Performance of enterprises in cultural and creative industries in large Hungarian cities between 2008 and 2018

Petra Kinga Kézai
Széchenyi István University Kautz Gyula Faculty of Economic Leadership and Marketing Department, Centre for Economic and Regional Studies Hungarian Academy of Sciences, West Hungarian Research Department, Hungary
E-mail: kezai.petra.kinga@sze.hu

János Rechnitzer
Centre for Economic and Regional Studies Hungarian Academy of Sciences, West Hungarian Research Department, Széchenyi István University Doctoral School of Regional- and Business Administration Sciences, Hungary
E-mail: rechnitzer.janos@sze.hu

Unquestionably, the creative economy's weight and importance in nation-states' economies are increasing. This study examines the performance of partnerships belonging to creative industrial branches in Hungary between 2008 and 2018. Research questions are as follows: What economic potential does the creative economy represent in Hungary, particularly in certain large cities? What tendencies exist regarding temporal changes? What are the professional branches in cities that defy the creative economy, and how has their performance changed during the period examined in this study? This analysis deals with partnerships in the creative economy in Budapest and eight Hungarian cities with a population greater than 100,000. Dun & Bradstreet Hungary, Ltd., provided the database used as the basis for the statistical analysis. The data of companies operating on the last day of the given year were collected based on valid Hungarian Unified Sectoral Classification System for Activity Groups (TEÁOR) codes and according to the indicated registered office, thus guaranteeing full national coverage. Regarding headcount data, only reports for the entire calendar year were included in the study, based on the statistical headcount for the given year. Within the study's 11-year reach, research has shown that there were no significant territorial changes in the creative economy and that Budapest still dominates the landscape, with the other eight cities playing minor roles (11%–12%). During the study period, all the cities had individual development paths.

Keywords:
cultural and creative economy, urban research, urban development

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Introduction

In the 21st century, creativity, knowledge, and innovation have become increasingly important to the economic development of both cities and regions. Productive thinking and human capital have made the creative economy a prominent economic driver (Dobó 2007). The Hungarian Patent Office (2005) was the first to quantify the economic weight of the copyright sector in terms of output and employment. The Office concluded that 'they represent a significant weight in the national economy, both in relation to other economic sectors and to European Union [EU] countries' and do 'not benefit from an economic weight commensurate with its economic weight. Economic policy attention commensurate with its size' (2005: 107).

Cultural and creative industries (CCIs) are a significant part of the economy (Rechnitzer et al. 2019). According to a 2015 report by Ernst & Young, the global market value of CCIs reaches USD 2.250 billion per year (3% of the world gross domestic product [GDP]), and approximately 29.5 million people are employed in these industries (Ernst & Young 2015). In Europe alone, the Organisation for Economic Co-operation and Development (OECD 2018) estimates that creative industries employ 30 million people. According to data from the European Commission's statistical office, Eurostat, CCI activities accounted for nearly 3.7% (8.4 million people) of employment in the European Union (EU) in 2015 and contributed 4.2% of its GDP (Pasikowska-Schnass 2019). The creation of the social and economic environments necessary for the establishment of these industries is becoming increasingly important in the lives of cities, as they compete for progressive resources. For this reason, over the last decade, an increasing number of cities have been using CCIs as a tool to develop their economy and, together with tourism, raise their profile to make themselves more attractive destinations (Krstinić Nižić et al. 2019). According to the European Commission (2018: 1.), 'The New European Agenda for Culture (the New Agenda) responds to the European Leaders' invitation to do more through culture and education, to build cohesive societies and offer a vision of an attractive European Union. It aims to harness the full potential of culture to help build a more inclusive and fairer Union, supporting innovation, creativity and sustainable jobs and growth'.

In Hungary, it became clear after the turn of the millennium that knowledge-based sectors of the economy are the main means through which to participate in the European economic space. This realisation has influenced the development of creative and knowledge-intensive economic sectors, as reflected in national, regional, and local economic strategies (Egedy et al. 2018, Kovács et al. 2011, Keresnyei–Egedy 2016). Consequently, the CCI cluster has become an increasingly popular research topic over the last two decades, and its impact on the economy has been analysed, particularly in terms of employment and regional and urban development (Andari et al. 2007, Cooke–Schwartz 2007, Müller et al. 2018, OECD 2006). Rich international

and national literature exists on this topic, and our study focuses on the territorial and regional dimensions of the domestic creative economy.

