition to the above-mentioned factors, reciprocity, and state redistribution, and market sharing practices, as well as new phenomena that “bypass” market exchange, such as the sharing economy, decommodification (reducing market dependence), or even “de-ownership” might also spread.

In summary, crises, be they man-made or caused by vis major, have a significant impact on society's behaviour and, therefore, on consumer behaviour. In the following, we examine where and how our various empirical researches carried out in Hungary correspond to the models presented by Gundel and Koos et al., and whether these correspondences can really be identified in the Hungarian examples.

However, before introducing the Hungarian examples, we analyze the international trends and effects of crises on consumer behaviour.

Can a global supply crisis be expected?

The first quarter of the third millennium saw a series of local and global crises, the effects of which are unfortunately still being felt today. The first major crisis of the 21st century was the stock market crisis, which began with the dotcom bubble, resulting from the overestimation of often zero-value Internet-based companies. Investors poured money into these dotcom companies in the belief that they were actually worth billions of dollars, which led to a collapsed growth index on March 24, 2000. This also meant the bankruptcy of most investors.

Less than a year after the bursting of the dotcom bubble, the attack of the WTC on September 11, 2001, launched the war in Afghanistan, which unfortunately only ended in 2021. During the years of the war, a series of local and global crises arose such as the war in Iraq in 2003, which brought the oil crisis, or the Ebola epidemic, which also struck locally in 2013, affecting mainly West African countries, and, to a lesser extent, the citizens of other continents as well, mainly those who returned home from the infected zone or interacted with people from there.

The year 2006 witnessed another turnaround in the real estate and banking sectors in the United States, which brought along significant problems in the financial sector. During this period, many U.S. banks went bankrupt, which weakened not only the U.S. economy but also Western European economies, both in the bank and the economic sector.

During this period, the world's financial institutions suffered losses of about 435 billion USD. Many multinationals were also hit and had to merge with their own competitors to survive. Bankruptcy and economic uncertainty eventually led to the economic and financial crisis of 2008, which marked a long period of economic uncertainty and the situation only normalized by the beginning of 2018-2019. Barely has everything stabilized again, the COVID-19 pandemic broke out and has been unfolding since then. The economic crisis caused by the pandemic created a shock both in supply and demand in commerce. Trade has undergone a significant transformation both globally and locally as a result of the COVID-19 pandemic, new technologies and business models have emerged, and new innovation solutions have been introduced as digitalization strengthened. Online commerce has become increasingly important, with omnichannel sales appearing besides multichannel solutions. This, in turn, strengthens and develops the use of digital payment technologies, the need for a home delivery system. The COVID-19 pandemic has created a whole new situation in local and global trade. Transport methods and techniques from the infected areas need to be rethought. The methods previously used can no longer be applied, as e.g., a breach of food safety regulations would only spread the epidemic. That is why in the field of food supply new technologies such as automation, robots or artificial intelligence have gained increasing importance. The pandemic has increased the extent of mail order and e-commerce in retail, thus the volume of this sector had doubled by April 2020 compared to the same time in the previous year (CSO, 2020). In addition, the popularity of various digital solutions has grown exponentially within stores, the main driver of which was increased customer demand for contactless shopping (Pintér, 2020).

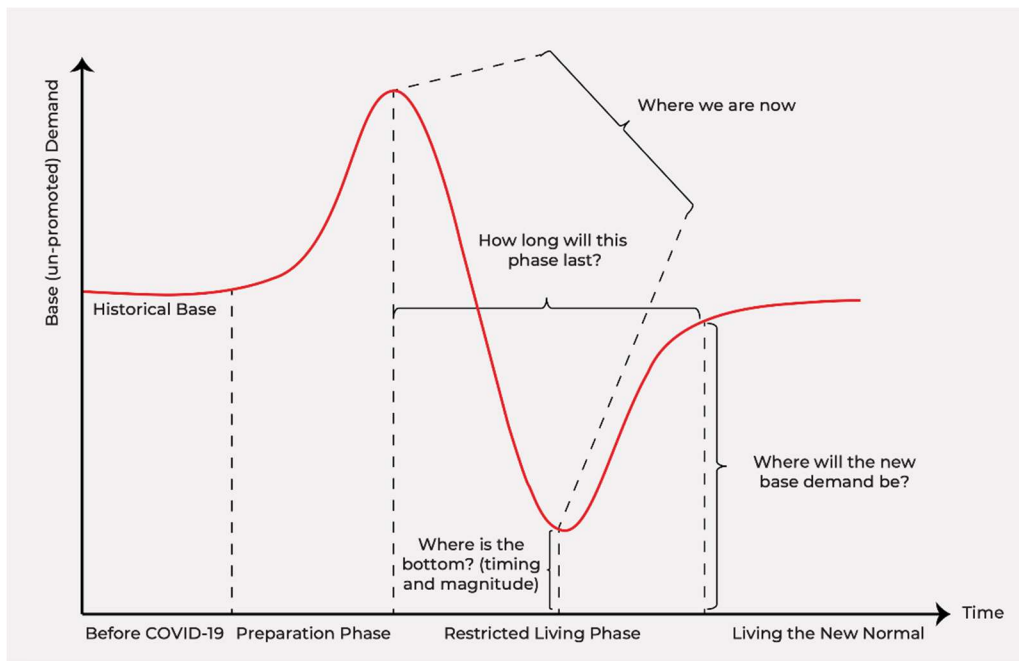
In order to understand the processes taking place during the crisis, it is necessary to briefly review the characteristics of the periods that have developed in connection with COVID-19:

1. The first period or the “pre-storm” period is characterized by normal purchasing processes,
2. The second stage is characterized by “panic buying” when customers stocked far more products than necessary,
3. The third stage is characterized by restrictions, lockdowns, and conscious purchases, as well as efforts to satisfy basic needs,
4. In the fourth period “anger” purchases or additional purchases appeared,

5. The fifth stage is characterized by a period of new normal, marking the end of the pandemic period, with customers returning to the usual purchase quantities (Sikos T. & Kovács, 2022).

In the specific development of the epidemic situation, when examining the basic necessities, we can describe the individual periods of the epidemic situation with the following demand curve (Fig. 3).

Figure 3 Demand for Essential Categories During & After the Outbreak



Source: Ayer & Gurman, 2020

The question is basically how long the COVID-19 pandemic will last. To what extent will it affect the further development of supply chains locally and globally? Vaccination rates vary from country to country, which is why the periods of the pandemic have differed from continent to continent, and we are now in the 6th cycle, and it is not over yet.

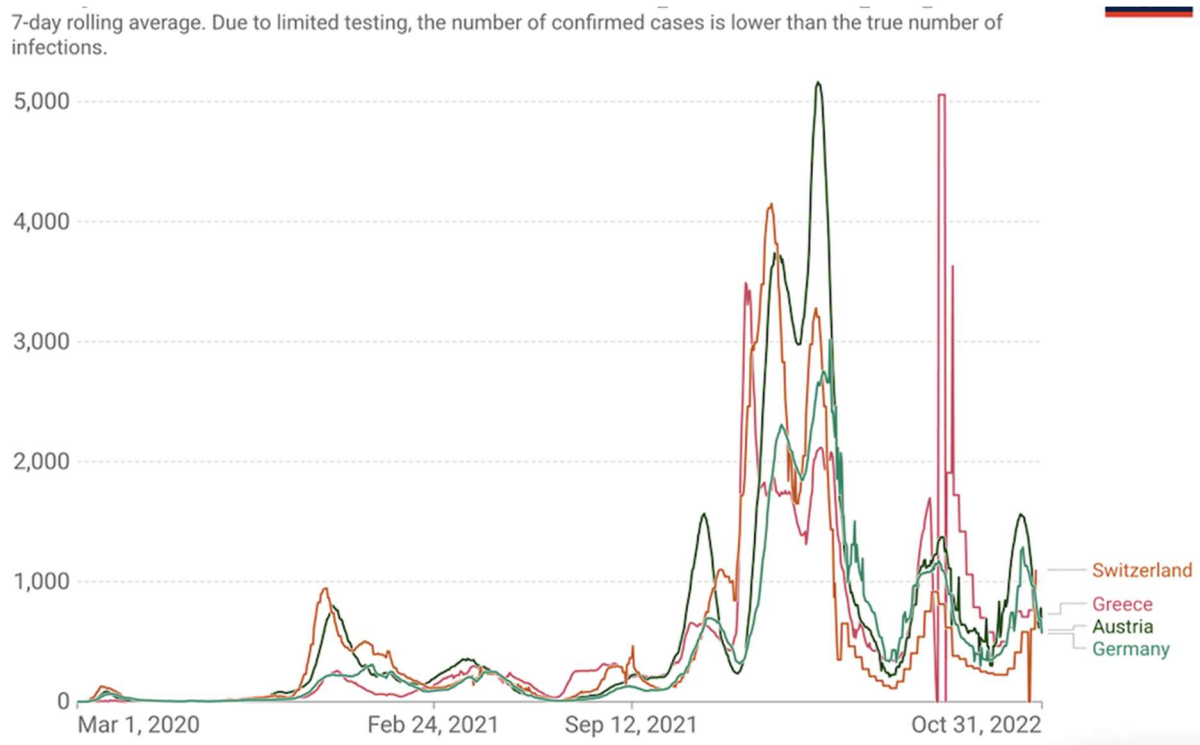
In China, big cities have now been completely cut off from the outside world again, e.g., in Jilin Province, Changchun and Jilin, or Shenzhen, known as the “Silicon Valley” in China, which hosts the busiest ports in the country, but there have also been serious manufacturing problems in Shanghai as well (production in Tesla was halted for a short time).

Traffic restrictions and mass testing have also been ordered in China’s largest steel-producing center, Tangshan, with a population of 7.7 million. Only emergency and supply vehicles are allowed on city roads.

The free movement of the inhabitants of the city, located 156 km from Beijing, is subject to a separate permit. It should be also noted that in addition to China, the number of COVID-19

cases has increased in several Western European countries, despite higher vaccination rates, e.g., Austria, Switzerland, Germany, and Greece are not in a good position either. WHO data clearly suggest that the COVID-19 pandemic is far from over, according to current estimates we are somewhere in the middle of the epidemic (Fig. 4).

Figure 4 Daily new confirmed COVID-19 cases



Source: John Hopkins University CSSE COVID-19 Data from Global Change Data Lab (2022)

The crisis caused by the COVID-19 pandemic is further exacerbated by the outbreak of the war between Russia and Ukraine. So far, more than 3 million Ukrainians have fled the country due to the war.

The present war situation has generated both local and global crises. In Ukraine, it is becoming increasingly difficult to provide food supplies and logistics lines as a result of the war and EU and US sanctions have hit Russia hard. Among other things, the following have become uncertain:

- Food trade,
- Iron and steel shortages,
- Car manufacturing,
- Computer industry,
- Gas and oil supply,

- Air transport between Europe and Asia (the shortest route is via Russia),
- Sale of agricultural products (e.g., wheat, corn, sunflower oil),
- Forage,
- Chip production (due to lack of neon gas),
- Palladium, fluorine, nickel shortage, etc.

Nowadays, it is still very difficult to provide a clear answer to the question of what kind of outages occur in the global chains due to the war. It is a fact that outages in fragmented global supply chains will sooner or later appear in the final stage of product assembly, which will lead to significant delays in production. According to Interos, a research company specialized in risk analysis for supply chain management companies, more than 2,100 U.S. firms in the USA and 1,200 European firms have at least one direct (tier-1) supplier in Russia. More than 450 U.S.-based firms and 200 companies in Europe have tier-1 suppliers in Ukraine. But the impacts will be larger if we look at indirect tier-2 or 3 relationships. “More than 190,000 firms in the U.S. and 109,000 firms in Europe have Russian or Ukrainian suppliers at tier 3. More than 15,100 firms in the U.S. and 8,200 European firms have tier-2 suppliers based in Ukraine.”²¹

Another area potentially affected by the crisis could be the services sector, in particular the IT services. However, the loss of a significant share of agricultural products is likely to be a much bigger concern than for industry and services. Trade sanctions in the case of Russia and the war situation in Ukraine could also cause a shortage of important agricultural products on the world market, as the two countries together account for a third of world wheat exports, a fifth of maize exports and 80 percent of sunflower oil.

In addition to the financial and economic crisis, the current global crisis has also resulted in a very serious humanitarian crisis. Not to mention the fact that this serious war situation has hit the world in the midst of a climate crisis.

DATA AND METHODS

In the empirical part of our study we will introduce some findings related to COVID-19 and the conflict between Russia and Ukraine.

In our COVID research, we examined the impact of the health and global economic crisis situations on the shopping habits of the Budapest population in the last two years. We aimed to

²¹ <https://www.forbes.com/sites/stevebanker/2022/02/24/the-russia-ukraine-war-could-have-dire-impacts-on-global-supply-chains/?sh=6eaa54b14919>

reveal the change in purchasing attitudes at different stages of the pandemic situation and the frequency of using the different retail channels. The database required for this was compiled from an online questionnaire survey conducted in May 2021. Then, we also examined the extent to which the frequency of using the different last-mile delivery methods had changed as a result of the COVID-19 outbreak and the severe restrictive measures. The required data were collected in June 2020 on Facebook, via an online questionnaire. A total of 353 people participated in the survey. The questionnaires were surveyed in the largest community groups in the Budapest districts. Facebook groups were selected on a territorial proportion basis. The results of the questionnaire surveys cannot be representative, because the proportion of women and higher education graduates was higher in the survey than in the Budapest population. Descriptive statistical methods and cross-tab correlation analyses with Chi-square tests were applied in the research.

The possible implications of the war between Russia and Ukraine were evaluated by processing and analyzing the available literature and secondary data.

RESULTS AND DISCUSSION

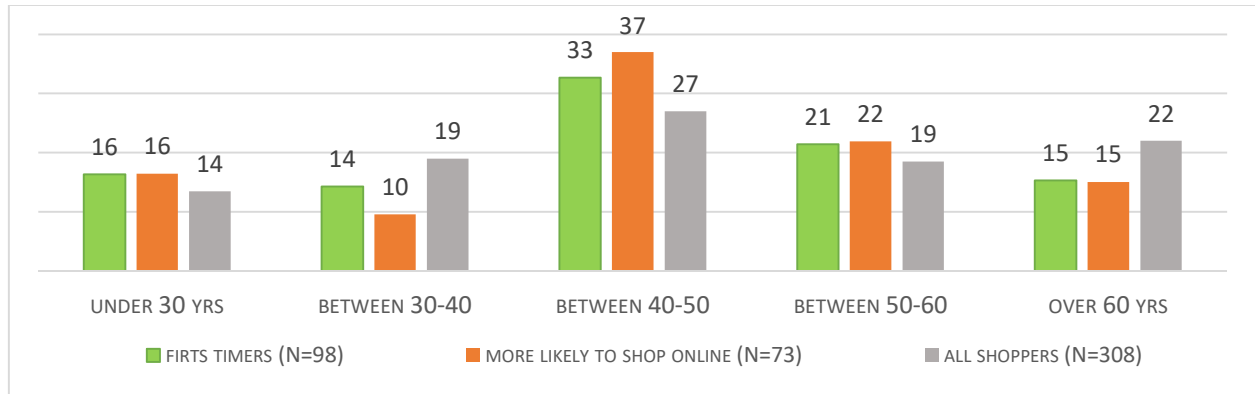
Shopping behaviour of Hungarian consumers during the time of the COVID-19 crisis

As a consequence of the current health crisis, the retail market structure has become more concentrated, with the largest companies further strengthening their positions. Results of the 2021 survey showed that small shops were hit the hardest by the COVID-19 pandemic, which were already in a difficult situation before the world crisis. 17.5 percent of respondents did their shopping in large FMCG chains more often than before the pandemic. In contrast, local stores were only a priority for 12 percent of shoppers. However, it is worth noting that around 7 percent of shoppers shopped during the pandemic in a store they had not previously visited. It was also found that almost one in ten shoppers tried a new brand during this period (9%). The scale of these changes cannot be considered negligible, as these shifts took place in a very short period of time, less than one year, in the retail market.

Online retailing was the most affected by the changes, with almost a quarter of respondents preferring to shop online during this extraordinary period (23.6%). According to the results of the survey, the proportion of those trying online shopping for the first time was even higher among customers (35.1%), and the questionnaire responses also showed that 14% of respondents ordered less online from foreign online stores. Fig. 5 shows the age structure of

those who tried online shopping for the first time during the curfew, those who preferred online shopping, and all respondents to the questionnaire.

Figure 5 Age distribution of online shoppers during the curfew period (%)



Source: own research based on survey data, 2021

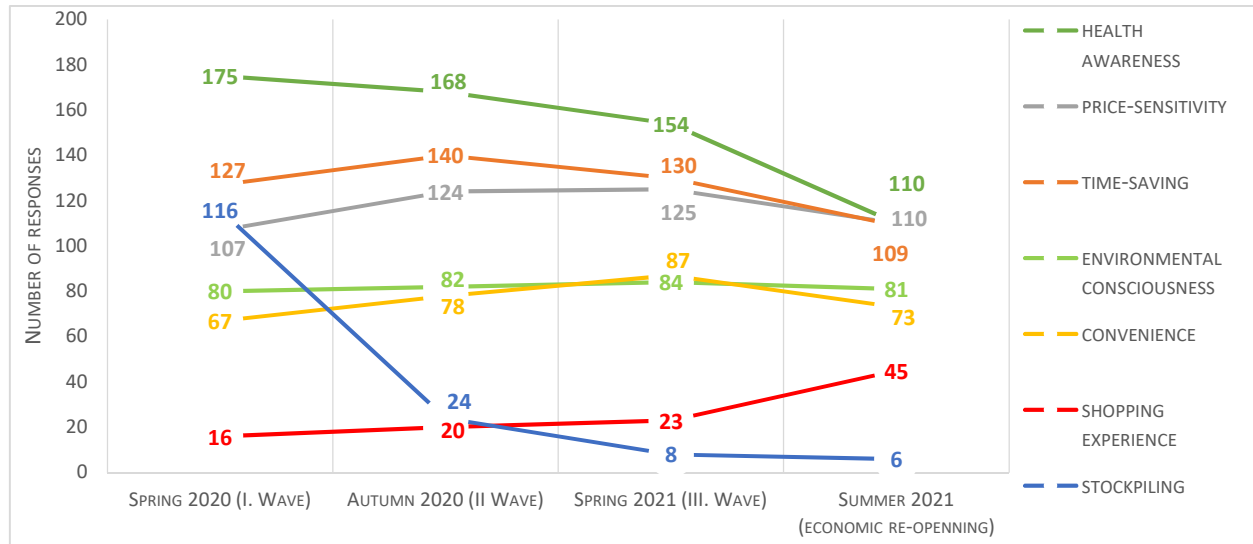
The proportion of middle-aged shoppers (aged 40-50 years) who preferred to purchase online during the curfew was higher (37%) than it would be expected from their age distribution in the total survey sample. In the age group of 50-60-year-old shoppers the percentage of online shoppers was 22, which is significantly lower than this number in the 40-50 age group. Results show that the age distribution of new entrants corresponded to the total sample, with no significant structural differences. It can be also seen from the responses that the proportion of first-time internet shoppers is significantly higher in all age groups than the pre-pandemic levels. The public health emergency accelerated the pre-pandemic development trajectory of the online FMCG sector by many years.

The relationship between price sensitivity and the intention of using an online shopping service can be pointed out. A medium-strength and statistically significant association was detected between those who were more price-conscious during the outbreak and those who were open-minded to try out online shopping for the first time.

The direction of the correlation was the opposite between these variables, i.e., less price-sensitive shoppers are more likely to prefer online retail channels. The importance of cost-consciousness also decreased significantly when those who had been using online shopping for a longer period of time were included in the sample. In other words, there was an inverse relationship between the preference for online shopping and cost-consciousness.

The main preferences of product purchases were also examined in the research (Fig. 6). Not only the rank of these factors, but also the change in their relative position can be traced on the graph during the different stages of the pandemic era.

Figure 6 Preferences of product purchases by the number of responses 2020-2021



Source: own edition

The results showed that, due to fears of viral infection, health-related purchasing considerations were the most significant influencing factor at each stage of the pandemic, but the priority for this aspect declined at an accelerating rate in three waves of the epidemic.

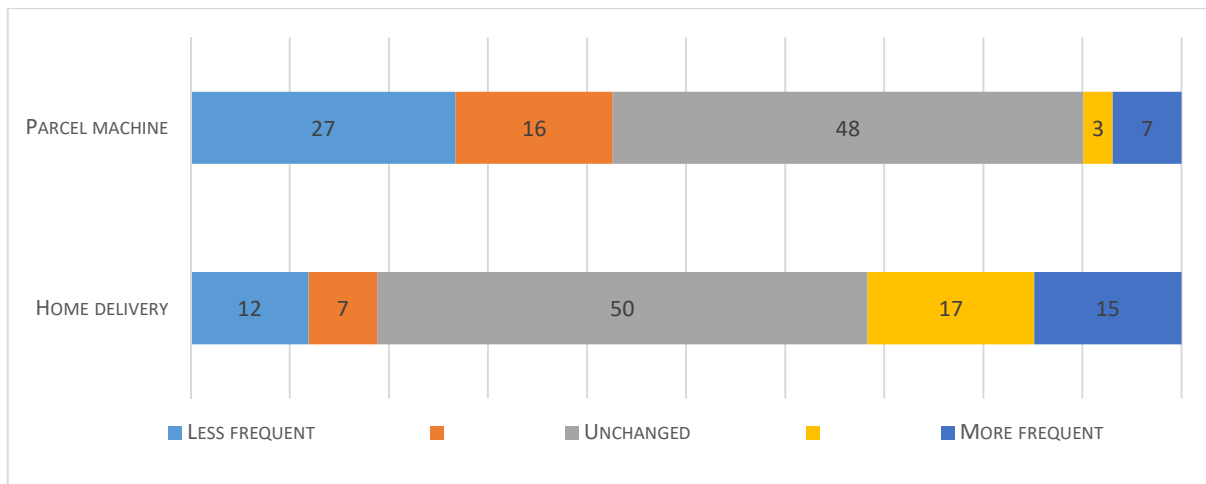
As a result of the panic buying in the first wave of the epidemic, stockpiling was still one of the biggest buying motivations in the spring of 2020, but it was no longer a major factor during the next epidemic waves. The importance of the shopping experience was greatly influenced by the fear of the pandemic.

The line graph showed a steady upward trend, starting with a significant increase in dynamics at the end of the third wave. At that time, the number of those who wanted to make up for missed purchases (“anger buyers”) almost doubled. A significant group of respondents showed a lower willingness to buying compared to the beginning of the epidemic, and their buying intentions were further reduced during the period of mass vaccinations and economic reopening. They are mainly characterized by price sensitivity, convenience, and time savings. In terms of environmental consciousness, however, there is no significant change between the examined epidemic waves. According to the analysis, health and environmental consciousness are significantly correlated to the level of education. Younger age groups tend to have higher levels of education, so these aspects are also much more articulated in the case of GenY than in

generations over 60 years of age. It seems contradictory that while the older generations felt much more vulnerable during the pandemic, health considerations were more important for the younger generations.

Not only in terms of purchasing habits did the COVID-19 crisis influence customers' habits, but their delivery choices also changed, which can also be considered an important issue in the long run (Fig. 7).

Figure 7 The intended frequency of use of delivery services after the public health emergency, compared to 2019 in the share of total respondents (%)



Source: own research based on survey data, 2020. (N=353)

Behavioural changes are not expected to disappear completely once the epidemic is over. For both delivery methods, roughly half of the respondents indicated that they would change the frequency of using the service compared to the previous year. The coefficient of the Spearman rank correlation used in the cross-tabulation analyzes by age group showed a negative, loose relationship for the planned frequency of home delivery (-0.21) and e-parcel point services at the 95% significance level most accepted in the social sciences (-0.26). There are many similarities between the two delivery methods, but there are also significant differences in the evolution of the results. The proportion of those who want to increase the use of parcel machines is similar in all age groups. However, there is a clear age distinction among those who plan to reduce the frequency of use of parcel points: a quarter of the respondents are aged 20-30, a third of those aged 30-50, roughly half of them are between 50-60, and two-thirds of them are 60+. In terms of home delivery, respondents between 20 and 30 claimed in the highest rate that they would increase the number of deliveries in the future. This represents an increase of approximately 10 percentage points compared to the overall average of 32%. Meanwhile, this

age group also has the lowest rate of those planning to reduce the number of their delivery orders. By far the highest proportion of people over the age of 60 responded that they would change the frequency of using delivery services (67.2%). In contrast to other age groups, most of those senior customers who would like to change their behaviour after the pandemic will reduce the frequency of use home delivery services. Overall, this group accounts for 62% of the oldest age group. At the same time, compared to the results in other age groups, it is very favorable that almost a quarter of respondents aged 60 and over plan to increase the use of home delivery services. This value is only 7 percentage points below the proportion in the overall survey sample.

First reactions on the military conflict between Russia and Ukraine

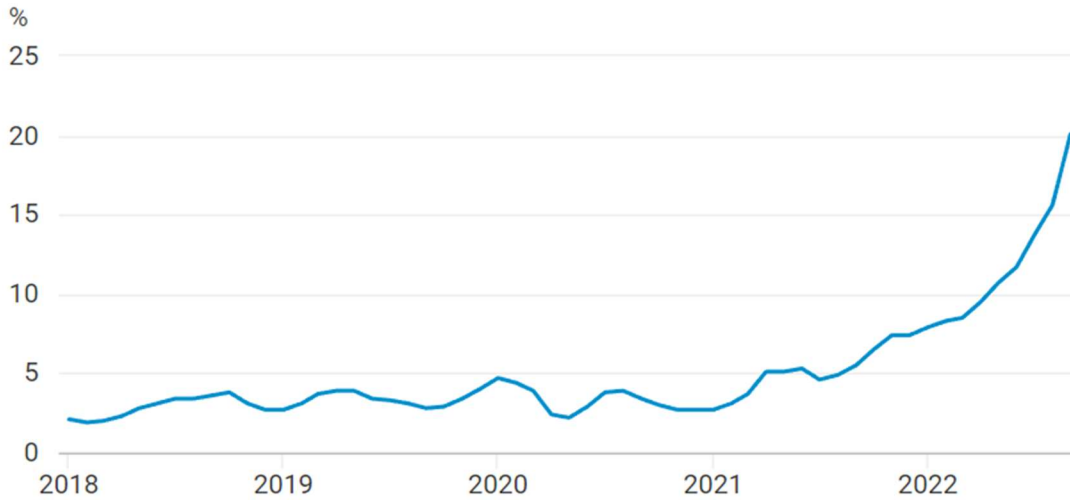
There are no major disruptions in the Hungarian FMCG retail supply system one month after the outbreak of the military conflict in Ukraine on 24 February (Thurzó, 2022). Impacts of the war on the retail sector are perceived by Hungarian shoppers in the form of a steady increase in prices. However, it is difficult to calculate exactly how much of the price increases is due to the conflict in Ukraine, as the reasons are not only attributable to the war (Szabó Tamásné, 2021). Price caps on essential food products (e. g. UHT milk, basic fresh meat (chicken)), which artificially dampen the scale of price increases, are recently distorting real market prices in consumer markets. The Hungarian government introduced price caps on seven basic food products for three months [Government Decree 6/2022 (I. 14.)]. Furthermore, the introduction of the fuel price cap in November [Government Decree 626/2021 (13.11.2021)] indirectly contributes to increasing the security of supply chains and reducing price increases (MTI, 2022).

Due to the fast increase of energy prices and to the uncertainties in the global energy markets a higher volatility of the Hungarian national currency (HUF) could have been observed from the 3rd quarter of 2022. These unfavorable macroeconomic processes contributed to a fast increase in consumer prices (Fig. 8), this way the price-cap measures were sustained according to the decision of the government.

However, the disinflationary impact of these measures is below what was previously expected, and they are becoming increasingly difficult for the Hungarian government to sustain, in large part due to the extreme runaway in world prices (Csiki, 2022). For the reasons mentioned above, panic buying was not experienced among consumers until the end of April in the Hungarian retail stores. At that time, there was an increase in the turnover of price capped products in retail stores due to fears of derailing the price (Portfolio, 2022). Eventually, these

fears proved unfounded, with official measures being extended for another two months (Braunmüller & Madár, 2022).

Figure 8: Changes in consumer prices (previous year=100%)



Source: HCSO, 2022, www.ksh.hu

In the meantime, fears of fuel shortages led to a small buying boom at petrol stations before the four-day holiday in March. In order to tackle the tense crisis situation, the government intervened on the fuel market (Dajkó, 2022). Fortunately, as a result of the extraordinary interventions, the market calmed down in a few days after the holiday (Szabó Tamásné, 2022).

The Hungarian government introduced some customer protective measures in the financial market as well. The interest rates of loans for private clients and SMEs were maximized (via so-called interest rate stop), producing a trade-off in the amounts of mortgages in the short- and long-term: while the monthly expenditures remain on the same level for the families and SMEs, the length of the credit-payback period will be expanded, which will decrease the discretionary incomes of families and SMEs in the long-run. All of the above introduced changes in consumer and shopping behaviour caused by different crises (health-related, war-related) have a significant impact on the suitable and applicable retail strategies. The possible way-outs for retailers will be drafted in the next part of the study.

Strategic reactions in retail

By referring to and analyzing international and Hungarian trends in retail, in the previous chapters we have presented the most important changes that are forcing commercial companies

to (re)act. The changing market and customer patterns were summarized by Deloitte in their 2020 strategic analysis (Deloitte, 2020) in the following key points:

- Mobile (shopping)
- Individualization of products/services
- CX (customer experience)
- Instant availability and delivery
- Health and sustainability
- Less loyalty to brands
- Well-informed customers
- Social media

In order to be able to adapt to these changes at the right pace and to the right extent, for retailers a multi-level strategic intervention is essential. Re-thinking and adaptation are essential in the business model, operating model and strategy (mission and vision) of businesses.

Changing the operating model is critical, since implementing organizational, management and behavioural changes is a must (Deloitte, 2020):

- Organization:
 - organization structure
 - governance
 - capabilities
 - task designs
- Execution:
 - Budgeting
 - Processes
 - Tooling
 - KPIs
- Behaviour:
 - incentives
 - culture
 - workplace

As can be seen from Deloitte's previous analyses, retailers need a more flexible response adapted to market changes, which is in connection with digitalization, and a continuous oversupply. However, the second and third decades of the 21st century brought a number of non-market uncertainties (pandemics, war, climate change, etc.) with unexpected and

significant market effects such as fluctuations in demand / supply, resource supply problems, logistical problems, restrictive measures by the government, etc.

These challenges call for new strategic responses from retailers to the following issues:

- Dealing with sudden demand or supply shocks
- Development of an appropriate response strategy for the introduction of temporary / permanent state measures restricting market mechanisms (e.g., opening hours, central pricing, etc.)
- Management of supply disruptions (e.g., stock shortages, fluctuations in demand)
- Customer service development due to changes in customer behaviour, increase in needs and expectations (e.g., immediate customer service, omnichannel sales)
- Responding to anomalies (operation, product range, services) caused by climate change (e.g., weather extremes).

In order for a retailer to be able to meet these many unforeseen challenges, it is essential to make its operating model “crisis resilient”. This requires a strategic, marketing, financial, controlling, HR, sustainability approach and measures too (Fig. 9).

Figure 9 Conditions for retail success today



Source: own edition

CONCLUSION

As a conclusion of our study, we can state that in the turbulent decades of the 21st century, the overall approach, methodology and tools of retail trade are constantly changing, and business success depends on the extent and speed with which retailers are able to adapt to these market and non-market changes. In the third decade of the 21st century, commercial companies need to be able to face challenges not only of market origin but also non-market ones such as pandemics, wars, and climate change.

This means that challenges and responses are different, as hitherto “unusual” phenomena such as the introduction of active state restrictive measures, oversupply markets, stock shortages, etc. need to be addressed. All of this makes it essential for retailers accustomed to operating in a very competitive market and oversupply to develop radically different conceptual and operational practices.

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THE POTENTIAL ROLE OF UNIVERSITY COMMUNITY ENGAGEMENT (UCE) IN SOCIAL JUSTICE AND SUSTAINABILITY TRANSFORMATION – THE CASE OF THE UNIVERSITY OF SZEGED (HUNGARY)

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Abstract

The aim of the paper is to reflect on the role of social justice orientated university community engagement (UCE) (Hazelkorn, 2016a, 2016b) in contributing to social justice and environmental sustainability transformations. We build on the social justice perspective to UCE (Hazelkorn, 2016a, 2016b); the transformative approaches to social justice and sustainability (Hopwood et al., 2005); and UCE models that deal with the transformative potential of UCE partnerships (e.g. Himmelman, 2001) as theoretical frameworks. We apply autoethnography to reconstruct and critically reflect on the transformative potential of a social justice orientated UCE process that we as researcher-activists are a part of. We use the UCE initiatives of the Research Centre of the Faculty of Economics and Business Administration at the University of Szeged (Hungary) as a case study to reflect on UCE in a Hungarian urban context in the city of Szeged (Hungary).

We analyze how power relations (partnerships) function and change within UCE; how UCE is able (or not) to change existing power relations (empower the marginalized) within a specific urban social context; and how these changes in the social power of the marginalized might (or might not) contribute to transformative changes in relation to social justice and sustainability. We conclude that (1) it is difficult to establish transformative (equal) relations among academics and communities; (2) working with community representatives might lead to unknown, unexpected and contradictory UCE impacts; (3) transformative intentions and characteristics of UCE do not imply that transformative social impacts are actually realized; and (4) transformative relationships (as understood in UCE literature) do not necessarily lead to transformative social changes (as conceptualized in the literature on social justice and sustainability).

Keywords: university community engagement (UCE), social justice, sustainability, partnership, transformation

INTRODUCTION

Numerous trends influence the role of higher education institutions (HEIs) in today's societies (Larrán Jorge & Andrades Peña, 2017; Hazelkorn, 2018; Shek et al., 2017; Reisinger & Dános,

2021). Universities are expected to play a role in the solution of global social and environmental challenges. Global, regional and national institutions and actors (including the UN, the EU and OECD) increasingly expect that universities integrate social and environmental aspects into their operation (Larrán Jorge & Andrades Peña, 2017).

At the same time, higher education institutions are increasingly seen as, and expected to act like major contributors to (economic) development (Etzkowitz et al., 2000). This resulted in universities becoming “stakeholder organizations” (Bleiklie & Kogan, 2007), responding to the expectations of stakeholders powerful enough to articulate their interest. HEIs have become “corporations”, which take part in international competition contrary to their earlier, primarily local/national character (Hazelkorn, 2018; Shek et al., 2017). Education has become a service that is subject to international trade. All of this contributes to the emergence of transnational academic capitalism (Hazelkorn, 2018, 12). According to new public management, public intuitions need to be accountable and are supposed to compete for funding based on their performance. Hence, criteria of efficiency, accountability, and transparency have gained importance also for universities recently (Larrán Jorge & Andrades Peña, 2017), as a part of the accountability agenda (Hazelkorn, 2018).

Therefore, universities face the double challenge (Compagnucci & Spigarelli, 2020) of corporate-type functioning (including the production of own revenues; cost efficiency, competitiveness; meeting labour market needs, etc.) on one hand, and being institutions that provide solutions to local, national and global social and environmental challenges on the other.

The present paper deals with this latter expectation through the concept of university community engagement (UCE). Our research question is the following: How is the social justice perspective on UCE able (or unable) to contribute to social justice and environmental sustainability as conceptualized by transformative sustainability and social justice approaches?

To answer our research question, we build on (1) the social justice perspective on UCE (Hazelkorn, 2016a, 216b); (2) the transformative approach to social justice and sustainability (Hopwood et al., 2005), and (3) UCE models that deal with the transformative potential of UCE partnerships (e.g. Himmelman, 2001) as theoretical frameworks. We apply autoethnography to reconstruct and critically (self-)reflect on the transformative potential of a social justice orientated UCE process that we ourselves as researcher-activists are a part of. Thus, we use the UCE initiatives of the Research Centre of the Faculty of Economics and Business Administration at the University of Szeged (Hungary) as a case study to reflect on UCE in a Hungarian urban context within the city of Szeged (Hungary).

We analyze (1) how power relations (partnerships) function and change within UCE; (2) how UCE is able (or unable) to change existing power relations (empower the marginalized) within a specific urban social context; and (3) how these changes in the social power of the marginalized might (or might not) contribute to transformative changes in relation to social justice and sustainability.

Our paper is structured as follows. First we introduce the theories that we use as analytical frames. Then we briefly describe the case study before proceeding to empirical research methods, followed by results and discussion. We finish our study with conclusions.

UCE, SOCIAL JUSTICE, AND SUSTAINABILITY

Universities are under the influence of multiple institutional logics. This results in the co-existence of multiple, and often conflicting priorities, identities and approaches (Kraatz & Block 2008). This institutional pluralism serves as a framework condition for university community engagement as well.

The theory and practice of universities' social engagement largely focuses on business and government ties, however, several concepts also embrace relations with civil society actors and the local communities. The third (developmental) mission of universities (e.g. Laredo, 2007), the (regionally) engaged university (Gál & Zsibók, 2011), or universities as "stakeholder organizations" (Bleiklie & Kogan, 2007) may embrace various forms of community engagement. However, these (umbrella) terms may denote approaches to UCE, which are very far from the logic of UCE we pursue in this paper.

A growing interest in the engagement with non-business and non-governmental actors is largely the result of the fact that the perceived importance of users, the media or the general public in the innovation processes has increased (e.g. in the quadruple helix model of Carayannis and Campbell, 2009). The concept of "third mission" also has its roots in the increased importance of university research for national (regional) competitiveness, and is strongly intertwined with the concept of "entrepreneurial university" (Laredo, 2007).

In fact, the developmental role (mission) of universities and their engagement with societal actors very often takes the dominant narratives on development (e.g. competitiveness, innovation-based economic growth) as granted and leaves hierarchies and power relations unchanged (more powerful stakeholders' expectations are more likely to be responded to). Therefore, UCE needs be understood together with the institutional logic it is embedded in.

Social transformation and university community engagement

According to one stream of thought, wicked or persistent environmental and social problems (Avelino et al., 2019) demand deep social transformation, as “*mounting problems in the environment and/or society are rooted in fundamental features of society*” (Hopwood et al., 2005, 45). From this perspective, the superficial reform of social institutions is inadequate to meet the extent of the challenge, which is “*located within the very economic and power structures of society*” (Hopwood et al., 2005, 45). Instead, political and social action is needed, with researchers emphasizing grassroots actions outside centres of power.

In a similar way, Fraser (cited by Udvarhelyi, 2013) distinguishes between affirmative and transformative remedies in relation to counteracting social injustices. Affirmative remedies aim to correct inequitable outcomes of social arrangements without disturbing the underlying framework that generates them – seeking to change the outcomes but leaving processes untouched. Meanwhile, transformative remedies aim to correct inequitable outcomes by restructuring the underlying generative framework – seeking to change outcomes by changing the rules of the game (processes that generate injustices) (Udvarhelyi, 2013). For example, the welfare state can be considered as an affirmative remedy, being a system that distributes resources more evenly but does not change the political and economic structures that produce them. Conversely, initiatives that aim to transform the structures that produce injustices (e.g. social economy, participatory democracy) are transformative remedies. While the concept of affirmative remedies is in line with the reform approach to sustainability, the concept of transformative remedies is in line with the transformative approach to sustainability as conceptualized by Hopwood et al. (2005). We refer to this latter stream of thought as the transformative social justice and sustainability literature/theories/approaches.

Adopting a transformative perspective on social justice and sustainability also influences how we think about university community engagement. UCE is a “*process whereby universities engage with community stakeholders to undertake joint activities that can be mutually beneficial even if each side benefits in a different way*” (Benneworth, 2018, 17). Cooperation is usually carried out within the frame of one of the major missions of universities (education and/or research). It is characterized by co-determination: both academic and non-academic participants are able to influence the cooperative process. Mutuality is thus a definitive characteristic of UCE, implying not only mutual benefits but also mutual respect and cooperative decision-making. Thus, UCE is a value-driven activity that presumes strong democratic commitment.

UCE might involve a diverse range of university activities (Ćulum, 2018), including the organization and functioning of the university (e.g. institutionalizing UCE by providing resources and people/organizational units in charge or helping marginalized, disadvantaged residents to be able to successfully participate in higher education); university facilities; dissemination of scientific results; cooperative educational and research activities; and the community engagement of staff and students.

Hazelkorn (2016a) distinguishes three approaches to UCE. On one side of the theoretical spectrum, we find the **social justice perspective** to UCE. Accordingly, UCE is an activity that aims to fight social exclusion and injustices and support and empower marginalized and excluded social groups.²² This approach also incorporates global commitments and responsibility, including environmental sustainability initiatives. Here UCE partnerships are organized according to the aforementioned goals and such cooperation becomes a part of (is mainstreamed into) education and research.

On the other end of the theoretical spectrum, we find the **economic development perspective** (Hazelkorn, 2016a). Accordingly, the university is one of the major sources of social and economic growth, with the role of producing knowledge to support national competitiveness and success. The focus is on intellectual property, innovation, technology transfer and marketization, and entrepreneurial activities. This approach to UCE corresponds to the aforementioned conventional views on the third (developmental) mission of universities (e.g. Laredo, 2007), the (regionally) engaged university (Gál & Zsibók, 2011), or universities as “stakeholder organizations” (Bleiklie & Kogan, 2007).

Finally, in-between we find the **public good perspective**. This approach considers higher education as a public good (in an economic sense). This is why public financing of higher education is desirable, even though it is increasingly difficult to maintain this public good character in the age of neoliberal globalization (where university research results are commercialized and education obtains a labour market focus). However, such processes make it important for universities to strengthen their public good character through community engagement, including cooperation that supports both economic growth and/or social justice.

Out of these three perspectives on UCE, it is the social justice perspective that directly addresses the need for fundamental social (and environmental) changes, thus this is the one that

²² Hazelkorn (2016a) does not provide any operational definition of “marginalization”. For present study we use the definition of Tagai (2016), who refers to marginalization as a “socio-spatial process, which is a product of changing societal conditions that weaken linkages between individuals, groups and other parts of society and contributes to the decline of social groups and spaces” (Tagai, 2016, 60). Marginalized groups/residents are groups and people that are subjected to such processes.

is potentially able to meaningfully support the societal goals of social justice and sustainability according to the criteria set by transformative social justice and sustainability approaches (including challenging and changing power structures, political and social action with actors outside centres of power).

The concept of transformation within the UCE literature

Even though it is rather difficult to make any general and decisive judgment on the social impact of the social justice perspective on UCE (Benneworth et al., 2018), numerous authors emphasize the role of empowerment and transformation in relation to impactful UCE.