In this study, we sought to answer the following questions: What is the economic strength of the CCI sector in the country as a whole and in individual cities? In which cities is the CCI sector active and on what scale? We analysed the period 2008 to 2018, seeking to answer the following question: How has the size of the CCI sector in metropolitan areas with 100,000 inhabitants or more (Budapest,[1] Debrecen, Győr, Kecskemét, Miskolc, Nyíregyháza, Pécs, Szeged, and Székesfehérvár) changed (Figure 1)?

Figure 1

The examined cities in Hungary

For comparison, we look at the CCI performance of the rest of the country as a whole, which includes, in addition to the eight cities and the capital, the 15 cities with county status and their agglomerations, as well as towns and villages (this definition applies to the following figures and tables).

[1] Budapest is not only the capital but also the largest city in Hungary, with an area of 525.2 square kilometres and 1,723,836 inhabitants, which far exceeds the total population of the eight cities examined (Debrecen: 200,974; Győr: 132,735; Kecskemét: 109,651; Miskolc: 150,695; Nyíregyháza: 116,554; Pécs: 140,237; Szeged: 159,074; Székesfehérvár: 95,545) (HCSO 2021).

Cultural and creative sectors in the European Union

'Cultural and creative sectors have huge capacity for experimentation, anticipating trends, and exploring models of social and economic innovation' (European Commission 2018: 5.). The Cultural and Creative Industries Cultural and Creative Cities Monitor (European Commission 2019), developed by the European Commission's Joint Research Centre, shows that cities that invest in culture can gain a significant advantage over their peers (Montalto et al. 2017). However, for CCI businesses and professionals to contribute to economic growth by exploiting the opportunities available, they must be able to facilitate growth and job creation and offer favourable framework conditions. Thus, a regulatory environment that rewards job creation and provides better access to finance and opportunities for growth and internationalisation must be created (European Commission 2018). To this end, the EU has established the European Creative Hubs Network (ECHN), a project launched under the EU's Creative Europe programme. The ECHN project aims to facilitate and support the interconnection and cooperation of creative hubs across Europe [1].

Among many studies, Daly–Garattoni's (2019) is relevant to our research. It describes the specific challenges and opportunities faced by creative hubs in small and medium-sized cities. It also established the importance of ongoing dialogue about creative spaces in small and medium-sized cities. It is essential for these cities to constantly redefine their objectives according to their specific circumstances and find ways to be sustainable. The ECHN project supports these efforts in Europe (Daly–Garattoni 2019).

Domestic territorial research on the creative economy[2]

In a pioneering application of Florida's (2002) theory, Lengyel–Ságvári (2009) examined creative occupations and their practitioners. On this basis, he delimits creative managers, the core, and professionals in occupational fields and assigns groups according to the occupational classification system. We find it fascinating to interpret the creative core in terms of the occupational groups' knowledge formations, which are the authors' analytical, synthetic, and symbolic knowledge-based job grouping points of contact. For the purposes of our topic, these knowledge forms and the occupations that embody them are concentrated in metropolitan spaces, as county-level data could not be found. For counties that include metropolitan areas, county-level information cannot be used to demonstrate analytical or synthetic knowledge, or, more precisely, a perceptible concentration. In some counties, the scores increased; that is, the estimated number of persons employed increased.

[2] Several studies exist on this (Egedy 2017, Egedy 2020, Egedy et al. 2018, European Commission 2016, Marosán–Márkus 2019), so we do not include it in our research.

However, this was not a consequence of the presence of metropolitan areas, but rather a random phenomenon contrary to a regular pattern. The authors conclude that the presence of universities can enhance creative jobs, and the presence of foreign working capital can have a diminishing effect on creative employment. However, their model does not clearly explain the distribution of knowledge-based jobs in the country, particularly their composition in large cities.

Egedy et al. (2018) show a clear interdependence between cities and the creative economy by analysing the changing geographical patterns of the creative economy using longitudinal statistical data. Their results suggest that the relative importance of Budapest and its urban region has been steadily increasing, with even larger regional centres failing to keep pace with the Hungarian capital. They also found that the cities comprising the Hungarian urban system have become highly differentiated in terms of their attractiveness to creative firms and workforces and that there is increasing competition for knowledge-based and creative activities among secondary cities. The increasing geographical concentration of the creative economy (particularly knowledge-intensive industries) is partly a consequence of past neoliberal regional and urban policies.