Himmelman (2001) distinguishes between **collaborative betterment** and **collaborative empowerment**. While the former refers to instrumental cooperation that is (1) controlled by powerful actors (in the context of UCE: university actors) and (2) does not aim to change existing power relations, the latter aims to transform existing power relations and thus to give power to the hands of powerless participants. Himmelman (2001) emphasizes that establishing cooperation of transformative character is an essential challenge in practice as participants are embedded in their everyday power relations and social positions and these are reproduced within cooperative processes.

Collaborative betterment is usually initiated by a larger institution (financer), it is orientated towards efficiency and follows the “more from less” paradigm. It is a typical expectation that the project become self-maintaining within a relatively short period in a financially efficient manner. This clearly implies the reproduction of dominant efficiency-centred social ideology and the reinforcement of existing power relations, where economic efficiency and financial sustainability have primacy over other aspects, thus the perspective of powerful socio-economic actors has primacy over societal goals. The result of this cost-effectiveness paradigm is that too many goals and tasks are set within projects, therefore community partners undertake too many tasks and become overwhelmed and overtired. Thus, projects remain short-term, small-scale “demonstrational projects” and institutional change at a larger scale is not realized. Control within such cooperation stays with powerful (often financing) actors, while the community’s role is service provision. This does not mean that such cooperation cannot be efficient in reaching certain discrete societal goals, but it does not fundamentally challenge existing power relations and inequalities within societies.

Meanwhile, processes of **collaborative empowerment** are usually initiated by the community. Goals are formulated on the basis and in line with community goals, institutional actors are involved as outsider actors, to change existing power relations. Therefore, such

collaborations aim to place power into the hands of community partners (stakeholders) and are characterized by community control. Whereas within collaborative betterment the community is an object of intervention, it is an actor fostering its own goals within collaborative empowerment. Finally, collaborative betterment and collaborative empowerment are not mutually exclusive categories but rather the two endpoints of a spectrum.

In relation to the UCE continuum, Clayton et al. (2010) determine three categories. Besides transactional and transformational relationships [that correspond to collaborative betterment and collaborative empowerment as defined by Himmelman (2001)] they also distinguish exploitative relationships: relationships that are one-sided to such an extent that they exploit either one or more parties. According to Clayton et al. (2010), the quality of relationships is important for participants for two reasons: a transformative relationship has intrinsic value for participants, and it also has an instrumental value as it might lead to better outcomes (outcomes that serve the goals of participants) in the long run. Just like Himmelman (2001), Clayton et al. (2010) emphasize that even though we tend to consider transformative relationships as the preferred form of relationships within a cooperation, transactional relationships might be just as desirable in certain contexts. Continuous expectation towards developing relationships into transformational ones (e.g. expectation of one party to develop and deepen relationships within a given cooperation) might also have a negative impact on relationships in case other partners do not have such needs.

Dorado and Giles (2004) approach university-community partnerships as dynamic relationships that might change over time. Within their model, the initial stage of partnerships is tentative engagement with the main characteristic/feature of partners learning about each other. The next stage is aligned engagement when partners look for common goals. This might turn into committed engagement, characterized by shared goals beyond the initial project. The fact that university-community partnerships evolve over time does not mean that all partnerships would attain the stage of committed engagement. Certain partnerships (relationships) do not acquire any depth as they are either terminated (as partners do not intend to cooperate after a while) or at a certain point, each party becomes satisfied with the depth of the cooperation.

As described above, there are significant similarities between models of university-community partnerships as all models distinguish between (1) more shallow, project-focused (established for and focusing on only a given project) relationships, which do not aim to change but rather strengthen existing societal power relations; and (2) deeper, long-term partnerships that go beyond given/discrete projects and focus on changing societal power relations. This

dichotomy is fundamentally related to the concept of power: whether we accept and maintain existing societal power relations within university-community partnerships or contrariwise, changing these becomes the main focus of UCE as we assume that this serves the goal of social justice and sustainability.

„Community” and „transformation” – under-conceptualized terms within UCE for social justice and sustainability

The models introduced in the previous section might be rather useful in reflecting on the usefulness and direction of UCE initiatives. However, two of the core concepts, “transformation” and “community” are used rather arbitrarily within these models. Below we reflect on a few related dilemmas before using the aforementioned models of UCE continuum to evaluate UCE’s “transformative” impact on the “community”.

Literature on UCE is often blamed for its homogenizing and abstract concept of “community”, while in practice communities are diverse entities characterized by power, interest, value differentials, and conflicts (Dempsey, 2010). The lack of practitioners’/ researchers’ reflection on this may lead to UCE reinforcing existing societal power relations instead of challenging and changing them. This critique might be valid both in relation to the (1) academic vs. non-academic relation (within UCE cooperation) and (2) within-community power relations (Málovics et al., 2021a, 2021b). In order to be able to evaluate the impacts of “working with the community”, we need to abandon the homogenizing and abstract view on communities and critically reflect on the concept of “participant/involved community” within UCE.

The concept of “transformation” also constitutes a challenge for the theory and practice of UCE. Transformation within the UCE literature is related to the transformation of power relations within the cooperation process itself: the empowerment of marginalized/voiceless partners/participants. However, as we demonstrated in the previous section, the term “transformation” refers to a normative concept in case we approach it from the perspective of social justice and sustainability. It refers to radical change and changing the rules of the game in a way that supports social justice and sustainability. This is not independent of (changing) societal power relations or power relations within UCE cooperation but it cannot be conflated with these. It is reasonable to assume that changing power relations, resulting in the enhanced (political) agency/capabilities of marginalized/voiceless communities are likely to lead to a different (less unjust and unsustainable) social functioning. Hence, transformation understood as changing power relations might also imply transformation understood as changing the rules

of the game for social justice and sustainability. However, there is no guarantee that such a clear-cut causal relation actually exists.

Linking back to the literature on UCE: what happens if transformed power relations do not actually contribute to transformative social changes but have an opposite impact (see e.g. Málovics et al., 2021b)? Should we talk about transformation in such cases or not? Who should define the meaning of concepts such as “transformation” in a democratic, cooperative process? What happens in case participants have diverging views (definitions) on such concepts? These questions need to be addressed and reflected on within each and every meaningful UCE process aimed at empowerment and transformation.

THE CASE

In order to empirically investigate the social impact of UCE, we use the case of our academic group, the Research Centre of the Faculty of Economics and Business Administration at the University of Szeged (for a detailed description of UCE activities of the group, see Málovics et al., 2022).

UCE activities are conducted in the city of Szeged (Hungary), a regional centre in South-East Hungary with approximately 160,000 residents, home to the University of Szeged. Szeged is a controversial modern urban space (Szirmai, 2014) characterized by the concentration of an educated and qualified middle-class and members of the economic, political, and cultural elite on one hand, and a variety of social problems, social inequalities, poverty, and marginalization on the other. Similarly to the Hungarian context in general, urban policymaking in Szeged has been characterized by a halt in the democratization of planning and serious limits to consensus building (Bajmócy, 2021), so the inclusion of social groups in urban policymaking is not automatic, especially in the case of marginalized groups.

Szeged is heavily shaped by the presence of the University of Szeged (SZTE) (Bajmócy et al., 2020). It is a prestigious institution in Hungary, where study and scientific fields are represented in 12 faculties and the Teacher Training Centre. The SZTE is one of the largest domestic higher education complexes where about 22,000 university students are enrolled. It is a research university active in 700 research areas with 19 doctoral schools and 110 PhD programmes. In an international comparison, SZTE is a mid-range university located in a non-metropolitan area. Mid-range universities are generally expected to have a weaker developmental role than “first-ranked universities” (Gál & Ptaček, 2011; Gál & Zsibók, 2011). However, differences in the ability to contribute to the traditional development agenda may not

have any implications on the ability to contribute to a transformative agenda. The literature does not provide guidance on this.

Within the university, our organizational unit (the initiator of UCE activities that we, the authors explore in the present paper), the Research Centre belongs to the Faculty of Economics and Business administration and employs 6 full-time colleagues – being a small organizational unit within a large university.

UCE activities were launched in 2011 within a **participatory action research** cooperation, which involved marginalized, stigmatized, extremely poor, and segregated Roma residents besides researcher-activists. Participatory action research is a research process that directly aims to support societal change: researchers (being activists at the same time within such processes) work together with local communities in a cooperative and action-orientated process that produces both academically and locally relevant knowledge. Numerous initiatives grew out of this process during the past decade, including: community centres and afternoon schools; supporting networks; facilitation of a slum desegregation process; quality-of-life interventions in local slums; and strengthening the political voices and interest representation capabilities of local Roma political leaders (also involving significant material and non-material support for Roma issues by the municipality) (see Málovics et al., 2021a, 2021b; Méreiné et al., 2021).

Community engagement activities of the Research Centre later extended to **other cooperative and action-orientated research processes**. In 2018, we (in this chapter, “we” refers to members of the Research Centre) started to work together with the local community of deaf and hard-of-hearing youth. Besides theoretical results, actions have also been carried out. University students volunteered in the local school for deaf and hard-of-hearing students within the framework of our service learning course (see below). In collaboration with the school community, we explored the situation of deaf and hard-of-hearing youth and their communities (parents, teachers, etc.). Finally, new cooperative and action-orientated research processes have been launched alongside the approach of citizen science.

Since 2017 **community engagement has also been a part of educational activities**, most of all related to our **service learning** course (see Juhász et al., 2021). Within this course, more than 300 students have already volunteered for more than 10 local non-governmental organizations (NGOs)²³, dealing mostly with vulnerable social groups. Besides, from 2019 on we have also started to implement the **science shop concept** in our educational activities, including our courses on corporate social responsibility and local economic development.

²³ We use the expressions of non-governmental organization (NGO) and civil society organization (CSO) as synonyms in present paper.

Students here work on research-based projects related to the concerns (research problems, objectives, and questions) raised by local NGOs and social entrepreneurs.

The aforementioned experiences also prompted us to critically reflect on the **inner functioning of the University and the Faculty**. By 2018 we had started to work on equality issues within the university. We produced a document that later served as a basis for the Student Equality Strategy of the Faculty. Later, other steps of institutionalizing equality within the Faculty followed: the Equality Committee of the Faculty was established and equality became a dedicated official task of one of the deputy deans. Initiatives related to equality and diversity took numerous forms: developing principles and protocols for a safe and non-discriminatory learning environment; rethinking the needs of special needs students; accessibility auditing of the Faculty building (in 8 accessibility categories); mental health counselling for students; and changing the internal and external communication of the Faculty in line with the idea of inclusion.

METHODOLOGY

As described in the previous section, we (the authors and other members of the Research Centre as well) are a part of a cooperative process that involves a diverse range of academic and non-academic actors with diverse goals. Our aim is to develop community engagement within our university to support transformative social change for social justice and sustainability while also producing scientific knowledge about these issues. Our non-academic partners seek to enhance their capacity to pursue their own goals (related to social justice and/or sustainability). Our (researchers') dual participant-observer (researcher-activist) role, being present as both researchers and as full participants (facilitators, activists, change agents) is related to two research approaches (methodologies).

First, we follow the principles of **participatory action research** as we aim to contribute to both scientific understanding and social change (see e.g. Málovics et al., 2021a, 2021b; Juhász et al., 2021) within a democratic, cooperative and action-orientated process. Second, our participation is also in line with analytic autoethnography: *“ethnographic work in which the researcher is (1) a full member in the research group or setting, (2) visible as such a member in the researcher’s published texts, and (3) committed to an analytic research agenda focused on improving theoretical understandings of broader social phenomena”* (Anderson, 2006, 375).

For the present study, we used analytical autoethnography to produce and analyze data. Thus, we

- acknowledge our complete member-researcher status by making ourselves (our roles) explicitly visible and reflecting on our own impacts on the process;
- have become involved in dialogue with external informants by using our own former scientific publications that address single elements of the UCE process as data sources besides our own autobiographic texts for our analysis; and
- commit ourselves to an analytic agenda: we use our empirical data to gain insight into the broader social phenomena of UCE and social justice and sustainability transformations.

We (the authors) produced autoethnographic texts for the present paper as part of a wider self-reflexive process related to the UCE process that we are involved in. Based on the focus of the theories used within the present study we highlighted the role of:

- goals and impacts of UCE (reform vs. transformation); and
- university-community relationships within UCE (transactional vs. transformative).

Autoethnographic texts were analyzed by one of the authors, through codes created on the basis of theoretical models (literature used for the present study). To secure validity, the other two authors carried out a “reality check” on this analysis, which was followed by common reflection (discussion) of results by all authors. Several colleagues from the Research Centre may be involved in various UCE activities, but the reflection (results and discussion) is based on the autoethnographic texts of the three authors.

RESULTS

Motivation, focus

For us, UCE is related to the **improvement of the situation of marginalized communities**, including both extremely poor, segregated, stigmatized communities and disabled people. More generally, it is related to **supporting social justice**.

During the past years, we have experienced an **enhanced set of expectations towards the university related to social responsibility, inclusion, sustainability, and equality**. These expectations are also manifested in accreditation standards and project requirements. However, we (the members of the Research Centre) started to carry out UCE initiatives before the emergence of this tendency. UCE in our case is thus a bottom-up process based on inner motivation rather than a top-down process based on institutional expectations.

Bottom-up UCE initiatives have been most of all inspired by personal and professional experiences, including e.g. initial experiences in meeting marginalized communities (visiting a segregated Roma neighbourhood); introducing science shop methodologies within university courses; attending events organized by local CSOs; establishing our own NGO; or participating at international conferences dealing with UCE.

“I still remember when I first entered the segregated Roma neighbourhood. I felt that there was no way out. It is impossible to break out from such extremely poor circumstances. This feeling was reinforced when I saw how the most vulnerable families lived... Later on, I felt many times that it has been a meaningful thing that we (researchers) cooperate with this community.”

Other important factors that reinforced our commitment to UCE were **actions carried out in cooperation with other academic actors and NGOs**, including e.g. photovoice projects in segregated Roma neighbourhoods; creating and using community spaces; supporting poor and disadvantaged families; establishing a service learning course and experiencing its impacts on local NGOs. These processes have also led to otherwise non-existent scientific observations and results.

“... we are within their life sphere, we also observe them in their own environment, we see them living and functioning there. This is the scientific strength of UCE (and the related participatory action research), this outstandingly high level of validity.”

Another fundamental factor that also influences the character of UCE activities is the **commitment of authors (UCE initiators) to the values of democracy, equality and participation**. These serve as the moral motivational basis and background of UCE.

Participation within UCE

Ongoing UCE activities were initially **almost exclusively initiated by academic actors who also provided the frames** for these activities in the form of university courses, research processes or projects. This is not necessarily a problem (disadvantage) as *“participants have no problem with using these projects as frames of cooperation in case the cooperative process is not strictly attached to but rather extends beyond the time frame of projects”*.

In case of longer run relationships, sources of initiation have become more diverse: NGOs can also initiate cooperation in a diverse range of issues (from securing infrastructural background to events to research cooperation).

“In my view it has been changing recently and they (non-academic partners) will mobilize the university besides/behind their own initiatives. A prerequisite for this was that the university

has been opened up for them during the past few years, so trust could emerge and bases for cooperation have been fixed.”

Goals and types of cooperation are usually finalized by university actors. It is us researchers that usually make the final decisions on the content of UCE, even if such decisions are made on the basis of our diverse and complex interactions with community partners, inspired by their values and needs (as perceived by us). Concerning the goals of UCE, it is also important to acknowledge that

- we (the authors as academic participants) also have our agenda within UCE that we feel important to include;
- a part of the frames (e.g. the structure of university courses or academic expectations to publish) of UCE are also fixed for us academic partners, which on the one hand demands compromises regarding the values of being bottom-up, participatory, and inclusive, but on the other hand it provides resources (be it money or the time and energy of students or staff) to support the cooperation and to realize mutual benefits for participants; and
- whatever the frames that we work with within UCE, initiatives always follow our intentions to support the democratic, autonomous, and equal participation of non-university partners (based on the values of democracy, participation, and social justice).

Opportunities for participation (influencing the UCE process) are not only **uneven** in an academic vs. non-academic (CSO/NGO) dimension but **also within non-academic partner communities**: certain community members participate in UCE activities and represent their interests and values in an autonomous manner while others do not. **Power and capabilities are unevenly distributed within communities**. There is obviously not a single initiative where we are able to cooperate with all community members (e.g. all Roma people or all physically disabled people in the city) with the same intensity, therefore, we usually cooperate with NGOs/CSOs that (implicitly or explicitly) appear as community representatives (not a rare situation within UCE in general). However, working with representatives might mask significant inner-community hierarchies and impacts.

“I remember when we carried out our photovoice project in 2011. We analyzed photos with a group of women led by the local usurist. At that point, I was not aware that no one would share their opinion in case it contradicted the usurist. Thus, the usurist became a community representative here and dissenting voices did not find their way to the researcher... Representation is a complex situation that has to be handled with extreme caution in case we are to establish a meaningful participatory process based on equality... After a while, people

started to remark among themselves that it was not how the usurist had said it earlier... But to reach that point, you need a regular, longer term process that also includes actions that support community members so that they also benefit from it. And you also need personal face-to-face meetings with single community members instead of holding exclusively group meetings with within-community power-holders also being present.”

Establishing an equal relationship with the most marginalized is probably an impossibility due to the enormous social and power differences that necessarily enter into the relationship.

“There are examples when we are able to establish relatively equal relationships. With representatives it is easier to move to this direction, mutuality works out with them. But if we are honest, with the most marginalized (e.g. the most vulnerable Roma families) it is more difficult as they have nothing to give. This is not at all a problem for me personally, but it necessarily puts a power asymmetry in such relationships and there is nothing to do against it, so we have to admit and accept it.”

The diversity of participation of non-university actors within UCE initiatives is also explained by the diversity of activities and partners’ needs.

There are NGOs that have become involved in UCE activities as partners only recently (for only a few months). Other partners entered into contact with us occasionally, related to initiatives of interest to them. Some partners are only interested in cooperating within service learning – here partners are fully autonomous in making decisions about volunteering opportunities they offer to students.

On the other hand, *“There are actors who stay with us for numerous years and started to connect to us in numerous ways, I suppose that this relationship offers them something that makes them committed.”* Members of the “Common Signs” research groups are committed as we (one author and other members of the Research Centre) aim to create a supportive community within the initiative that provides help for members in these challenging times (e.g. the epidemics and the nearby war). Some partners have been with us for the past 5 to 10 years. These are often trusted, friendly relationships, we can count on each other: *“When her car broke down and she called me to look after her students as she would not make it on time... such occasions build trust.”* Communication within these relationships is honest to an extent that partners can directly express their heavy critique towards our initiatives from time to time (e.g. the fact that the faculty building gained an official and popular accessibility certification does not make the Faculty more accessible for disabled people at all).

Institutional recognition of UCE

Issues of **environmental sustainability and social justice** have gained significance within the university only in the past few years. In parallel, **our research group has also become more powerful** within the faculty: two of us have become full professors, two members of the Research Centre have defended their PhDs and become associate professors and the Research Centre has also hired a new colleague. Meanwhile, **the topic of equality has become institutionalized within the Faculty**, with our research group taking the lead in the process.

Faculty members outside our research group acknowledge our UCE activities to an even greater extent. The faculty is open to organizing non-conventional (cooperative, participatory) educational and research processes and equality initiatives on-site that question the superiority of conventional academic knowledge and thus challenge existing, taken for granted power relations. Colleagues that share similar values have also started to initiate UCE-like and equality-focused activities. On the other hand, the faculty has to date appointed very few extra resources to support UCE, and there have only been rather minor steps towards the institutionalization of UCE (instead of significant ones such as making UCE a part of staff performance evaluation or establishing a Faculty CE Centre). Thus, UCE has not become a part of the faculty's mission, UCE initiatives are still mostly carried out on a voluntary basis by enthusiastic colleagues.

As our Faculty is only one of the twelve faculties of the **University**, and we are unaware of any impacts that our UCE work has produced beyond the Faculty so far, it is safe to say that we are far from any significant level of institutionalizing UCE at the level of the organization.

The social impact of UCE

Whether UCE has managed to contribute to any transformative changes or not is a complex issue. In terms of **environmental sustainability**, **UCE does not have a significant impact**. The main reason for that is the lack of green NGOs as partners, as such NGOs are more or less absent in the city, with the exception of one or two nature conservation organizations as potential but not yet reached partners.

Beyond that, a number of **significant changes have been underway**:

- opening up the university to NGOs while the central (state/government) rhetoric is openly anti-civic;
- the fact that we (authors and other colleagues in the Research Centre) have been in continuous cooperation with more than 10 CSOs for over 5 years indicates that “CSOs

have been coming for long years now, students as well, and in some cases ex-students who started volunteering for a CSO within the service learning course return as representatives of the given CSO – you can see that this is indeed good for both students and CSOs”;

- interest representation capabilities of certain marginalized communities have increased, e.g. *“the segregated Roma neighbourhood has gone through significant changes, people do not ask for support anymore to receive fibre or food, housing rights have been settled, residents have legal electricity network connection and there is a bathroom in the community centre where people can take a bath... representatives have developed in a way that they have managed to solve such problems of the community by now... this makes the daily lives of people a lot easier”.*

However, **many of these changes are contradictory in nature**. The recognition and support of local Roma representatives by the city council limits opportunities for challenging the local political establishment (Málovics et al., 2021b). Even after long years (a decade) of cooperation, problems in the life of marginalized (stigmatized and extremely poor) residents are reproduced from generation to generation, new generations are not able to break out of their oppressed situation (e.g. the poverty trap). The UCE cooperation has still not managed to change local policies (e.g. housing or transportation policies) in a transformative direction (Málovics et al., 2021b; Méreiné et al., 2021). We are unable to estimate the direct community impacts of the service learning course due to a lack of information as it is not us personally but students who are present in the life of marginalized groups, through community representatives (thus we are unaware of power dynamics within these communities and service learning’s impact on these). Seemingly promising steps forwards (development) in relation to faculty equality initiatives might result in false satisfaction reinforced by projects and accreditations. Hence, the majority of inner and outside structures are left untouched, even though meaningfully more equal access to educational materials and physical spaces would require fundamental changes in educational activities and also in the area of existing physical infrastructure (faculty building, classrooms, programs, etc.).

The reasons for such difficulties are related to the fact that UCE aims to solve problems (1) that are more or less impossible to address through small-scale bottom-up initiatives, even if participants dedicate considerably more time (their entire life) to these than we do (because of professional and personal reasons/duties); (2) that are difficult to solve even in the case of governmental/state commitment (and dedicated financial resources) to do so; and (3) where major social institutions are dysfunctional in supporting the most vulnerable (e.g. the education

system does not support the extremely poor and stigmatized or the physically/mentally disabled as in a neoliberal, efficiency-orientated economic environment employers are not interested in employing less productive disabled people).

DISCUSSION

UCE and transformation – partnerships

The present UCE process might be described as being somewhere in-between the ideal types of collaborative betterment and empowerment (Himmelman 2001), where both transactional and transformational kinds of relationships (Clayton et al., 2010) are present.

Cooperation in most cases is initiated by academic participants – **a situation that is characteristic of both collaborative betterment and transactional partnerships.** Though we (academic participants) do not shape and organize cooperation based on the cost efficiency paradigm and lack any exploitative intentions, still, our academic position, projects, and arrangements (e.g. courses) that provide the background for cooperation might lead to efficiency-orientated impacts. We need to comply with efficiency-orientated (indicator-orientated) project requirements; we need to regularly publish in scientific journals; we cannot transform most of our courses according to the idea of UCE; we do have other duties that are well aligned to the dominant efficiency-and quantity-orientated paradigm and do not question the prevailing power relations (e.g. administrative duties, large-scale conventional classroom courses, conventional research duties, tender applications, etc.).

Despite being against our intentions, and mostly as a result of the organic process of the development of UCE, we (academic actors) have taken numerous duties on ourselves in relation to UCE and invited our most committed partners to participate in numerous cooperative processes. The result is that initiatives often stay smaller-scale demonstration projects and participants are overloaded with tasks, a situation characteristic of collaborative betterment. This way energies that could be concentrated on supporting transformative changes in a given area (topic) might become dissipated, especially when we (academic actors) have other duties and needs (e.g. work-life balance, material security) besides UCE.

On the other hand, goals of UCE are co-defined by academic and community partners, the latter having the autonomy and power to shape the content of cooperation. Community partners

participate in UCE as subjects fostering their own goals – a situation characteristic of **collaborative empowerment**.

Thus, we agree with Himmelman (2001) that collaborative betterment and collaborative empowerment are not mutually exclusive, and the implementation of a UCE process reflecting the idea of collaborative empowerment is a significant challenge for academics. Theoretical models that deal with the nature of partnerships within UCE raise concerns that indeed imply relevant challenges for UCE practice.

Besides, **the quality and nature of partnership within UCE might change from partner to partner; activity to activity; and from time to time** as described by Dorado and Giles (2004). As a result of this diversity, the role of academic actors (being usually the powerful ones within UCE) is to go as close to (or stay as far away from) partners as they demand. This might serve as a basis of equal relations that respect the autonomy of community partners.

We must also keep in mind that **even though in theory UCE is about “working with the community”, in practice it often implies that academic actors cooperate with NGOs/CSOs as explicit or implicit community representatives**. Perceiving these two as equal categories would lead to accepting the homogenizing and abstract concept of “community” instead of acknowledging that in reality communities are diverse entities characterized by power, interest, and value differentials and conflicts (Dempsey, 2010).

Establishing equal relations and common decision-making in each phase of UCE is especially challenging if we are to carry these out within whole communities (e.g. all extremely poor Roma residents, all local people living with a certain disability) as such communities are usually large in number, rather diverse and have their own inner power relations that determine their functioning.

We obviously do not have the opportunity (energy, time etc.) to cooperate with every single community member, and it might seem less challenging and more effective for academic actors to share power (cooperate with) community members (representatives) that possessed a higher level of autonomy (capability) already before entering into any UCE initiative, i.e. having the capacity for self-organization. However, this way being fully aware of and dissolving potential within-community (oppressive) power hierarchies and interest and value conflicts is an enormous challenge (if possible at all). How can we be sure that “community representatives” do not represent some particular interests instead of community interest, especially in the case of antagonistic within-community (value and/or interest) divisions/conflicts? These organizations, on one hand, indeed function as a bridge between the given community and

academic actors and thus (as we were able to experience it) play an important role in the lives of community members. However, such community representatives are also embedded in their everyday power relations that might be reproduced (reinforced) by UCE.

UCE and transformation – social impact

Based on the theoretical concepts used in the present study to operationalize transformation as social impact we can state that **numerous signs/characteristics of social transformation appear within the UCE process**. The process is in line with Hazelkorn's (2016a) social justice perspective on UCE, as its goal is to empower marginalized communities and to support social justice and environmental sustainability, and these goals are manifested in numerous activities related to education and research.

We have also reflected on the transformative nature of activities (or its absence) embedded within the UCE process. We also emphasize the need for supporting grassroots initiatives and almost exclusively work with communities and NGOs/CSOs outside power centres – in line with Avelino et al.'s (2019) and Hopwood et al.'s (2005) approach to social justice and sustainability transformation.

However, **transformative changes are extremely difficult to realize in practice**. Moral and practical expectations of “being transformative” often imply that we have to fight (work against) dominant interests, structures, institutions, solutions, and existing inequalities in power. Any UCE initiative of transformative intentions faces the enormous inertia of dominant political and economic structures (including rules, interests, and institutions) and cultural habits that are only possible to change (start to transform) to a limited extent in rather small steps through single UCE initiatives.

All the more so since **the concepts of “change” and “transformation” might have diverse meanings for different UCE participants**. Even though all UCE participants work for social justice and empowering the marginalized, this does not mean that all actors aim to radically change current structures. Empowering marginalized communities without affecting existing socio-economic structures might be just as attractive to numerous UCE participants: *“It is possible that not all our partners want to put an end to capitalism.”*

Equal relations within UCE vs. social transformations: process vs. impact

Enhanced (political) power of NGOs/CSO as representatives of marginalized communities might lead to significant social changes (in the life of the community).

However, this does not necessarily generate significant change in relation to structures, institutions, and solutions: processes that (re)generate social injustice and a lack of environmental sustainability. The fact that some of our partners are better able to materially support the local poor and disabled might indicate a significant improvement in the life of numerous people on one hand, but it does not imply that we have managed to change neoliberal economic policy and efficiency-orientated labour markets.

Here, the **distinction between procedural and distributive justice** (see e.g. Tyler, 2000) **may prove valuable in supporting critical (self-)reflection concerning the (lack of) transformative impact of social-justice orientated UCE.** While procedural justice is about the fairness/just character of decision-making procedures, distributive justice refers to fair outcomes, e.g. the distribution of resources. In relation to UCE, procedural justice is related to the quality of cooperation (e.g. which parties were actually able to influence decisions), while distributive justice is related to outcomes (e.g. whose welfare/well-being was supported by UCE).

Procedural justice is clearly related to the transformation concept of UCE, focusing on the quality of relationships within UCE. The presence of (a higher level of) procedural justice indicates a more transformative process according to UCE as the concept of transformation here relates to the quality of relationships and eliminating hierarchies and uneven power relations within UCE. Our observations show that enhanced procedural justice within (the transformative character of) UCE might indeed frequently lead to increased distributive justice in case UCE partners use their increased capacities to support their communities (as is usually observed in our case). However, such a change in itself clearly stays within system boundaries – it cannot be evaluated as social transformation from the perspective of social justice and sustainability thinking as it does not question and challenge the “rules of the game” (existing hierarchies, power relations, etc.).

A more difficult question is whether increased procedural justice within (the transformative character of) UCE, i.e. the emergence of empowered community partners (CSOs, NGOs, representatives) leads to (1) increased procedural justice within the communities represented by UCE partners (whether UCE participant community partners share their power within the community or not); or (2) increased procedural justice on a wider societal scale (e.g. more just macro level decision-making processes). Our results provide scant evidence on these happening. All this indicates that transformation (procedural justice) within UCE, even if it contributes to societal reform (distributive justice), does not automatically indicate a step

towards societal transformation (changing the rules of the game beyond the UCE cooperation itself).

Finally, **there might be a trade-off between the environmental and social dimensions of transformation.** We have seen how global crises (including the COVID-19 pandemic or the Russian war in Ukraine) tend to overshadow the challenge of global climate change, while resource utilization trade-offs might also appear on the local level. *“Does the city council really not allow us (the extremely poor) to collect fallen twigs and branches from the local forest as they want to leave those there for insects? Are insects really more important than people?”* Any decision on such issues supports one particular aspect (social justice vs. environmental sustainability) at the expense of the other.

CONCLUSIONS

Within our paper, we have shown that UCE initiatives carried out according to the social justice perspective on UCE might conform to transformative social justice and sustainability theories by emphasizing the need to support grassroots initiatives and work with communities and NGOs/CSOs outside power centres. However, even though the social justice perspective on UCE might be promising in supporting significant positive changes in the life of marginalized communities, there are still numerous factors that challenge its transformative potential.

First, it is difficult to establish transformative (equal) relations among academics and communities, as everyday power relations necessarily also enter into UCE and academic frames (expectations, functioning) are often organized according to the efficiency-paradigm that undermines the values of participation, democracy and equality in UCE (while also providing valuable resources). Furthermore, the quality and nature of partnership within UCE might change from partner to partner; activity to activity; and from time to time – not all partners demonstrate the need for too close (transformative) relationships. The role of relatively powerful academic actors here is to go as close to (or stay as far away from) partners as they demand. Such an attitude serves as a basis of equal relations that respect the autonomy of community partners.

Second, establishing equal relations and common decision-making in UCE with whole communities is extremely challenging as communities are usually large in number and rather diverse. As such, it might seem less challenging and more effective for academics to share power (cooperate) with those community members that possessed a higher level of autonomy

(capability) already before entering into UCE initiatives: to work with implicit or explicit community representatives (CSOs/NGOs). However, this way being fully aware of and dissolving potential within-community (oppressive) power hierarchies and interest and value conflicts is an enormous challenge (if possible at all) and the community impacts of UCE might even be contradictory as in reality communities are diverse entities characterized by power, interest and value differentials and conflicts.

Third, transformative intentions and characteristics (e.g. working bottom-up, outside power centres, etc.) do not necessarily imply that transformative social impacts are realized. The reason for this lies in the inertia of dominant social/economic/political structures and institutions on one hand, and the potentially divergent conceptualization of “change” and “transformation” of UCE participants on the other.

Finally, the enhanced (political) power of NGOs/CSOs as representatives of marginalized communities might lead to significant social changes (in the life of the community), but it does not necessarily generate significant changes in relation to structures, institutions, solutions, i.e. processes that (re)generate social injustice and a lack of environmental sustainability. Thus, transformative relationships (as understood in the UCE literature) do not necessarily lead to transformative changes (as conceptualized in the transformative social justice and sustainability literature), especially given the possible trade-off between the environmental and social dimensions of transformation.

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ASSESSING SELF-DRIVING VEHICLES AWARENESS IN HUNGARIAN REJECTING GROUPS

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Abstract

Autonomous vehicles can be seen as a radical innovation that develop innovative aspects in the mobility system, which can affect every part of our lives. Numerous studies have examined the attitudes of consumers toward autonomous vehicles with different models. It is striking that several models used questionnaires, and the empirical investigation of the social aspects of the issue of self-driving cars is complicated by the fact that people have little or no direct experience in Hungary. Research has demonstrated that there are certain groups that are more critical of technology. The aim of the research is to examine the attitudes of Hungarian people towards autonomous vehicles with a special focus and methodology: focusing on „rejection groups”, we perform a series of analyses. The results obtained draw attention to the impact of social processes on innovation. The study contributes to a deeper understanding of the Hungarian population's attitude toward autonomous vehicles and our goal is to enrich further research with our results.

Keywords: autonomous vehicles, rejection groups, consumer perception

INTRODUCTION

Numerous studies have been conducted in the field of trust, suggesting that managing and continuously improving mutual trust between self-driving automotive systems and users is a primary challenge that professionals face when trying to promote the use of fully self-driving systems intelligence (Beer et al., 2014; Choi & Ji, 2015; Koo et al., 2015). Technological development greatly affects urban mobility (Miskolczi et al., 2021b). In recent years, great strides have been made in the development of autonomous vehicles (AV).

The interpretation of the challenges posed by self-driving vehicles is mainly based on the various levels of automation. According to the professional association Society of Automotive Engineers International (SAE), today's technological progress within the automotive industry is so rapid that it requires the development of technical standards. For this reason, SAE (2014) created a standard that defined degrees of automation at six different levels. With the help of this standard method, it is possible to group the various levels based on the relationship between human intervention and the control technology of one's own vehicle. In the first three levels,

the human driver is still present behind the steering wheel, who monitors and constantly checks and controls the driving. From level 3 onwards, the automated driver system monitors the immediate environment around itself during the journey.

However, research on consumer perceptions and attitudes toward AVs has lagged behind technological development. Some research has predicted that age as well as gender may influence consumer propensity to drive self-driving vehicles, however, none of these studies have explained these effects in sufficient depth (Howard & Dai, 2014; Rice et al., 2019; Sener & Zmud, 2019).

Recent research suggests that in addition to low levels of social acceptance (Hulse et al., 2018; Deloitte, 2020), its diversity may pose a significant problem, even though the latter is relatively little discussed in the international literature. Certain well-identified social groups, such as women, the elderly, those with a lower level of education, or those living in rural areas, are significantly more critical of AVs (König & Neumayr, 2017; Audi & Ipsos, 2019), which can have a noteworthy impact on self-driving technology market penetration.

Influencing the behavior of the critical, contradictory segment is not feasible with general strategies in many cases. This is predominantly the case when the psychological and neurological backgrounds of each segment differ significantly. However, the attitudes of men and women or the young people and the elderly cannot be shaped by the same interventions.

In addition to the benefits of self-driving vehicles, consumer acceptance can be influenced by several other factors. Shariff et al. (2017) suggest that factors hindering the social acceptance of these vehicles are of a psychological rather than a technological nature. The results of a study conducted in 2020 well illustrate that autonomous mobility, and thus a key long-term goal for self-driving vehicles, is to reach people who do not drive or drive less: including children, the elderly, women, or those who are unable to drive for some reason (Havlíčková et al. 2020). According to this research, the gap between technological readiness and social acceptance creates a paradox in the context of autonomous mobility, i.e. one of the biggest advantages of self-driving vehicles is most rejected by those who could benefit significantly from the use of AVs.

Both Slovic (1999) and Kahneman (2019) have explained in their research that society is constantly forming opinions in all areas and making judgments that are accompanied by the expression of our emotions. Moreover, it is proven that we shape our decisions and opinions on a given topic according to our emotions (Varga, 2016). Our emotional stimuli during certain processes and activities have an impact on our perceptions of emerging risks and opportunities (Kahneman, 2019).

THEORETICAL BACKGROUND

The technological development of self-driving vehicles is much more advanced than most of society would assume (Lukovics et al., 2020). The market penetration of self-driving vehicles highly depends on consumers, their preferences, and fears. Noy et al. (2018) explain that without consumer acceptance, the benefits of self-driving vehicles cannot be realized. If AVs become the norm, many opportunities can be attributed to their collective use, but the potential social benefits can only be achieved if they are accepted by a critical mass of society. Under optimistic scenarios, we cannot ignore the pessimistic, unintended consequences. We need to keep in mind that we have little information on which factors influence acceptance or rejection the most, and we must not forget that end-user acceptance is critical to widespread adoption. Widely used models are available to study technology acceptance, the most used in the research reviewed below being the Technology Acceptance Model (Davis, 1986) and the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), or the diffusion of innovation theory (Rogers, 2003).

The assessment of the expected social impacts of autonomous, self-driving vehicles in the literature shows a mixed, often contradictory picture. Acceptance of self-driving vehicles is limited among users. Car manufacturers need to consider trust requirements in the early stages of self-driving car development (Hakimi et al., 2018). According to a study by Carlson et al. (2014), the biggest challenge in the coming years and decades will be to attract the attention of average users, road users – who have high expectations of fully self-driving cars globally.

Until 2014, we retrospectively reviewed research related to the adoption of self-driving vehicles aiming to explore social attitudes internationally. Regarding autonomous vehicles, exploring empirical studies of social attitudes highlights the fact that many of them used the methodology of the questionnaire survey, and in some studies the segments that are more negative in terms of technologies can often be identified. However, questionnaire surveys often do not measure what we truly want to measure, as most research participants cannot even imagine AVs, having never physically encountered the technology. The majority of studies related to self-driving vehicles focus mostly on technical or natural science fields in Hungary, however social science research on the topic has recently become increasingly important (Kassens-Noor et al., 2020; Miskolczi et al., 2021a; Kovács & Lukovics, 2022).

Thanks to advances in technology, we can not only reap potential benefits but also cover several challenges that are yet to be seen. According to Braun (2020), revolutionary digital technologies that are already integrated into the transportation system may be able to crowd out

members of society from making judgments and making decisions. To all this, Braun adds that we are clearly faced with a wealth of potential opportunities that could lead to a more environmentally friendly, livable, and much more organized human-environment relationship. These subjects have the greatest impact on all the expected reforms.

Organized into a system, AVs can open extreme perspectives on mobility, the consequences of which will affect almost every area of ordinary citizen life. They can change our travel habits, create new business models, build new networks, open new city opportunities, and enrich our lives with new daily routines (Lukovics et al., 2018; Palatinus et al. 2021), therefore, it is a non-negligible topic that needs to be addressed.

Research on attitudes toward self-driving vehicles identifies segments that are more dismissive. In the case of negative, critical opinions about AVs, women (Schoettle & Sivak, 2014; Kyriakidis et al., 2015, König & Neumayr, 2017; Hulse et al., 2018; Liljamo et al., 2018; Audi & Ipsos, 2019; Pettigrew et al., 2019; Havlíčková et al., 2020; Raue et al., 2019; Wang et al., 2020), the elderly (Schoettle & Sivak, 2014; König & Neumayr, 2017; Hulse et al., 2018; Liljamo et al., 2018; Audi & Ipsos, 2019; Pettigrew et al., 2019; Havlíčková et al., 2020), those on lower incomes (Kyriakidis et al., 2015; Audi & Ipsos, 2019; Wang et al., 2020) those living in the countryside (König & Neumayr, 2017; Liljamo et al., 2018) parents with small children (AAA 2016) and those with no or less driving experience stand out (Audi & Ipsos, 2019; Raue et al., 2019).

However, the empirical examination of social aspects is greatly hampered by the fact that people have very little direct contact with these types of vehicles. Consumers receive information mostly from news portals and public opinions, and their effects can be felt to a large extent in consumer attitudes.

Tóth (2019) explains that the car system in Hungary is not comprehensive and decisive in its current state, owing to which the introduction and social acceptance of new innovations presumably differs from that in other countries. The empirical investigation of the social aspects of the employment of self-driving cars is undermined by lacking or insufficient direct experiences in Hungary, allowing us to capture only the development and current status of public opinion shaped by public perceptions (Csizmadia, 2019), moreover, the lack of self-driving systems can lead to high rejection rates as people do not meet the technology. Csizmadia (2019) notes that the subject of self-driving vehicles is an extremely exciting topic, not least due to the social, psychological and sociological aspects of the introduction of machines making

decisions for us. Tóth (2019) notes that half of the Hungarian households do not have their own car, presumably leading to high rates of inclusion in the new mobility system.

DATA AND METHODS

The research is primarily an idiographic approach, an inductive, exploratory research, as it seeks to gain insight into underlying causes, opinions, feelings, and possible problems. The aim of the study is to *examine the attitudes of Hungarian society towards autonomous vehicles with a special focus and methodology: we performed a series of analyses that included visual experiments with a focus on rejection groups.*

Qualitative data combined with quantitative tools were used to (Tab. 1) describe the acceptance of autonomous vehicles in Hungary. The aim of the study is to provide a basis for the development of appropriate strategies by understanding the characteristics of the rejection segments related to self-driving vehicles in Hungary. To this end, we conducted a *netnography* using nearly 5,500 posts on online platforms. The qualitative information derived from this, supplemented with quantitative tools. We surveyed which segments were more negative toward AVs with an *online questionnaire*. This was supplemented by additional qualitative methodologies, such as *emotion research through in-depth interviews*, which examined immediate emotions and reactions in the case of rejection groups during a video projection. Finally, we conducted with rejecting subjects a *virtual reality experiment through in-depth interviews*. The study's significance lies in that through the qualitative collection of user-generated online content from netnography we were able to categorize consumers according to their trust and curiosity, allowing us to learn more about the reactions and opinions of the rejection groups.