In addition to providing a demanding and informative interpretation, Kovács et al. (2011) used regional data to investigate the regional specificities of this new sector. While employment in the creative economy increased steadily in Budapest in the years they studied (1999, 2004, 2007), the number of people employed in cities with more than 100,000 inhabitants decreased slightly (from 17.7% to 15.3%), similar to the trend observed in municipalities in other categories. Apart from large cities[3] with a university tradition and capacity (Debrecen, Szeged, and Pécs), cities with a strong industrial base (Győr and Miskolc), followed by Kecskemét and Székesfehérvár, were found to be slightly behind Nyíregyháza. Interestingly, in 2007, the top 12 cities in the creative economy were Pécs (3rd), Szeged (4th), Székesfehérvár (5th), and Debrecen (12th). Győr (18th) and Miskolc (20th), as large cities with regional functions, did not make it into the leading group of traditional university centres, while Kecskemét (22nd) and Nyíregyháza (32nd) also lagged behind. Regarding the role of the creative economy in shaping the spatial structure, the authors noted that the former East–West divide narrowed the 'gap between Budapest and the creative distance from rural centres of the creative economy' (Kovács et al. 2011: 60.).

Rittgasszer (2009), based on the statement 'Big cities coexist with their regions', presents novel results by analysing 174 small regions in the country using variables

[3] Győr and Kecskemét are dominated by vehicle manufacturing within the manufacturing sector, but Miskolc is also prominent in this sector, and perhaps Székesfehérvár should also be mentioned as a connector. However, in the cases of Székesfehérvár and Debrecen, the industrial structure could be considered more diversified, although there are outstanding specialities in each city (in Debrecen, the pharmaceutical industry and electronics; the latter is also significant in Székesfehérvár, as is metal production and processing). Nyíregyháza has a one-sided structure in terms of value-added (rubber and plastic industry), as do Szeged (food industry) and Pécs (electronics industry) (Rechnitzer–Berkes 2021).

developed for Florida's (2002) 3T (technology, talent, tolerance) model, that is, 11 technological, 26 talent, and 6 tolerance variables for 2006. After examining the corresponding internal correlations between these variables, he was able to isolate four groups with different levels of creativity. The differences between our metropolitan areas are also evident. The sub-regions of Debrecen, Pécs, and Szeged were placed in the super-creative group, and these had the highest values for all three T-factors. The sub-regions of Győr, Kecskemét, Miskolc, and Székesfehérvár were placed in the third group; these had high values for the technology variables, while the talent variables had medium values, and the tolerance variables were rather average. The Nyíregyháza sub-region was placed in the 'non-creative' category; it had no significant value for technology, talent, or tolerance. It is worth highlighting the author's finding that at the sub-regional level, the talent variable group has the strongest influence on the given territorial unit's income generation. Gombos (2016, 2018) investigated the differences between city types in terms of CCIs among cities with more than 10,000 inhabitants in Hungary. In her cultural classification, she distinguished between centrally located municipalities and those that were lagging behind. However, her analysis also showed that there is an active cultural life in settlements where not all three functions are available, that is, where the size of the settlement cannot explain the lack of cultural life.

Since the millennium, large cities have been home to businesses that provide knowledge-intensive business services (KIBS). The KIBS sector comprises all highly-specialised service providers that employ highly-skilled staff and form part of international networks or embody the modern economy by shaping and serving it (Bajmócy 2007). The KIBS sector's new technology-related activities include research and development (R&D) consultancy, design development for new technologies, education, training, management consultancy, and technical design. Other classic activities include marketing, advertising, legal consultancy, accountancy, traditional financial services, and building design, development, and environmental services. The relationship between new technologies and the activities they trigger is a key aspect of the division; however, in many cases, they merge and interlock within organisations. Domestic metropolitan areas are true regional centres for the KIBS sector (Nagy–Nagy 2010). However, while capital and its agglomeration are real concentration areas for these services, Hungary's eight large cities house sites belonging to several entities, in contrast to the other metropolitan areas. Regrettably, the referenced research only provided numerical results and has not been able to show the structure of the KIBS sector, its real structural conditions, or even its evolution over time.

The existence of a creative economy can also be characterised by the presence of organisations that concentrate on higher value-added activities and are thus essential in the management of economic life. The presence in a city centre of the shared service centres of large international and national companies and of the organisations

serving, supplying, and complementing them can be a clear indication of creative activities and workplaces. Döbrönte (2018) identified 16 countries with advanced product service (APS) firms in the Central European region. Previous analyses clearly indicate that, in addition to the size of cities and their advantageous economic agglomeration, the various services they offer, such as cultural and entertainment facilities, are factors that positively impact living conditions (housing supply, quality of urban life, infrastructure facilities, and accessibility) and influence the location choices of the large companies analysed and the location of their business units. Among the countries studied, capital cities were the main destinations for APS companies and their national locations, with only secondary centres standing out from the Central European area, given its ability to accommodate large international companies of major importance. From our subject's viewpoint, that is, the vantage point of the creative urban environment, it can be emphasised that the cities analysed in the major regions in question do not have the economic and intellectual potential to attract high-level business services linked to the creative economy and thus become part of an international network of such services.

Csomós (2017) similarly reviewed the locations (office network) of APS firms in Central Europe and the Globalization and World Cities Research Network (GaWC) in 2012. The author presents the spatial or, more precisely, metropolitan distribution of the 656 offices in the APS sector, which, again, focuses on capital cities, and, to a lesser extent, major international corporations with significant locations (in Hungary, there are two such cities: Győr and Debrecen). The appendix to the referenced paper is relevant to our topic, as it lists the main areas of the APS sector's activity, together with the top 50 leading companies. Thus, it provides an additional contribution to the economic content of the KIBS sector, confirming that accountancy, advertising, legal and financial consultancy, and banking firms should also be included as creative factors. The economic entities listed are the creative labour force, demanding high-quality services that will strongly influence the establishment and operation of other elements in the creative economy in the future.

In the Hungarian literature, one study (Miszlivetz 2012, Miszlivetz–Márkus 2013) more generally understands creativity and aims at the system's local and territorial development. The Creative City Sustainable Countryside (KRAFT) index is based on an integrative approach and emphasises that local development depends on innovative, creative social, economic, natural landscape, and community relations that are available in the territorial system (municipality, region); through the links and networks between them, these create specific resources that can be linked to the unit under study. By exploring these systems and networks of factors, it is possible to shape the future and serve the well-being of local people, which is also a key factor for the environment, society, and the economy. While Florida's 3T indices provide the basis for city-level development strategies and action plans (Lévai 2019), through his creative cluster model (creative node), which focuses on smaller territorial units,

we can classify neighbourhoods and districts according to the creativity of the city and its inhabitants based on the spatiality factors of creativity. Morvay (2019) also uses the example of Győr and its subsystems, specifically the interconnection of CCI activities and productive economic bases and their mutual impact. Fekete–Morvay (2019, 2020) developed and applied an analytical model for quantitative comparative analysis of cities' (Győr, Veszprém, and Debrecen) cultural, tourism, and financial potential in vying for the title of European Capital of Culture, expressed by 14 indicators.

From the perspective of our topic, these studies provide guidance by highlighting the role of soft factors, which, unfortunately, cannot be validated. In our second analytical perspective, in terms of temporality, to which the above-mentioned studies also devote attention, we can already register structural changes in the creative economy, and in some cases, they even provide explanations for its development and reorganisation.

Regarding domestic research, we can conclude that CCIs have been included in the field of territorial research. The analyses emphasised that we are dealing with a new type of activity system in which knowledge, skills, and talent play a prominent role; however, the new driving forces arising from the nature of the activities cannot be neglected. These can be inspired by the specific nature of places, the quality they have created over time, and the incentive to create new activities, thus expanding the space and attractiveness of the local economy and creating new economic, organisational, and operational formations.

Domestic analyses have stressed that the creative economy shows a marked spatial concentration, with the capital city and its agglomeration gradually exerting a shaping and diminishing influence. In large cities, the creative economy is already recognisable as a more creative industry, but its spheres of influence do not yet indicate a specific character.

The aim of this research is to precisely explore the creative economy in the capital and the eight major cities in Hungary between 2008 and 2018, the intensity with which it has spread, and how its structural characteristics have changed; that is, whether it is possible to detect – to the best of our knowledge, based on economic performance – data that have not yet been analysed in the national literature regarding the specialities or activities that can be linked to general metropolitan functions. Organisations are the focal points of the Hungarian urban network, in addition to the capital.