Table 1 Applied methods and main expectations

Applied methodology	Objectives, main expectations
Netnography	Analyzing posts and comments on articles related to AVs on various domestic portals on Facebook, with the aim of exploring attitudes, then creating categories from the comments.
Online questionnaire	Exploring and examining the rejection segments in Hungary, and studying the attitudes of these groups in relation to self-driving technology.
“Emotion research” through in-depth interviews	Exploring the attitudes of rejecting groups on the basis of stimuli evoked by a short film and detecting and understanding the subjects' emotions about AVs.
Virtual reality simulation through in-depth interviews	Introducing a virtual reality driving experience for rejecting groups to gain a better understanding and a deeper insight into the operation of AVs

Source: own construction

Netnography

The media can greatly distort our judgments and be of paramount importance in our decision-making. Based on this, we can categorize certain things, finding ourselves in the face of prejudice. Netnography can be well applied to map the structure and mechanisms of different online communities (Kozinets, 2010), based on information from online platforms. Netnography involves both the observation and coding of online content, as well as the analysis of content. In the case of netnography, researchers look for logical patterns through categorization. In the analysis of communication in online communities, it is possible to draw conclusions not only about the examined text but also about the context of the text (Krippendorff, 2018). In observational netnography, the researcher is present as an outsider, an “observer” but will not be a member of the community (Kozinets, 2007).

Identifying the combinations between the content and visual elements of the posts can help to explore the connections between the posts and their activating effect. Analyzing the posts can help us understand user opinions and consumer attitudes. The weakness of netnography is that it is difficult to analyze demographically, in addition, the Facebook algorithm prefers news and comments which have a negative attitude toward topics. Therefore, the online platform itself can influence the type of comments.

The Crowd Tangle platform was used for the netnographic analysis. Based on the aggregated data of 2021, out of the 10 most popular pages in Hungary²⁴, the posts of *24.hu*, *index*, *origo*, and *hvg* (including *Autó* and *Tech*) were included in our analysis. We also considered it important to examine the posts of news portals that put vehicles in the forefront, so the *Totalcar* and *Vezess* portals were also analyzed. The analysis covers a one-year period, and we reviewed the articles related to AVs posted before April 1, 2021, by searching for the keyword “self-driving,” which received 154 hits. We removed the posts that no one commented on. A total of 5,476 comments were analyzed during the study period.

Online questionnaire

The development of the online questionnaire is based on a poll conducted by Schoettle & Sivak (2014). The number of answers to the series of questions was 1,005 at the Hungarian level. We distributed the online survey using social media platforms. The main topics focused on the following: general opinions about AVs, the expected benefits of self-driving vehicles, and possible concerns. The next block focused on issues related to possession, ownership and

²⁴ https://nmhh.hu/cikk/220235/Internetes_kozonsegmeresi_adatok_2021_I_negyedev

willingness to pay, and last but not least, we examined the time liberated instead of driving. We closed the questionnaire with demographic questions. We asked a total of eleven questions which were multiple-choice questions. The results of the questionnaire were analyzed using a chi-square test, which is a statistical test that can be used to analyze the relationship between variables. Our aim was to detect whether there is a significant relationship between some variables. The test can be used for nominal or ordinal measurement level variables.

The gender distribution of the respondents is as follows: 57.2% are male and 42.8% are female. In terms of educational attainment, 50.3% of the subjects in the research have a lower than a bachelor's degree. The average age of the respondents is 29 years, and the median is 24 years.

“Emotion research” through in-depth interviews

We conducted a series of special in-depth interviews during which we projected a short video, edited by us, to our subjects belonging to the pre-identified rejection segments. We kept pausing the video and asking about their emotions. Audiovisual stimuli are the most accepted method for evoking basic emotions, as they can elicit very similar stimuli from humans (Fernández et al., 2019; Siedlecka & Denson, 2019), which is why we consider them to be a useful method.

The video featured an AV in increasingly complex traffic situations. We assessed how the level of trust changes in each situation. The experiment involved 34 people who were more dismissive, half of whom were men and the other half women. Participants ranged in age from 20 to 66 years, while their management experience ranged from 0 to 45 years.

Virtual reality simulation through in-depth interviews

The increasingly common use of virtual reality is not only a result of technological advances but also of a paradigm shift in research. Virtual reality expands our perceptions of our immediate environment and our available experiences with information that is not available to us or may be difficult to access. With the help of virtual reality, we can update our knowledge, assisting our everyday judgments and decisions.

For the virtual reality simulation, we used one of the applications of Wind River Automotive Solutions. The Wind River app provides a unique virtual reality experience that puts the user in an entirely self-driving car, which allows them to experience what it feels like to drive without human intervention. During the implementation of the experiment, we took care to ensure that the experiments supplemented with in-depth interviews take place in person, as body language

and facial expression can also contribute greatly to a deeper understanding of attitudes and feelings. In the choice of the location, our main priority was to conduct the experiment in a relaxed atmosphere.

During the experiment, a smartphone-compatible virtual reality goggle was attached to the subjects' heads, through which the self-driving car simulation was projected. Meanwhile, a blood pressure monitor was installed on each participant to measure any increase or decrease in blood pressure and heart rate. In the experiment, when the subject turned his head, he could see a part of the car and the environment immediately surrounding the car.

The experiment involved 16 individuals selected from the rejection segments. The application was voluntary. Half of the participants were male, and the other half were female. The age ranged from 23 to 72 years.

RESULTS

In the case of *netnography*, different categories (Tab. 2) could be formed according to the degree of trust and curiosity after examining each post. Respondents were categorized according to their level of confidence in self-driving vehicles and their interest in the technology. Based on these, *rejectors* (52.3%), *doubters* (28.7%), *conformists* (11.2%), *experts* (4%) and *enthusiastic fans* (3.8%) or “early adopters” could be distinguished. Powerful characters have developed among members of the communities. The contents of the posts varied over the one-year interval. It can be clearly stated that the strongest statements were expressed in the case of accidents involving self-driving vehicles and in the case of writings organized around already known brands.

In the case of enthusiastic fans and rejectors, a dedication was observed, so in one post they constantly commented on previous objections, reacting to those positions that were unacceptable to them. They commented in detail on the subject. In the case of enthusiastic fans, they felt it was their mission to convince the rejectors, while in the case of the rejectors, complete disappointment was felt.

A striking phenomenon was that the rate of consumer comments was much more intensive, and the number of reactions was higher in the case of posts reporting negative events (accidents, hits, corpses). We could not ignore the negativity bias theory, which shows that negative stories on Facebook are more viral because evolutionary people are more likely to react to negative events. Thanks to the spread of the Internet, any civilized person across the globe can easily obtain this information, causing them to be shocked by what they see, hear, and read. The

emotions that develop within us in relation to media content can vary depending on how far a particular tragic event has taken place, both in space and time.

Table 2 Categories according to the level of trust and curiosity toward each post

Level of trust	Degree of curiosity	Segment	Description of attitude	Quote
Low	Low	Rejector	They completely reject the technology, do not trust it at all, and show no interest in its direction. They argue about the disadvantages of vehicles, they don't need this technology at all.	<i>"They will be able to unscrew the steering wheel from my cold little dead hand. Seeing myself sitting in a remotely hackable autonomous tin when even our data has been leaked these days isn't as likely as a klezmer band's success at the skinhead festival."</i>
Low	Moderate	Doubter	They have reservations about the technology and less trust in it. They are still waiting.	<i>"Then when it's here, we'll grab it, taste it, test it, and see what it knows for how much. Until then, we're just guessing."</i>
Moderate	Low	Conformist	They are not particularly interested in the current state of the technology and shall see what the future holds. In a few years, after the tests, the vehicles will have reached maturity anyway.	<i>"Excluded in five years! Not necessarily due to the technical possibilities, but also because of the legal environment. Today, on the one hand, there is no legislation that can or wants to create a fair legal environment in all this time. On the other hand, a chemically clean legal environment should be created in an area that no one knows perfectly well yet. Also, you can't even know it because it's not formed yet. There are ideas at best. One kind for lawyers and one for technicians ..."</i>
Moderate	High	Expert	They address the issue of autonomous vehicles with curiosity, and their confidence is moderate. In many cases, statistics are brought under the posts, linking to additional pages that can help other contributors and readers as a guide. In some cases, they reveal that they work or conduct developments in the automotive industry.	<i>"This is interesting and important news. It's just that journalists again don't understand anything, they know nothing, they just portray the superficial things about the investment. No background. Briefly outlining the reasons. In freight transport, self-driving can come first because there is a bigger car, more space for small boxes, more electricity for small boxes, and most importantly, more money and more benefits of self-driving. ..."</i>

Table 2 (continued)

Level of trust	Degree of curiosity	Segment	Description of attitude	Quote
High	High	Enthusiastic fan/“early adopters”	They strongly express their confidence in the technology and are curiously awaiting self-driving vehicles. The benefits of the vehicles are extremely welcomed, technology is believed to make their lives easier.	<i>it will be good and there are those who do it well. Many of the parked cars will finally be removed from the streets and other people in the city center, not just motorists, will be able to drive in a human way. You won't have to go to a service station, wash, replace a wheel, you won't have to look for a parking lot if you go somewhere – and it will cost as much as your own car. There will be no accidents, no need for a police officer, parking guard, ambulance, and with time, neither traffic lights nor signs. One-fifth will be enough, so fewer car factories, less pollution due to production.</i>

Source: own construction

Due to difficulties of mapping the demographic features of each group in the categories identified by netnography, we used the *online questionnaire*. The subjects of our study came from the rejection groups, so we examined which groups were more critical of the technology in Hungary. Due to the values of $\chi^2 = 7.640$, sig = 0.02 obtained in the chi-square test, a significant relationship can be detected between education and knowledge of self-driving vehicles. The higher the qualifications of the respondents, the more familiar they are with the technology. Between education and general attitudes ($\chi^2=18.358$, sig=0.001), it can be stated that there is a significant relationship, the strength of which is weak (C=0.096). The higher the qualification of the respondent, the more they declared a positive attitude towards self-driving vehicles. The analysis shows that there is a significant difference in the awareness of women and men ($\chi^2=45.335$, sig=0.000). The women in the research are those who have not heard of the technology in a larger proportion (10.5%). Examining the issue of possession by gender, a significant difference can be detected. The test values of the statistical chi-square were: $\chi^2=27.872$, sig=0.000. Based on the results obtained, we have found identifiable rejection segments in the social perception of self-driving vehicles. In terms of age categories, the rejection of the older age group is noticeable, in addition, there is also a divergence according

to levels of educational attainment. The less educated showed a higher degree of negative resistance. In terms of gender, women were more critical.

The added value of *emotion research through in-depth interviews* is that the presumption of the large-sample questionnaire survey about the characteristics of critical segments was more or less confirmed. It became apparent from the results of the experiment that there was a male – female polarization. In some cases, we found negative attitudes among the elderly and those living in smaller settlements. In other cases, rural respondents or those without a license were reluctant to answer the questions asked and expressed fear in the case of multiple responses. However, in addition to the different demographic situations, it has been shown that past transport experiences, with which emotions have been associated, play an important role. Based on the responses, we have found that in the case of self-driving vehicles, attitudes are influenced by previously acquired information, vehicle-related experiences, pre-perceived opportunities, and dangers (car breakdown, loss of control, hacker attack), and emotions related to self-driving vehicles.

The *virtual reality simulation through in-depth interviews* method has a clear added value, as fully realistic self-driving car situations were able to evoke emotions in the participants, allowing them to express their personal opinions freely. It clearly contributed to making the opinion of rejecting subjects more positive. Older people and those with lower levels of education in the countryside also had a more positive view of self-driving technology at the end of the research – before and after the experiment, we asked them how they felt about self-driving vehicles, and there was an unequivocal positive shift. Our experience shows that the more information they acquired about the technology, the more they learned about its operation, the more the previously existing differences in attitudes tended to disappear. Experimental rejection segments showed less rejection when participating in the virtual reality simulation.

Netnography helped to segment consumers, and based on the comments, we created categories characterized by distinctive features. The online questionnaire identified differences in education, age and gender, as well as who were more dismissive (elderly, low-educated and women). Emotion research through in-depth interviews, the subjects of which were selected from the rejection groups, revealed that the more a person learnt about the technology, the more experiences and impulses they acquired in the field of autonomous vehicles, the higher their confidence became. Based on the virtual reality experiment through in-depth interviews, and our observations simulating the real self-driving vehicle experience, we found that pre-existing differences in attitudes tended to disappear.

DISCUSSION AND CONCLUSION

The future of passenger transport is characterized by a high degree of uncertainty (Miskolczi et al., 2021c), leading Ekman and co-authors (2018) to distinguish phases in the process of building trust in self-driving cars. The first stage is referred to as the learning phase, which begins with the very first interaction (between a self-driving car and the subject) and lasts until the user becomes familiar with self-driving systems. In the simulation used in their experiment, they found the learning phase to be the most important in the acceptance process, although the duration of this phase appeared to vary from subject to subject. In the learning phase, trust is mainly acquired by gaining a deeper understanding and knowledge about the performance of the system and its reliability.

With the help of netnography, it was possible to identify 5 separate groups based on the Facebook comments of online portals using the spectrums of trust and curiosity, ranging from naysayers to die-hard fans. We tried to make up for the shortcomings of the method (demographic data) by using an online questionnaire. It was clearly visible that women, the older age group, and those with a lower educational level have a less positive attitude towards self-driving vehicles. With the help of “emotion research” through in-depth interviews, we attempted to bring the technology even closer to the interview subjects, and the initial doubts regarding the demographic aspect were less present by the end of the experiment. The VR experiment aimed to make the “AV experience” more realistic and tangible for the Hungarian subjects. The responses to our interview questions after the experiment show that previous negative opinions could turn into positive ones.

The empirical survey of our study concludes that acceptance can be increased through awareness: the more respondents learned about the technology, the more receptive they were toward the technology. We observed how additional information could reverse the dismissive behavior of subjects. From all of this, we concluded that the attitudes of rejection groups towards self-driving vehicles could be improved by providing them with newer and more detailed information. The exact method for this is a wide-ranging topic, the elaboration of which should be the task of a wider professional community. We believe that there is a need to carry out consumer acceptance and design research that is mindful of the suggestions of road users, in order to ensure the successful implementation of self-driving vehicles in existing, established traffic systems.

It is important to note that qualitative research methods are not able to fully cover the representative sample, even with the most thorough planning of sampling, which can be

mentioned as a major limitation of our study. For this reason, we believe that it is worthwhile to conduct our research on a larger sample in the future and to develop strategies based on the results obtained.

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TWENTY YEARS OF THE HUNGARIAN REGIONAL SCIENCE ASSOCIATION IN NUMBERS

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Abstract

This study is a retrospect on the 20th anniversary of the founding of the Hungarian Regional Science Association. Our aim is to provide a brief but comprehensive overview of these two decades in the light of quantifiable facts and results. We use document analysis and statistical descriptive methods in order to present a compact picture of the history of the Association's development. The results of our analysis confirm the impression that the Association, after a consistent building process, is characterised by stability, and it offers a wide range of perspectives for professional cooperation between the representatives of regional science.

Keywords: regional science, descriptive analysis, Hungary, science history, scientific associations

INTRODUCTION

Spatial research has been undertaken in Hungary for a long time, but only in the last decades has the system assembled into a unified, ordered, regional science (Faragó, 2010). The development of the discipline and its institutionalisation have been closely linked together in Hungary (Horváth, 2014). “The results of the development of regional science in Western Europe and the USA were summarised in several studies and books (e.g. Isard, 2003). New works were published about the publication forums of regional science and the activities of its international organisations during the past decade. In these works we only find a couple of references to Eastern and Central European spatial research” (Horváth, 2017, 296). “The ample availability of factors (Research units; University master trainings; Doctoral Schools; Journals; Book series; Scientific association and scientific academic coordinating organisation; International regional scientific congress) which contribute to the identity of regional science as an autonomous discipline can be demonstrated in Poland and Hungary” (Horváth, 2017, 305). “Apart from research institutions, scientific associations constitute the other important base of spatial research. Besides researchers engaged in the field, a scientific association

assembles practicing professionals interested in the application of scientific results and intellectuals interested in regional development. These forums for intellectuals function as autonomous institutions or national divisions of international regional science associations. The first group contains the Hungarian and Romanian Regional Science Associations” (Horváth, 2017, 302-303). In 2020, a special issue of the Hungarian journal *Tér és Társadalom* (Space and Society, Vol. 34, Issue 1) was devoted to a synthetic assessment of the achievements, challenges and prospects of Hungarian regional science, although HRSA was not prominently featured in the articles (see Varga, 2020).

The Hungarian Regional Science Association (HRSA) is the professional forum of Hungarian regional science, an independent non-governmental organisation, which brings together professionals involved in regional research, development and governance. The Association was established in February 2002 by a proposal of the Regional Science Committee of the Hungarian Academy of Sciences in Pécs.²⁵ With this, the institutionalisation phase of regional science has been completed in Hungary (Lux & Rácz, 2007). HRSA has more than 300 registered members associated with various organizations (research institutes, universities, central, regional and local government bodies, public and private companies, etc.). The Association’s organization follows the regional principle: in all the seven regions of Hungary and in six regions abroad where Hungarian speaking regional specialists are working the regional organizations have already been established (HRSA, 2022). The seven domestic sections cover the entire territory of Hungary, while the seven cross-border sections integrate Hungarian-speaking researchers from the Carpathian Basin. The Association also serves as the Hungarian section of the European Regional Science Association, which is an important indicator of the organisation's international embeddedness.

This article aims to introduce and assess the HRSA’s two decades of operation up until now based on several quantifiable facts and results. We use document analysis, content analysis and statistical descriptive methods to present a compact picture of the history of the Association's development. In the next section we look at the trends in the Association’s membership, management, and the variety of events it organizes, as well as its finances; then, the concluding section assesses its achievements and prospects in advancing Hungarian regional science.

²⁵ Headed by the current president: 2002-2011 Prof. Gyula Horváth, 2011-2017 Prof. János Rechnitzer, since 2017 Prof. Zoltán Gál.

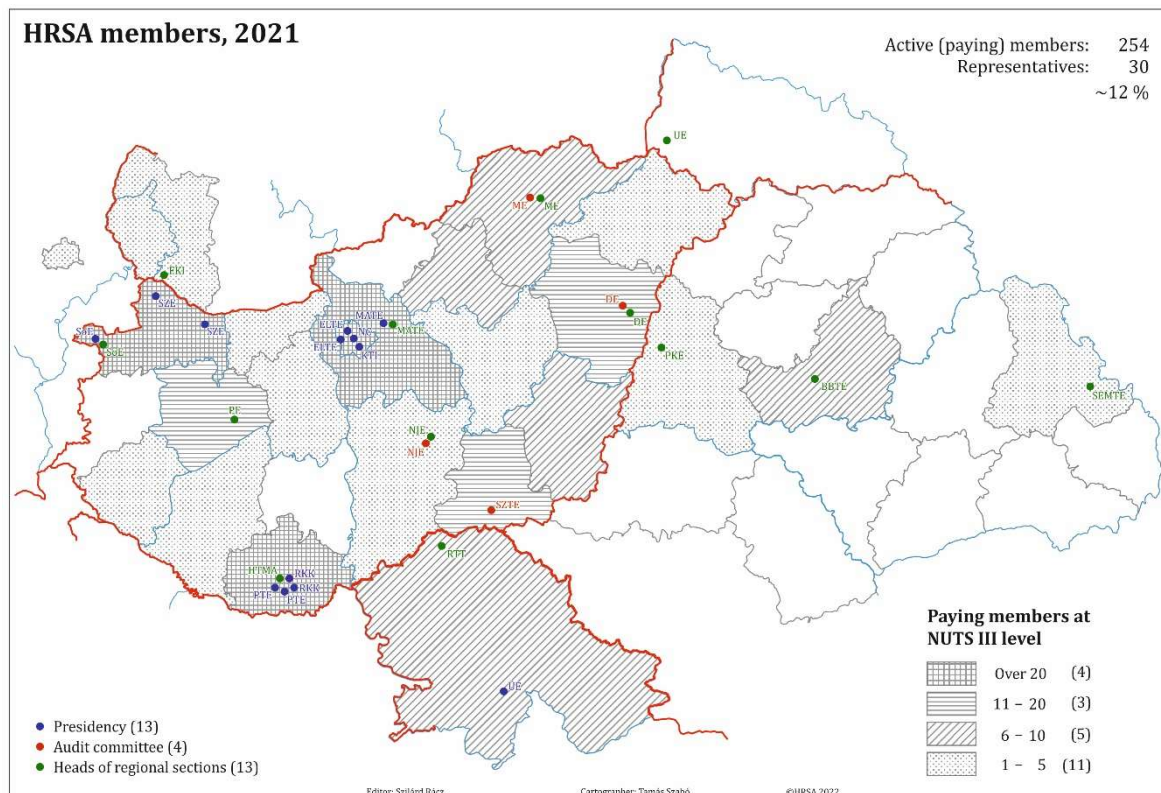
TWENTY YEARS OF THE HRSA IN RETROSPECT

Despite the changing international and domestic institutional environment, including higher education (Lengyel, 2021), for regional science, the objectives of HRSA have not changed over the last twenty years (Rácz, 2015). The main areas of HRSA's operation are the organisation of scientific and educational events, publishing scientific works, building relationships with national and international partner organisations, as well as monitoring and evaluating shifts in the orientation of territorial policies. Furthermore, a main feature of the Association is the regular provision of news (newsletters, circulars, website). In this section we quantify the results achieved in the different areas of HRSA's operation over the past two decades.

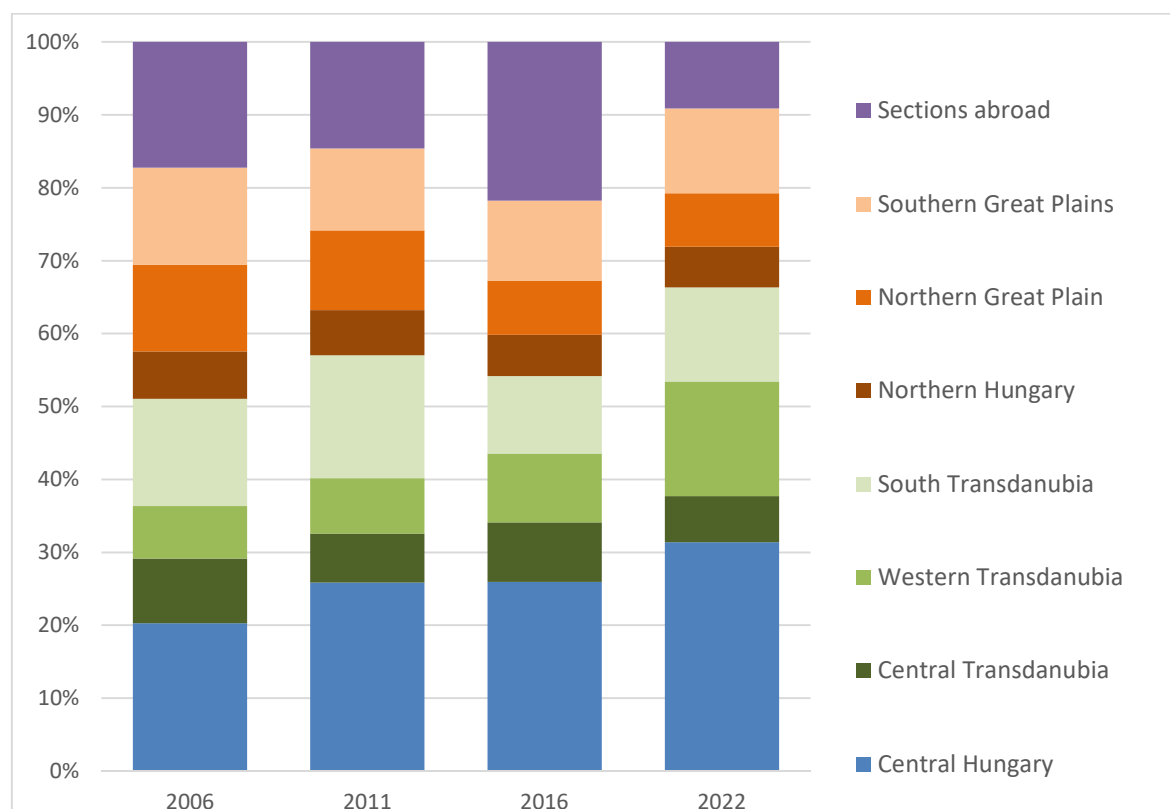
Membership

The thirteen regional sections of the HRSA shows various degrees of activity, the largest of them being Central Hungary, Western Transdanubia and South Transdanubia (Fig. 1). The number of members who paid the membership fee increased with more than one hundred persons between 2004 and 2021, which is a 72 percent increase, the largest part of which was experienced in Central Hungary and Western Transdanubia (Fig. 2).

Figure 1 Map of the active members of the HRSA by sections as of 31 December 2021



Source: HRSA

Figure 2 Membership of the HRSA by sections, 2006, 2011, 2016, 2022

Note: Number of members paying membership fee as of 31 December 2021

Source: Authors' elaboration based on HRSA data

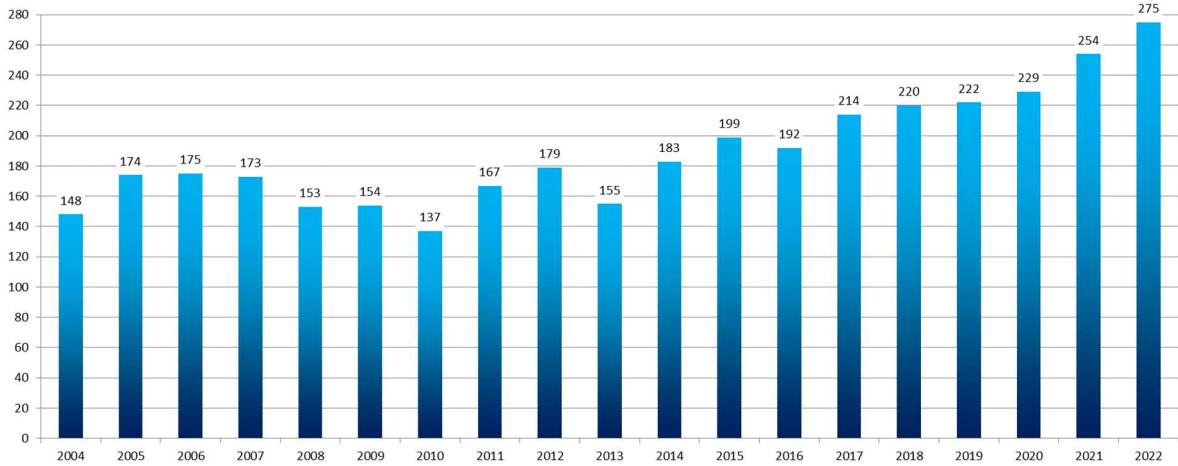
The number of active (regular paying) members exceeds 250, of which 25 represent regional communities beyond the borders. The majority of members' work in research institutes and higher education institutions, while a smaller number work in public administration (local, regional, central) and in companies (state, municipal, private). The wider, registered membership is around 600, of which 100 are cross-border.

The number of HRSA members was large, 350 to 440 persons between 2004 and 2009, but the share of members paying membership fee was relatively low (30 to 40 percent). The members of the Association have been entitled to a complimentary copy of the journal *Space and Society* since 2008, at the same time, a 250 percent increase of the membership fee took effect that year. There has been a revision of membership in 2010, under which only those persons were considered active members who pay their dues. As a result, the period after 2011 is characterised by lower membership but high paying rates. In 2012 an increase in the reduced membership fees (for students and pensioners) took place.

The activity of the sections has shown volatility from time to time (Fig. 3). A part of the sections operated continuously, while other sections operated only occasionally, and there were sections awaiting reorganisation. Similarly, only a part of the membership is active, which has been made clear after the revisions of the membership status in 2010 (for the Hungarian

members) and in 2018 (for the members abroad) that caused a significant drop in the number of the members from abroad.

Figure 3 Membership of the HRSA (paying members), 2004-2022

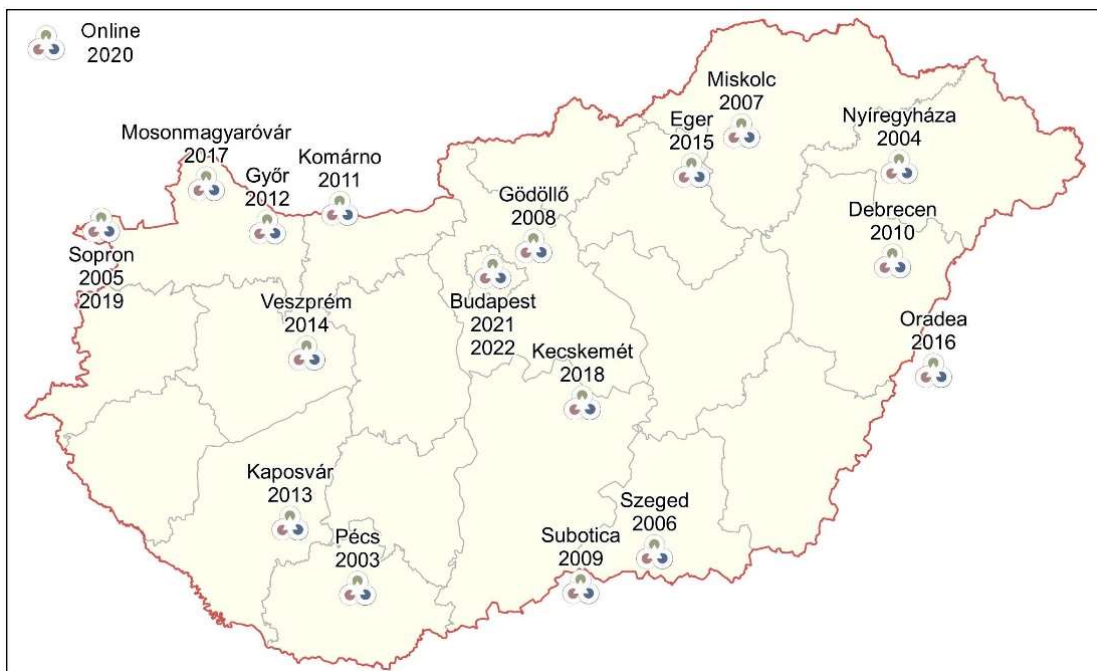


Source: HRSA

Events

The HRSA is active in organizing regular scientific and educational events, the most important of which are the annual meetings. There have been twenty meetings in 17 different venues since 2003, three of which were in the neighbouring countries (Fig. 4).

Figure 4 Venues of the HRSA annual meetings, 2003-2022



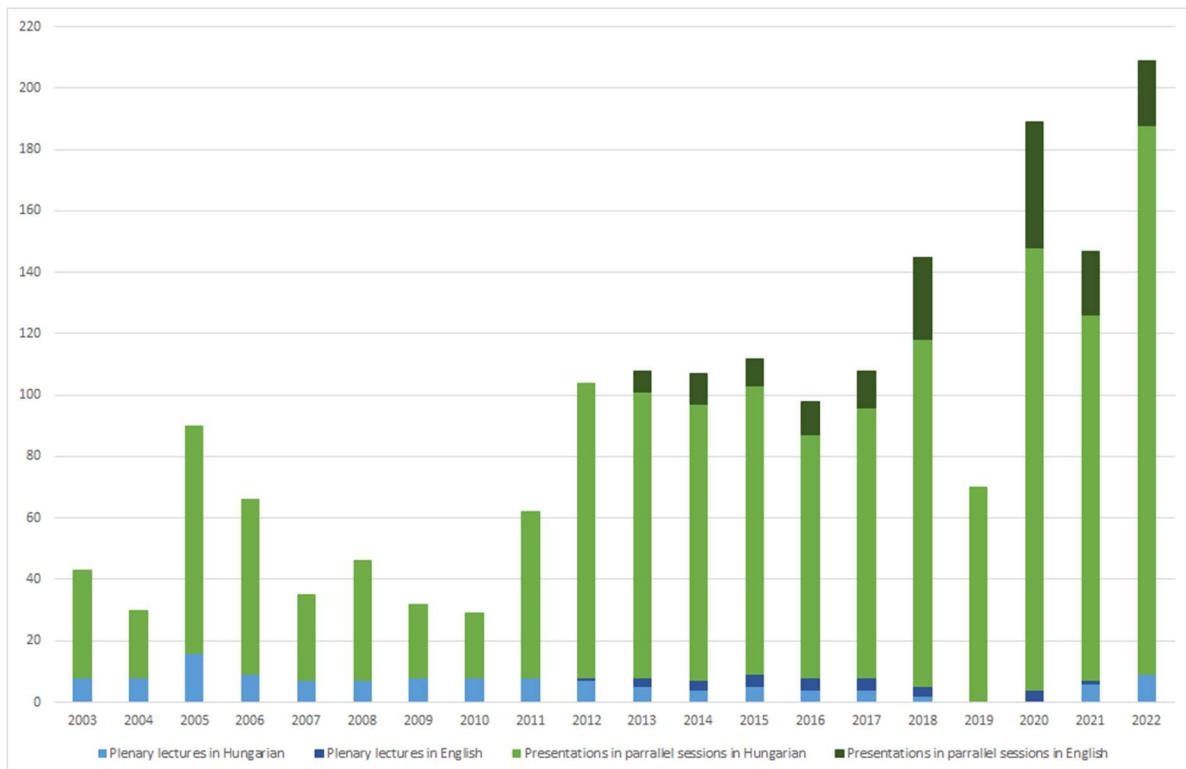
Source: Created by Tamás Szabó based on HRSA data

The first annual meeting outside the Hungarian borders was in Serbia. At the 2009 Subotica conference the aim was to discuss the practice of cross-border cooperation within the Schengen area, the experience of regional development in the autonomous province of Vojvodina and the implications of spatial policy in Serbia (Rácz et al., 2010).

So far, only one conference proceedings have been published in Hungarian, on the 2005 conference (Rácz, 2006). Regional development ministers from Hungary, Slovakia, Romania and Vojvodina (Serbia) participated in this conference and issued a joint declaration on the importance of regional scientific cooperation.

An early opening up to international speakers for plenary presentations (from 2012²⁶) and the calls for sessions held in English language (from 2013) prove the Association’s commitment to international outreach (Tab. 1 and Fig. 5). The international plenary speakers were (in alphabetical order) Prof. Roberto Camagni, Prof. Roberta Capello, Prof. Daniela L. Constantin, Prof. Jouke van Dijk, Dr. Jan Fidrmuc, Prof. Grzegorz Gorzelak, Prof. Tomasz Komornicki, Prof. Eveline van Leeuwen, Prof. Gunther Maier, Prof. Peter Nijkamp, Prof. Petr Pavlínek, Prof. James W. Scott and Prof. Michael Steiner.

Figure 5 The number of plenary lectures and parallel session presentations at the HRSA annual meetings, 2003-2022



Source: Authors’ elaboration based on HRSA data

²⁶ Kovács & Rácz (2013)

Table 1 The number of presentations at the HRSA annual meetings, 2003-2022

Year	Venue	Plenary sessions			Roundtable discussion or book launch	Parallel sessions			Participants
		nr.	lectures	of which in English		nr.	of which in English	presentations	
2003	Pécs	1	8	0	0	3	0	35	100
2004	Nyíregyháza	1	7	0	0	3	0	22	125
2005	Sopron	4	16	0	0	6	0	74	150
2006	Szeged	1	9	0	0	5	0	57	160
2007	Miskolc	1	7	0	0	3	0	28	70
2008	Gödöllő	1	7	0	0	6	0	39	120
2009	Szabadka	1	8	0	0	4	0	24	90
2010	Debrecen	1	8	0	0	4	0	21	85
2011	Révkomárom	1	8	0	0	7	1	54	110
2012	Győr	1	8	1	2	11	0	96	150
2013	Kaposvár	2	8	3	0	11	1	100	150
2014	Veszprém	2	7	3	0	12	1	100	160
2015	Eger	3	9	4	0	12	1	103	190
2016	Nagyvárad	2	8	4	1	12	1	90	130
2017	Mosonmagyaróvár	2	8	4	1	12	1	100	150
2018	Kecskemét	2	5	3	1	16	3	140	200
2019	Sopron	Co-organised with the CERS ²⁷ conference				9	0	70	100
2020	Online/hybrid ²⁸	2	4	4	0	22	4	185	320
2021	Budapest	3	7	1	1	19	2	140	180
2022	Budapest	3	9	0	1	24	3	200	240

Source: Authors' elaboration based on HRSA data

The themes of the conferences covered a wide range of areas of regional science and closely followed the major shifts in emphasis in the international arena (Fig. 6). It can also be seen that the main theme of the conference, the accessibility and timing of the venue are important. In 2008, industry was not so relevant to research in Hungary as indicated by the title of the

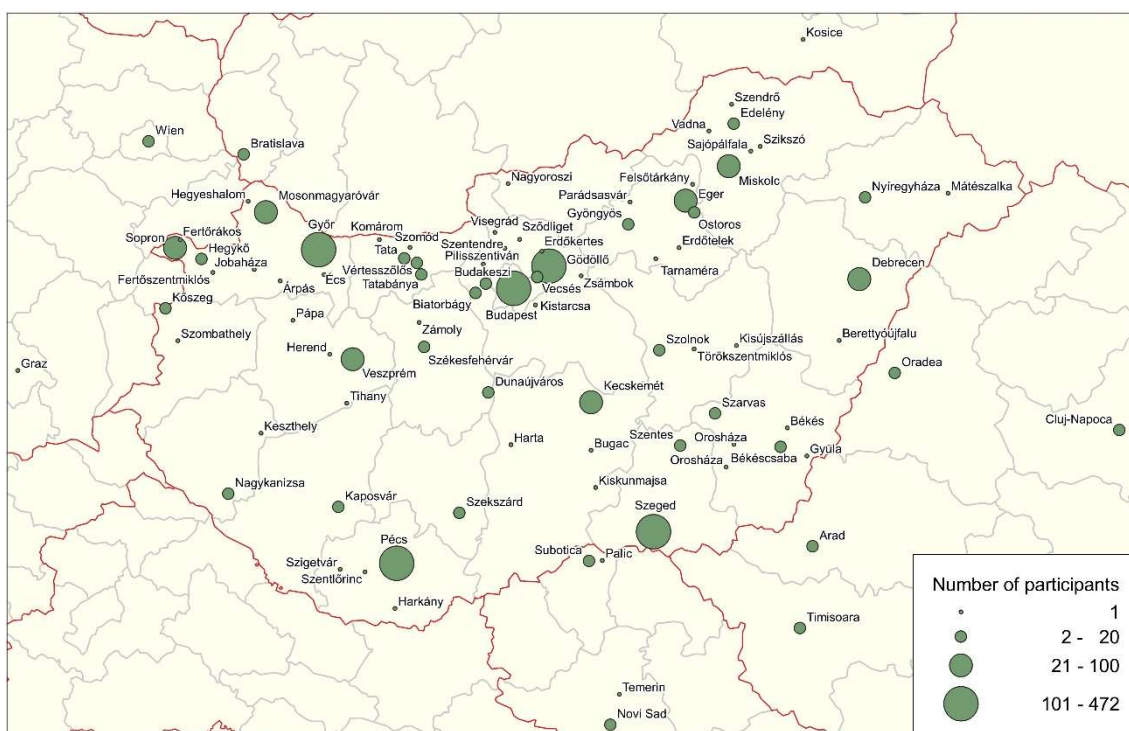
²⁷ The 7th Central European Conference in Regional Science (CERS) was held in Sopron between 9-11 October, 2019. The main organisers of the event were the University of Sopron and the HRSA. Further co-organizers with CERS included the German speaking, Polish and Slovak Sections of ERSA and University of Economics in Bratislava, Technical University of Košice. Plenary speakers included the most illustrious figures of European regional science: Andrés Rodríguez-Pose, Alessandra Faggian, André Torre and Katarzyna Kopczewska. The conference in numbers: 3 days, 4 plenary and 4 session blocks, 190 participants from 20 countries, 160 session presentations, 29 sessions on 14 topics (Rácz & Egyed, 2020).

²⁸ Due to the coronavirus epidemic, the 18th annual meeting was organized in a hybrid form at different venues (mostly online) between 27–30 October 2020. A total of 185 session presentations were given. The event and sessions were attended by a large audience, 135 people exceptionally free of charge (Egyed & Rácz, 2021).

Gödöllő has had 112 participants in the last 10 years, closely followed by Debrecen and Miskolc. There are also regular speakers from other county seats.

The highest average growth rate in the number of participations was in the case of Budapest (+14.74%) and Győr (+13.35%). There are more and more participants from Sopron, Szeged and Pécs. The average number of participants from these cities increases by about 5% per year.²⁹ Apparently, most speakers tend to come from the city where the annual meeting is taking place.

Figure 7 The participants at the HRSA annual meetings, 2012-2022³⁰



Source: Created by Tamás Szabó based on HRSA data

In addition to the participants from Hungary, foreign speakers are also represented in growing numbers. Over the past 10 years, the speakers have come from neighbouring countries (Romania, Serbia, Austria, Slovakia). Albeit less commonly, participants from outside Europe also attend the HRSA annual meetings.³¹

²⁹ The average growth rate cannot be calculated because the data series is not continuous for the other cities.

³⁰ The map shows 10 years of cumulative data by billing address, which is usually the sending institution. The database contained missing data.

³¹ The database does not include plenary speakers.

Table 2 Participation of foreign countries at the HRSA annual meetings, 2012-2022

Country	Participants
Romania	47
Serbia	17
Austria	5
Slovakia	5
Netherlands	3
Germany	3
Spain	2
England	1
Egypt	1
Ghana	1
China	1
Poland	1
Italy	1

Source: Authors' elaboration based on HRSA data

There is a high dues payment rate and most of the participants come to the annual meeting from the place where the current president lives (from prosperous doctoral schools with a stable financial background (e.g. Gödöllő, Győr, Szeged, Miskolc, Budapest – ELTE). The relationship with CERS IRS (Pécs) is strong, as it ensures the operation of HRSA at the institutional level. It is one of the institutions sending the most participants to the annual meeting.

The *Regional Science Evenings* lecture series, jointly organized by the Department of Regional Science of the ELTE and the Central Hungarian Section of the HRSA offers useful and informative sessions for those interested in regional science. There have been 58 lectures since 2008, and two more are scheduled for 2022 (Fig. 8).

The *Conference of Young Regionalists* is a biennial event, its 12th edition was in 2021, with its venue always being Győr. The conference aims to provide an opportunity for both young and experienced researchers in the field to present their research results, discuss their proposals and exchange ideas. In recent years, between 70 and 80 lectures have been given by 80-100 participants in 6-12 sections, and many young researchers in the field have made their first scientific debut here.