The definition of creative and cultural industries and the database

In Hungary, after the turn of the millennium, a number of studies examined the economy and industries using several different approaches (Borsi–Viszt 2010, Egedy 2017, 2020, Egedy–Kovács 2008, 2009, Egedy et al. 2014, 2018, Kovács 2009, Kovács et al. 2007, 2011, Lengyel–Ságvári 2009, Lengyel et al. 2016, Rittgasszer 2009, Ságvári–

Lengyel 2008). In 2006, the Creative Industries Platform (KIP), supported by the National Research, Development and Innovation Office, defined 'creative industries as those activities that are rooted in individual creativity, skills and abilities and skills, and which are capable of generating wealth and jobs through the creation and use of intellectual property' (KIP 2010: 15). The following sectors were included among the creative industries: electronic and print media, advertising, film and video, software and digital game development, architecture, publishing, music and performing arts, fine arts, applied arts, design and fashion design, and arts and crafts (KIP 2010).

In our study, we defined CCIs based on the 12 sectors recommended by the KIP and the correspondence between the narrowly defined creative industries (see Appendix) and the Standard Industrial Classification of Economic Activities (TEÁOR'08)[4] classifications Borsi–Viszt's (2010) analysis identified. In all the referenced analyses and in international practice, financial services are classified among CCIs. However, we differed in this regard. Our explanation is simple: Because Budapest-based companies provide financial services. Outside Budapest, there are neither banks nor significant financial services and advisory firms; the economic activity of bank branches or advisory offices is calculated at the head office, which is located in the capital. Therefore, we refrained from analysing this sector, as its specific location would have increased the capital's already significant weight within the domestic CCI group.

In the course of the study, we collected data for 27 TEÁOR codes, which were grouped into four activities important for urban development, as shown in Table 1 (Rechnitzer 2016). Following Rechnitzer (2016), the CCI sections included in the analysis were grouped into the following main activity groups according to the nature of each activity: media and publishing, market services, scientific research and development, and artistic activities.

Data collection covered firms operating on the last day of the year in question, according to the Hungarian Unified Sectoral Classification System (TEÁOR'08) and the head office. The Dun & Bradstreet Hungary[5] database provides full national coverage. Companies are included according to the statistical number of employees for the year in question, or if no employees are provided, according to the average number of employees reported in the annual tax return for each organisation and the applicable branches of activity. Enterprises that do not report employees are not equivalent to sole proprietorships; as they are economic units with no employees, they

[4] The Hungarian Unified Sectoral Classification System for Activity Groups, the codes of which are contained in the database.

[5] The data providers of Dun & Bradstreet Hungary [2] include the Ministry of Interior, National Directorate General of Immigration, Equal Treatment Authority, Public Procurement Authority, eupalyazatiportal.hu, Economic Competition Authority, Ministry of Justice, Ministry of Innovation and Technology, Public Procurement Authority, Central Statistical Office, Hungarian State Treasury, Hungarian Mining and Geological Service, Magyar Közlöny Lap- és Könyvkiadó – cegkozlony.hu, National Tax and Customs Administration, National Office for the Judiciary, Ministry of Finance – Labour and Employment Inspectorate.

are included in the database as companies without employees (consider, for example, enterprises that do not operate on a full-time basis). For financial data, only full calendar year financial statements were used.

Table 1

The main groups of activities associated with the examined CCI sectors

Media and publishing (6)	Market services (11)	Scientific research and development (5)	Artistic activity (5)
		7200 Scientific research and development	7410 Specialised design activities
	5820 Software publishing	7210 Research and experimental development on natural sciences and engineering	7420 Photographic activities
	5821 Publishing of computer games	7211 Research and experimental development on biotechnology	8552 Cultural education
5811 Book publishing	5829 Other software publishing	7219 Other research and experimental development on natural sciences and engineering	9002 Support activities to performing arts
5813 Publishing of newspapers	5911 Motion picture, video and television programme production activities	7220 Research and experimental development on social sciences and humanities	9003 Artistic creation
5814 Publishing of journals and periodicals	5912 Motion picture, video and television programme post-production activities		
5819 Other publishing activities	5913 Motion picture, video and television programme distribution activities		
6010 Radio broadcasting	7111 Architectural activities		
6020 Television programming and broadcasting activities	7310 Advertising		
	7311 Advertising agencies		
	7312 Media representation		
	9004 Operation of arts facilities		

Source: Authors' classification according to the Hungarian Unified Sectoral Classification System (TEÁOR'08).