Between 2006 and 2015 in cooperation with the Faculty of Economics, University of Sopron the HRSA organized 20 semesters of the *Free University on Local Development* as a series of 3-4 events.

and 24 presentations in four sessions, as well as a roundtable discussion with six professionals, the participants evaluated the past period of Hungarian territorial policy and territorial development, discussed current issues and made proposals for the future development of the objectives, instruments and institutions of territorial policy.

The Regional Studies Association (RSA) held its annual international conference in Pécs between May 24-26, 2010. Co-organisers of the conference were the HAS Centre for Regional Studies, the Hungarian Regional Science Association and the Faculty of Business and Economics of the University of Pécs. The conference with the title “Regional Responses to Global Shifts” discusses the appropriate instruments, institutions and organisational principles necessary to overcome the international crisis in the regions and the possible directions of settlement system development. The conference is the biggest event in the 25-year history of the RSA. The nearly 600 participants represent 50 countries of the world. A large number of regional science researchers from Eastern and Southeastern Europe were also present (Kiss, 2010).

The 7th Central European Conference in Regional Science (CERS) entitled “Flows of Resources in the Regional Economy in the Age of Digitalisation” was held in Sopron between 9-11 October, 2019. The main organisers of the event were the University of Sopron Alexandre Lamfalussy Faculty of Economics and HRSA. Further co-organizers with CERS included the German speaking, Polish and Slovak Sections of European Regional Science Association (ERSA) and University of Economics in Bratislava, Technical University of Košice. The 2019 CERS was the first to be hosted by a Hungarian institution. The CERS conference is organised every two years in one of the Central European countries for both academics and practitioners, focusing on urban and regional science in the context of the Central European Space. During the three days of the 7th CERS, 190 speakers from 20 different countries presented their state-of-the-art research results in the framework of 160 presentations. The scientific programme was organised in 29 sessions around 14 different topics (two sessions – networks; regional development – enjoyed outstanding popularity, attendees were able to exchange ideas in four parallel sessions) (Rácz & Egyed, 2020).

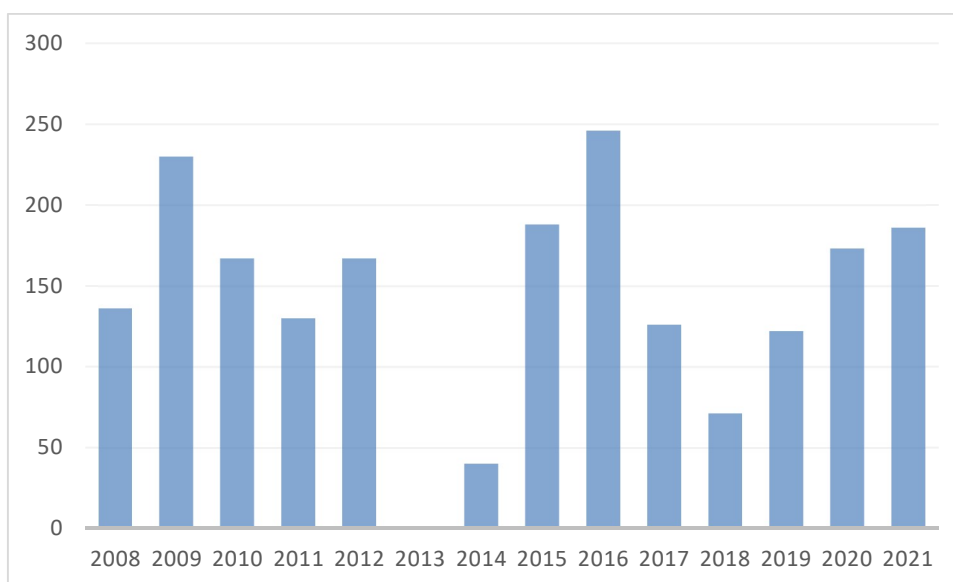
Thanks to the recognition of the European scientific community, ERSA organised its 61st Congress in Pécs this year. The congress, entitled “Disparities in a Digitalising (Post-Covid) world – Networks, Entrepreneurship and Regional Development” was held in person and online from 22 to 26 August 2022. Co-organisers of the conference were the Centre for Economic and Regional Studies, the Hungarian Regional Science Association and the Faculty of Business and

Economics of the University of Pécs. The Congress in numbers: 49 countries, 714 presentations, 39 general and 59 thematic sessions (Egyed et al., 2022).

Financial position

The financially efficient running of the Association is an important achievement, it is successful in obtaining grants through its tenders, and it has received 1% personal income donations every year. The growing interest in the organization is also reflected in the size of the raised funds from these tax donations. Although average Hungarian incomes have increased, the personal income tax rate has decreased from 36-40% in 2002 to 15% (from 2016), resulting in no significant change in the volume of donations.

Figure 9 The specific part of the personal income tax on the use of a part of the income taxpayer's transferred under Act CXXVI of 1996, 2008-2021 (thousand HUF)

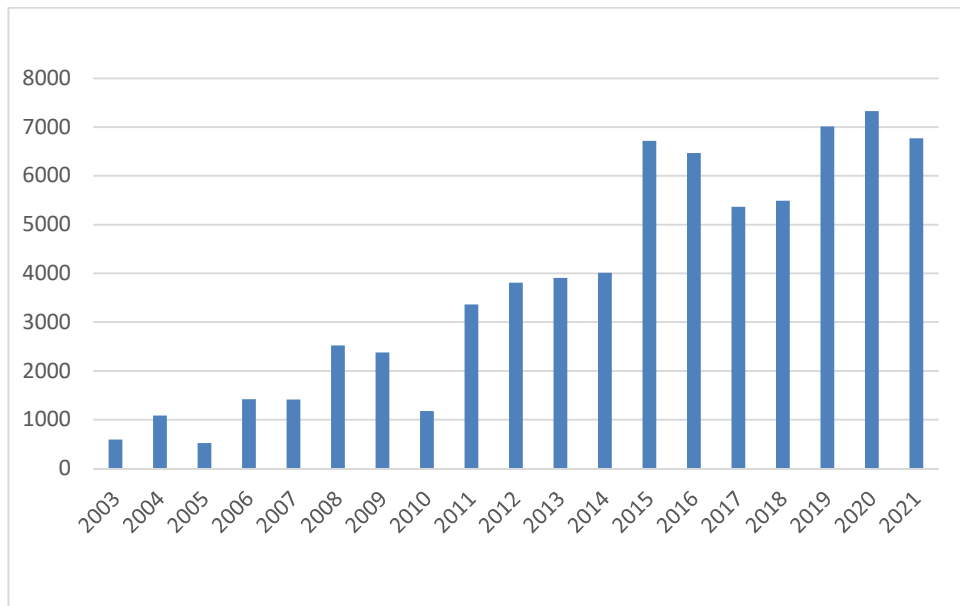


Source: Authors' elaboration based on HRSA data

In what follows a few key financial indicators for the HRSA Foundation are presented. The total assets and the total liabilities and shareholders' equity are characterised by equilibrium and linear growth (Fig. 10).

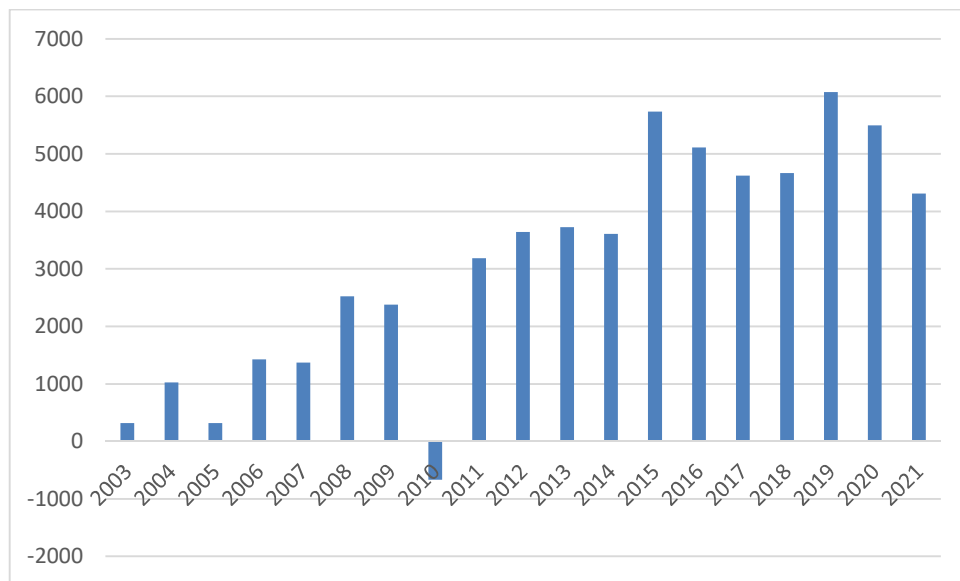
The shareholders' equity is also growing at a balanced pace, although it is also characterised by hecticness, with a decline in 2010 (Fig. 11). This is due to variations in the type of activity (special purpose or business activity) and is also affected by changes in the tax rate.

Figure 10 Total assets, 2013-2021 (thousand HUF)



Source: Authors' elaboration based on HRSA data

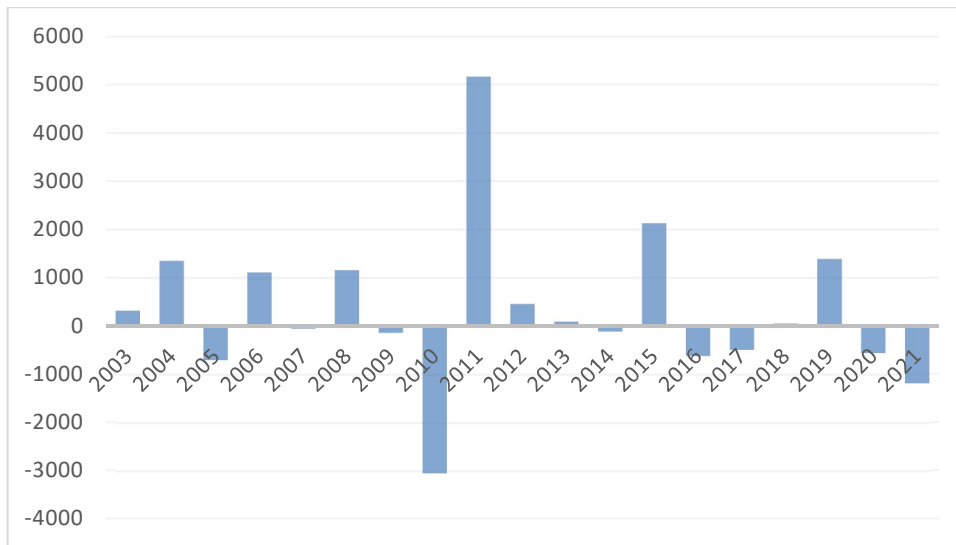
Figure 11 Shareholders' equity, 2003-2021 (thousand HUF)



Source: Authors' elaboration based on HRSA data

The activities of the Association are primarily of a public benefit nature, with the aim of providing a platform for researchers in regional disciplines. For this reason, it does not seek financial gain. The “profit” recorded in the financial balance sheet is used to organise scientific events and forums. This is illustrated by the fact that it closes the year with a negative “profit” (Fig. 12).

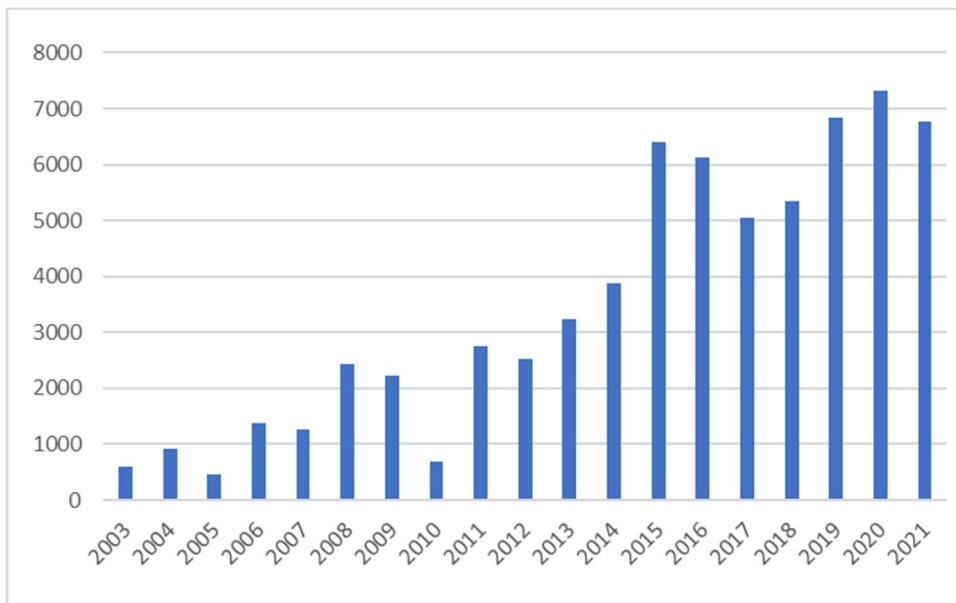
Figure 12 Current year profit between 2003 and 2021 (thousand HUF)



Source: Authors' elaboration based on HRSA data

The liquid assets also demonstrate the financial stability of the Association. The Association's funds are constantly growing, except in several years, due to the large number of scientific events organised each year, which are covered by the funds. The biggest expense is the organisation of the annual meetings, which requires a large amount of resources.

Figure 13 Liquid assets between 2003 and 2021 (thousand HUF)



Source: Authors' elaboration based on HRSA data

Other activities

The Association maintains three prizes: the Pro Regional Science Award has so far been granted to six professionals whose outstanding activities contributed to the development of regional science and the realisation of the objectives of the Association.³² Furthermore, the Presidency of HRSA acknowledges young researchers' outstanding scientific results and exemplary professional and community activities by the Excellent Young Regional Scientist Award³³, which has been awarded to twelve members of the society under the age of 35.³⁴ The "Certificate of Honor" is granted to the Society's members in recognition of their outstanding scientific achievements and community activities. The award has so far been distributed three times to four members of the Society.³⁵

Regular cooperation with national partner organisations is part of the Society's mission. In addition to formal agreements, this includes jointly organised conferences and a thematic special issue of the journal DETUROPE published each year since 2015, which reaches its 8th edition in 2022. Issue Nr 2 in 2015 of DETUROPE was of special significance from several aspects. This was the first time that an issue of the journal has a specific topic as its focus. Moreover, this is the first volume which publishes only English-language studies. The thematic issue was also a novelty from the aspect of HRSA since the selected studies presented at its annual meetings are published in an individual issue of a scientific journal. That was a milestone both for DETUROPE and HRSA. It also contributes greatly to the realisation of the common objectives, especially those of internationalisation and supporting regional research (Rácz, 2015). Renowned professors have also published in the thematic issues (Scott, 2021). Due to the large number of presentations in the annual meetings, HRSA offered conference participants more publication opportunities in Hungarian scientific journals (Rácz & Egyed, 2021).

³² Prof. Gyula Horváth (2012); Prof. Attila Buday-Sántha (2014); Prof. József Nemes-Nagy (2016); Prof. János Rechnitzer (2018); Prof. Imre Lengyel (2020); Prof. László Faragó (2022).

³³ Established in 2008.

³⁴ Ákos Jakobi (2009); Miklós Lukovics (2010); Cecília Mezei (2011); Balázs Lengyel (2012); Melinda Hajdu-Smahó (2013); Zoltán Bajmócy (2014); János Péntes (2015); Balázs István Tóth (2016); Zsófia Vas (2017); Katalin Lipták (2018); Zoltán Elekes (2019); Judit Berkes (2020); Balázs Páger (2021); Réka Horeczki (2022).

³⁵ Béla Baranyi (2016); Attila Korompai (2016); Zoltán Andor Végh (2017); György Kocziszky (2019).

CONCLUSION AND LOOKING AHEAD

HRSA is the professional forum of Hungarian regional science, an independent non-governmental organisation, which brings together professionals involved in regional research, development and governance. In the 20 years since its foundation, HRSA has achieved most of its basic objectives which remained unchanged over this period: to function as a bridge between science, higher education and practice (free university, seminars, meetings, regional science evenings). The Association supports Hungarian regional research, disseminates and uses its results (book launches, book publishing support, complimentary copy of the journal *Space and Society*, continuous news service). It provides support for the establishment of Hungarian regional scientific communities beyond the borders and development of their activities (Cluj-Napoca, Vojvodina, Partium, Szeklerland, Komárno – in the form of regional science workshops, university training in regional policy and participation in regional science courses in Hungary, conferences, book series in regional research, independent regional science association). HRSA takes part in the dissemination of the European ideals of regionalism, decentralisation and modern territorial policy and in shaping the territorial policy of the European Union. It promotes regional science education in higher education, the training of the next generation of regional scientists (doctoral schools, masters courses). It provides recognition and support for young people (awards, support for participation in conferences abroad, summer university, Conference of Young Regionalists, scientific student research associations, colleges for advanced studies). HRSA is active in international embedding (annual international conferences, plenary speakers and sessions at international meetings, membership of international organisations), and it maintains cooperation with NGOs (ongoing cooperation with national, regional and local partner organisations in similar professional fields).

Our retrospective overview suggests that the HRSA has had a successful two decades since its foundation, it is already well into the mature stage of its development, as indicated by the stable and increasing number of its members and sustained interest in the events organized by the Association. In the face of many years of external uncertainties in the domestic regional science arena, HRSA has been able to provide a stability for the academic community.

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2022 NOTABLE REGIONAL SCIENCE CONFERENCES IN HUNGARY REPORT ON THE 61ST ERSA CONGRESS & 20TH HRSA ANNUAL MEETING

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61ST ERSA CONGRESS

Two notable scientific events were organized by the Hungarian Regional Science Association in the year 2022 in Hungary. The report presents them in a chronological order. In 2022, Pécs, Hungary was home to the Annual Congress of the European Regional Science Association (ERSA). The ERSA Congress titled “Disparities in a Digitalising (Post-Covid) world – Networks, Entrepreneurship and Regional Development” hosted a large variety of themes in entrepreneurship, socio-economics, regional-urban economics, regional development, and regional policy related topics such as local governance and institutions. A chief ambition of the Congress was to achieve a stronger interdisciplinary dimension, featuring contributions and data from social sciences and entrepreneurship. With approximately 800 participants every year from all continents, ERSA Congresses have become the largest-scale academic conferences in regional science worldwide.

With its prominent history going back to 1982, ERSA is one of the most prestigious scientific societies in regional science and the largest supranational section of the Regional Science Association International (RSAI) at the same time. For the first time in its history, the annual congress of ERSA was held virtually and in-person simultaneously. (Due to the COVID pandemic in the previous year, the congress was held online.) The online part of the 61st ERSA Congress took place on 22-23 August 2022, and the on-site part on 23-26 August 2022 (Páger, 2022).

Hungary had already welcomed three ERSA Congresses, each hosted in Budapest (1968, 1975 and 1985)³⁶. Pécs is the first non-metropolitan venue to have attracted the prestigious scientific event to Hungary after a long period of time. Home to the Annual Conference of the Regional Studies Association in 2010, an event attracting 600 participants, Pécs had sufficient experiences to build on (Kovács, 2010). The city had also acquired valuable experiences in organizing large-scale international scientific events as co-organizer of the 7th Central European Conference in Regional Science held in Sopron in 2019 (Páger & Rácz, 2020).

Pécs had won the bid for hosting the Congress already back in 2018 thanks to the successful cooperation of three organisations, the Hungarian Regional Science Association (HRSA), the Faculty of Business and Economics of the University of Pécs (FBE UP) and the Centre for Economic and Regional Studies (CERS). Attila Varga and Zoltán Gál played a key role in preparing the proposal and presenting it to the ERSA committees. The Local Organising Committee (LOC) federated representatives of the three co-organising institutions, HRSA, FBE UP and CERS. The LOC was co-chaired by Prof. Zoltán Gál (President, HRSA; full-professor, FBE UP) and Prof. László Szerb (full-professor, FBE UP). Members of LOC included Balázs Lengyel (Senior Research Fellow) and Balázs Páger (Secretary of the LOC; Research Fellow) from CERS, Tibor Fehér (Head of IT Group), Gábor Klesch (Management Rapporteur), Ákos Nagy (Assistant Professor), Gábor Rácz (Head of Faculty) and Judit Szentendrei (Director of Marketing Office) from FBE UP, and Szilárd Rácz (Secretary) from HRSA. The LOC was, in cooperation with the ERSA, responsible for organising the on-site conference programmes, preparing the publications and their financing. The online conference was organised by ERSA with the assistance of the LOC.

The hybrid (online and on-site) organisation of the conference was an innovation by ERSA. The idea was to enable online participants to follow live streaming of the highlights of the on-site conference (opening and closing events, plenary sessions, round tables) and to attend parallel sessions held virtually. Registration for the on-site conference allowed participants to take part in both the online and on-site programmes. The live coverage of flagship events was a challenging task for the LOC, and the Univ TV crew of the University of Pécs contributed to its successful realisation.

The plenary speakers of the conference were among the most eminent experts in regional science. The plenary speaker at the online conference was Maria Abreu (University of Cambridge), whose lecture emphasized the importance of a capabilities-based approach to

³⁶ <https://ersa.org/about-us/what-is-ersa/ersa-history/>

regional development. *Michael Storper* (London School of Economics) opened the first day of the on-site conference with his excellent presentation on regional inequalities and their implications. *Simona Iammarino* (London School of Economics) presented regional inequalities from the angle of technological development and firms in her lecture summarizing various researches. The second day of the Congress featured a presentation by Olav Sorenson (UCLA Anderson School of Management), addressing the causes and relevance of the spatial distribution of entrepreneurship and firms. *Michaela Trippl* (University of Vienna) presented the concept of challenge-based regional innovation systems from the perspective of smart specialisation and place-based socio-economic-ecological challenges. At the closing event of the conference, this year's ERSA Prize laureate *Diego Puga* (CEMFI, Madrid) gave a presentation on the benefits and costs of metropolises (Unfortunately, the presentation of *Frank van Oort* was cancelled due to illness).

Overall, three Roundtables were organised in the framework of the on-site and online conferences. The focus of the debate at the online discussion organised by DG Regio was the 8th Cohesion Report published in 2022. The panellists were *Julia Bachtrögler-Unger* (Austrian Institute of Economic Research), *Roberta Capello* (Politecnico di Milano), *Marcin Dąbrowski* (Delft University of Technology), *Laura de Dominicis* (EC), *Philip McCann* (Alliance Manchester Business School), and the moderator was *Alessandro Rainoldi* (JRC). For the on-site conference, the panel discussion entitled “Inequalities in a Connected World” was organised and moderated by *Balázs Lengyel* (CERS), the panellists included *Katarzyna Kopczewska* (University of Warsaw), *Andrés Rodríguez-Posé* (London School of Economics), *Annie Tubadji* (University of Swansea), and *Jouke van Dijk* (University of Groningen). The discussants of the Roundtable on the link between entrepreneurial ecosystems and regional development (organised and co-chaired by *László Szerb*, FBE UP) were *Marcus Dejardin* (University of Namur), *Éva Komlósi* (FBE UP), *Rolf Sternberg* (Leibniz University Hannover) and *Aleksandra Tsvetkova* (OECD). The recordings of the Roundtables and plenary sessions are available on the ERSA Youtube channel.³⁷

The conference featured a total of 39 general regional science themes³⁸ and 59 thematic sessions³⁹ with parallel presentations. Delegates could follow around 400 on-site and 314 online presentations. ERSA devotes special attention to young researchers, and this year's congress hosted both online and on-site Young Scientists' Sessions. ERSA also announced the EPAINOS

³⁷ <https://www.youtube.com/@ersa-europeanregionalscienc9780/videos>

³⁸ <https://ersa.eventsair.com/ersa2022/general-themes>

³⁹ <https://ersa.eventsair.com/ersa2022/special-session-themes>

Prize for young researchers (under 33 years old), awarded by the jury to Maria Kubara (University of Warsaw) and Niels Kuiper (University of Groningen).

The congress was of particular importance for the quarterly scientific journal “Space and Society” of the Pécs-based CERS Institute for Regional Studies, founded in 1987. Volume 3 of 2022 was published for the conference as the first English-language issue of the journal (Nagy, Lux & Timár, 2022). Each participant received a copy of the journal in their conference package. The conference featured a dedicated programme presenting the journals of RSAI and ERSA, as well as the German, French, Italian, Spanish and Hungarian sections of ERSA. The aim of the programme was to popularize these journals among the attendees, introducing their thematic focus and the publication opportunities.

The overall positive feedback from ERSA management, keynote speakers and delegates testified of the successful organization of the congress. This is particularly gratifying, especially given that the new format of the conference has entailed new responsibilities not only for the LOC but also for our colleagues at ERSA headquarters. The high-level cooperation between the LOC and ERSA (in particular the two staff members of the ERSA office, Maristella Angotzi and Nurul Bariroh) was an essential pre-requisite to successful organisation. Hereby we express our gratitude to the members of the LOC for their professionalism in developing the technical programme and preparing and organising the on-site conference. Overall, we believe that the conference has strengthened the position of Hungarian regional science within the international regional scientific community.

20TH HRSA ANNUAL MEETING

The 20th Annual Meeting and General Assembly of the HRSA took place in Budapest, attended by 240 participants. The event was hosted by the National University of Public Service. The conference included 3 plenary sessions, a Roundtable and 24 thematic sessions (3 in English language), the interested audience could listen to a total of 200 presentations. The thematic focus of the conference was the space – state relationship.

The illustrious venue for the plenary lectures was the Ludovika Main Building St. Ladislaus Chapel, where the opening lectures of Thursday morning were held by Györgyi Nyikos, Professor of the University of Public Service and Gábor Mayer, state secretary for regional development (Prime Minister's Office of Hungary). The three speakers of the first plenary session lay the groundwork for the subsequent sessions of the conference. The presentation of *Zoltán Gál* (professor, president of HRSA) explored the challenges of Hungarian development

and regional policy, with an emphasis on the major crises of the last five years and their resolution. The first part of the lecture discussed the elements and pre-requisites for growth and successful catching-up. The second part outlined the Central and Eastern European (FDI-driven) model of the geo-economic framework conditions for catching up, its exhaustion and limitations, followed by a discussion of the main challenges of Hungarian regional policy and the importance of innovation and (higher) education, and the challenges of the knowledge economy. The second presentation in English language was held by *James W. Scott*, elected honorary member of the Hungarian Academy of Sciences (HAS) this year, highlighting the main lessons of innovative territorial cooperation based on the results of the H2020 RELOCAL project under his leadership. The professor of the University of Eastern Finland discussed the importance of place and place-based development in the context of territorial cooperation, regarded as a key element of European social and territorial cohesion. The thought-provoking presentation of Professor *Zoltán Hajdú*, scientific advisor of CERS Institute for Regional Studies, highlighted the question marks of state-building processes in the 21st century, with a focus on Europe and its peripheral regions. The lecture introduced the spaces of great power and the changes of state borders over the last century. The 19th and 20th centuries were an intense period of state formation and dissolution. The first two decades of the 21st century did not bring about a 'freezing' of state territory and borders, but the emergence of new challenges, not only in the post-Soviet space; independence referendums in Western Europe also led to new state formations under democratic conditions. The presentation was followed by nine parallel sessions in the early afternoon.

For years, HRSA has offered an opportunity for its members to organise sessions in the first circular of the organisation, and *in 2022 the following sessions were organised:*

- Changing Systems of Innovation: Qualitative and Quantitative Approaches
- Space and state – Regional, economic and social contexts
- FDI and Economic Dependencies in Central and Eastern Europe
- A changing system of tools in the implementation of EU goals
- Old and new challenges in renewing domestic territorial development
- State – space – history: territorial processes before and after 1920
- State – border – politics
- Western Balkans
- Modern villages – model villages

- Small town squares, small towns in space
- Metropolitan spaces: administrative boundaries, social boundaries
- The coronavirus outbreak and local governments
- Epidemic and crisis in the light of territorial and social effects
- The crisis of welfare states and the regional social problems of the COVID-19 pandemic
- Catching up and competitiveness – the socio-economic impact of state structural organization and communities managing local resources
- Sustainable labor market
- Higher education and research for social justice and environmental sustainability
- Local effects of monastic orders then and now
- Current trends in tourism
- Climate and environment
- Space and technological development
- Creative and cultural economy
- The role of waters in territorial development
- Local dilemmas of industrial development.

The afternoon plenary session focused on the legal narratives of power and space. *Ilona Pálné Kovács*, full member of the Hungarian Academy of Sciences, outlined the Hungarian situation in her presentation entitled “Power without territory, territory without power”. According to the research professor of CERS Institute for Regional Studies, we are witnessing a „lose-lose” situation, with weak Hungarian local governments and strong state bodies without autonomy (territory without power). The change in the political system has shifted the balance of power between the levels, which was further reinforced by public law reforms. However, the shrinking of local power has not been accompanied by a decline in trust (power without territory). *István Hoffman* presented his theory on fragmented space; reflecting on the changes in the status of local governments and in its legal regulation. The lecture reviewed the changing institutions of regional development policy in Hungary and Europe over the last decade and a half, highlighting the trends towards centralisation and concentration. As noted by the Professor of the Department of Administrative Law, Eötvös Loránd University, crisis periods tend to reinforce centralising tendencies. Moreover, the new economic challenges, in particular the development of infocommunication technologies, have also intensified the centralisation of local government systems. *Tamás Kaiser*, associate professor, Head of Department of

Governance and Public Policy, University of Public Service, in his presentation entitled „the physiognomy of the remodelling of space” discussed the elements of 'rescaling' (paradigms, narratives, experiments) in the context of the development of city regions in England over the last decade, with a special focus on the post-Brexit period. The effects of 'rescaling' can be addressed both from the perspective of continuity (centralised exercise of power, fragmented local government with limited financial room for manoeuvre but a flexible approach allowing tailored solutions) and modernisation (transformations embedded in narratives related to political projects, new spatial categories, coalitions of support, etc.).

The event was concluded in the afternoon with a Roundtable discussion titled “The 20-year-old HRSA”, where Zoltán Gál, President of the HRSA, and Szilárd Rác, Secretary of the HRSA, conducted a debate with Professors Imre Lengyel and József Nemes-Nagy, both winners of the *Pro Regional Science Award*. The Roundtable reviewed the major milestones of the institutional development of Hungarian regional science, revealing “insider information” to those present about the two-decade-long activities of the Association.

The ceremonial granting of awards took place in the evening. For the sixth time, the Hungarian Regional Science Association distributed its highest award, the *Pro Regional Science Award* based on a decision of the General Assembly following the recommendation of the Board. The members of the Society awarded the prize to Professor László Faragó (former director, research professor emeritus of Institute for Regional Studies, former Vice President of HAS Regional Scientific Committee) to honor his outstanding research, teaching and expert activities in the field of regional science & policy. For the fourteenth time, the HRSA's Presidential Board, enlarged by the heads of regional sessions, awarded the *Outstanding Young Regional Scientist Award* to Réka Horeczki, research fellow, Institute for Regional Studies for her valuable results in regional science.

The *Regional Science Publication of the Year Awards* founded by the HAS Committee on Regional Studies were distributed for the second time this year. The publication honors outstanding publications of the previous two years. In the domestic category, the 2020 prize was awarded to Bálint Koós for his publication entitled “Urban shrinkage and residential segregation in Hungary” (Koós, 2020). The 2021 prize was awarded to Zsuzsanna Zsibók and Balázs Páger for their publication entitled “Long-run economic growth paths in the Hungarian counties” (Zsibók & Páger, 2021). In the international category, the prize was awarded to Gergő Tóth, Sándor Juhász, Zoltán Elekes and Balázs Lengyel (2021) for their study entitled “Repeated collaboration of inventors across European regions”.

The morning of the second day continued with nine further sessions. On Friday, *Gergely Deli*, Rector of the University of Public Service, welcomed the participants of the annual meeting. *József Benedek*, Professor of Babeş-Bolyai University and external member of the HAS, opened the afternoon plenary session. His presentation titled “Democratic territorial development in Transylvania: state-building or identity politics?” provided a detailed assessment of the processes in Romania. The state of spatial development in Transylvania is defined by the post-transition paradigm shift, indicating a move away from the communist (systematizing) concept of spatial planning through the processes of democratization towards an integrated and participatory approach to spatial development. It is within this general field that the main stakeholders of spatial development in Transylvania, i.e. local and county governments, businesses and universities, can be situated. During the closing plenary session, researchers awarded the 2018 and 2021 Distinguished Young Regionalist Awards presented their most recent academic achievements. The presentation of *Katalin Lipták*, Associate Professor of the University of Miskolc, discussed the role of the solidarity economy in labour market integration. The global problem of unemployment and the labour market effects of the COVID-epidemic are increasingly being addressed at regional and local level, with solidarity economy initiatives and social enterprises presenting possible alternatives. The solidarity economy emphasizes social responsibility and the community interest, valorising non-material assets. Hence its treatment as an alternative to capitalist development, a possible new development model. In his co-authored presentation, *Balázs Páger*, postdoctoral researcher at the University of Vienna and research fellow of CERS, examined the role of entrepreneurial ecosystems in the context of regional development, highlighting the relationship between various configurations of the pillars of the entrepreneurial ecosystem and regional development. Drawing on the Qualitative Comparative Analysis (QCA) methodology, he emphasized the role of specific pillars of the entrepreneurial ecosystem that enable regions to achieve a particular development level. He also pointed out how a given level of regional development can be attained through various configurations of the pillars of the entrepreneurial ecosystem.

In the late afternoon, participants could join the activities of eight parallel sessions. The Association will organise its 2023 Annual Meeting in Pécs, connected to various jubilee events.

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**KUNC, J., KRIŽAN, F., NOVOTNÁ, M., BILKOVÁ, K., SIKOS T., T.,
ILNICKI, D. & WYETH, R. (2022):
THIRTY YEARS OF RETAIL TRANSFORMATION IN V4 COUNTRIES
(DE GRUYTER, BRATISLAVA, P. 200)**

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The socio-economic and cultural changes that have taken place in the Visegrad countries over the last 30 years have led to significant transformations in all areas of trade, and thus provide a timely topic for researchers, professionals, teachers, students and even lay readers dealing with economic and spatial issues of trade. Among them, I recommend reading the volume especially to those interested in the characteristics of retail trade and its territorial and temporal developments in Czechia, Slovakia, Hungary and Poland that have taken place after the regime change. The number of retail outlets, their capacity, quality and networks have evolved considerably, meeting the challenges of the market economy and removing the barriers of the centrally and state-controlled economy. Internationalisation was also a new feature. The international traders in the Visegrad Four countries had an urgent need to adapt to the new challenges. Complex and changing relationships with customers, manufacturers and trading companies (many of which were foreign) also constituted a challenge for them. Like all transformations, this one showed different patterns, with many trading companies adapting successfully to the new conditions, showing rapid growth and development, achieving considerable success, while others were less able to meet the challenges.

The joint work of the authors from the 4 Visegrad countries has considerable advantages, not only in providing a detailed description of the characteristics and features of each country, but also in providing a better understanding of the local context and the processes in the Visegrad region. The authors are professors, researchers and lecturers at Masaryk University, Comenius University in Bratislava, the Slovak Academy of Sciences, the University of Miskolc and the University of Wrocław.

The presentation of the retail sector in each country follows a similar structure, with a historical overview going back up to 100 years, followed by a focus on changes and typical developments in the decades since the change of regime. This is followed by a typology, a division of the development of retailing into stages, national characteristics and, in some cases, case studies. In each chapter, illustrative maps and diagrams are used to help understanding, showing changes over time and typical processes.

This structure is also evident in the chapter on changes in Czechia by Josef Kunc and Markéta Novotná. In Czechia, as in the other three countries, after the socialist era of top-down regulation, market conditions and customer needs played an increasingly important role in retailing. Compared with Western Europe before 1989, the large number of grocery stores and the very limited presence of non-food retail outlets are noticeable. In the last decades of socialism, despite concentration and modernisation, and the emergence of larger units, many features of Czech retailing lagged far behind those of Western European countries. The chapter describes the consequences of privatisation and the transformation of the cooperative sector in the identified stages:

- The stage of Atomisation (1990-95);
- The stage of Internationalisation (1996-2004);
- The stage of Consolidation (2005 – the present);
- The stage of Diversification (2013/14 – until now).

Illustrative diagrams help to understand the transformation of the commercial regional structure, the network development of the different chains, the different characteristics of shopping centre construction (localisation, area, brownfield and greenfield).

Frantisek Krizan and Kristina Bilková identify 3 phases in the process of Slovak retail transformation since the change of regime, namely:

- Stage of communism;
- Stage of transition;
- Stage of globalization.

This chapter provides a historical overview of the extremely rapid state take-up after 1948 and the stable networks of commercial cooperatives that emerged alongside the centralised state model, with 17,000 to 18,000 units. Here too, we see low-density retail networks and a situation, typical of other countries, where only the big cities had a truly diverse range of shops, while at

the same time there were often retail outlets in small towns with a low population density, which was not the case in Western Europe.

The chapter also mentions the former networks of shops that played a special role, with the Prior shops being mentioned here, and the currency shop network that was a curious feature of the former socialist countries, some of which had a different stock from the usual, with Tuzex in Czechoslovakia, Intertourist in Hungary and Pewex in Poland. Foreign-owned firms became dominant players in Slovakia in the 1990s and 2000s, and this period is broken down by the authors into the following phases:

- Dynamic development of supermarkets from 1996;
- Dynamic development of hypermarkets from 1999;
- Dynamic development of shopping centres from 2000;
- Dynamic development of discount stores from 2004.

In the chapter on Slovakia, a very interesting part is the presentation of spatial differences, West-East temporal differences (belatedness), hierarchical definition and diffusion. The prominent role of shopping centres in Slovak commerce is highlighted, which also implies the emergence of smaller shopping centres (under 20,000 m²) in smaller towns.

The chapter of Professor Tamás Sikos on Hungarian trade begins with a description of the historical past, the period between the two world wars and the post-war period. The author describes the impact of the positive changes after 1968, the construction of larger shops and shopping centres, and the strengthening of cooperative retailing, which remained important until the change of regime and even afterwards. Naturally, Hungary also witnessed a strengthening of the private sector, and a major expansion of retail chains and the creation of large-scale networks took place in the 1990s and 2000s. The chapter argues that a large-scale expansion of networks has also occurred here in the 2010s, for example in the case of Aldi or Lidl, which have by now become dominant players. A very interesting part of the chapter is the identification of 7 generations of shopping centres with very apt names from 1976 to the present:

Generation 1: “The dawn of opening”, 1976; Generation 2: “Early golden age”, 1980; Generation 3: “Western style” 1993-1996; Generation 4: “The age of dynamic development” 1997-2000; Generation 5: “The age of rivalry”; Generation 6: “The age of stabilisation” 2004-2008; Generation 7: “The period of hope” 2009-2021.

The chapter presents a very detailed analysis of the development of the various chains and shopping centres, their spatial distribution and patterns, with the help of spectacular diagrams and maps.

The chapter by Dariusz Ilnicki and Ryan Wyeth, which covers the last decades of retailing in Poland, identifies 4 phases. According to the authors, during the period of the centrally controlled economy from 1989 to 1990, the number of shops increased steadily, and contrary to the other countries presented, privately owned retail outlets also emerged here.

In the period 1989-1998, the number of shops in Poland also increased more in the central and large cities than in rural areas. Spatial patterns of growth and spatial development are depicted by large, expressive maps. They also show the faster development of metropolitan areas from the aspect of economic, social and income characteristics and differences. In stage 3, the number of shops decreased considerably in the 2000s, but their area increased, a process of concentration was observed, and this has in fact continued in the 2010s. The distribution of hypermarkets and shopping centres between 2010 and 2020 is also illustrated by spectacular maps, highlighting development trends, regional differences and patterns, and case studies on the main foreign chains (Tesco, Kaufland, Lidl, Dino, etc.).

The volume also includes a chapter on the similarities and differences in retailing in the Visegrad countries. Many of the processes in the four countries under review have been similar, but there are also differences. The privatisation of retail trade and the decline and disappearance of state ownership have occurred in all countries. In the 1990s, supermarkets and hypermarkets became the most popular stores, followed by large shopping centres as the main places of consumption. Shopping malls have often taken on a new cultural content, becoming spaces where, in addition to shopping, shoppers can meet each other, spend their leisure time, and in fact experience part of their social and community life. A similar feature is that the role of cities and large towns as hubs has increased, while spatial structures have also changed, with the commercial role of suburbs and suburbs increasing alongside city centres, and polycentric patterns and decentralisation processes have been observed. These similarities are reinforced by the steady increase in consumer demand, notably for foreign products, which were difficult to obtain in socialist times and were a novelty in the market economy. This also contributed to the internationalisation of retailing and the rapid expansion of foreign retail chains. A notable difference is that Slovakia has a smaller market size, with a smaller proportion of international chains and more foreign companies that are not present in the Slovak market. However, a similar phenomenon is that in the Visegrad countries, after the regime change, shopping centres were typically built on the outskirts of urban areas as part of greenfield investments, shifting

the focus of the flow of shoppers and spatial relationships from the inner city to the outer areas, suburbs. Later, with the commercialisation of brownfield sites, shopping centres were built in many places on previously used sites, often in city centres and historic city cores, thus redefining commercial transport links. Similarities also include a certain west-eastward lag in the opening of shops by international trading companies.

Expected trends in future retailing are also reflected in the volume, such as the timeliness of the changes in consumer spending patterns that can be expected in times of economic downturns and recessions, similar to the global financial crisis of 2008. Sustainability issues are also becoming more and more prominent in all areas of commerce, including hybrid commerce concepts, offline vs. online commerce, the development of technologies based on the use of virtual reality, and the potential for biometrics and other innovations. Digital technology, new business models and demographic and cultural changes are likely to transform the retail sector again and, in fact, continuously, and with the further spread and growth of online shopping, some shops could be at risk of closure. At the same time, there is also a chance to develop and use big data databases, using new technologies, to create personalised and individualised shopping experiences, providing attractive conditions and solutions for younger generations. Another emerging trend in the Visegrad countries is that, alongside the popularity of global brands, more and more consumers are looking for regional, local products, thus supporting local producers. Recognising this, not only retail chains, but often also international retail chains, are increasingly working with producers, even small producers, to offer unique products and meet the needs of these customers.

The timeliness of the book is demonstrated by the analysis of the impact of the COVID-19 epidemic on trade, showing the changes in shopping habits and the changes in the operation of different types of shops. In addition, the volume contains a brief discussion of the energy crisis, which is likely to lead to a certain reorganisation and concentration of retail networks, as small units may be significantly affected by inflationary pressures and, in some cases, the establishment of maximum prices.