The data are specified in the Hungarian forints. Due to the amendment to the Accounting Act in 2016, the balance sheet result was not available at that time, so in order to provide consistent data for the review period of 2008–2018, we examined profit after tax. The data were not adjusted for inflation, so calculations and comparisons were made in nominal terms.

Among the limitations of the research, it should be mentioned that we worked with aggregated data for the given sectors: Budapest, the eight large cities, and the rest of the country. For example, we were unable to specify the year of establishment, and thus, the CCI group of CCI units.

The organisational system

In Hungary, as is the case with many other activities, Budapest is the leader in the CCI group. More than 50% of CCI partnerships are located in the capital, with one-third in the rest of the country, while only 11-12% of companies are located in the eight big cities. Figure 1 shows that there was no significant spatial reallocation between 2008 and 2018. The shares of Budapest and the eight cities decreased slightly. The rest of the country saw the emergence of new CCI firms, essentially pointing to the gradual strengthening of the metropolitan agglomeration and the growth of CCI groups in small and medium-sized enterprises (SMEs). Egedy et al. (2014, 2018) reported similar results.

Table 2

Number of domestic economic organisations, joint ventures, and the proportion of CCIs

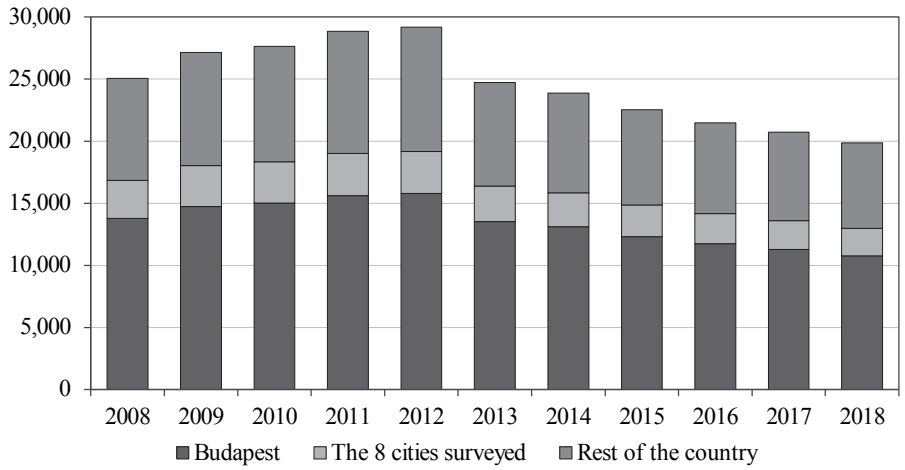
Year	All business organisations in Hungary	Total partnerships in Hungary	Total CCI partnerships in Hungary	CCI weight (in %) of all partnerships=100%
2008	1,654,299	561,424	25,054	4.4
2018	1,908,808	521,003	19,870	3.8

Source: Own compilation based on HCSO (2008b, 2019).

Figure 2 illustrates the growth in registered businesses, demonstrating the tendency of a technical-methodological shift, as opposed to a significant economic shift.

Figure 2

Number of companies in the CCI group in the territorial units surveyed



In terms of the evolution of the number of CCI firms in Hungary, the period under review was divided into two distinct periods. Between 2008 and 2012, the number of CCI firms increased steadily, with 35,223 registered entities in 2012, i.e. over 5% more firms than in 2008.[6] Between 2013 and 2018, this trend steadily decreased. The number of companies decreased by 12.5% nationally in the period 2012–2013. Finally, in 2018, only 84% of companies registered in 2008 were still in operation. The year 2018 had the least companies in the CCI group (19,870), representing a 32% decrease compared to 2012. We hypothesise that this change may be due to the Small Business Activity Tax (KATA)[7] tax regime[8] announced in 2012 and enforced on 1 January 2013. As shown in Figure 3, the evolution of CCIs in

[6] 'The growth in the number of registered businesses is driven by the increase in the number of partnerships and those self-employed. At the end of 2012, there were around 1,666,000 registered businesses; nearly 15% more than at the end of the previous year. As in previous years, the increase in the number of joint ventures continued in the same period as in previous years' (HCSO 2013: 1). 'The share of sole proprietors (formerly known as self-employed persons in the register of sole proprietors) was 34.6% of all self-employed persons. After a rise in the last two years, the number of self-employed persons fell again by 4.3% in 2012' (HCSO 2013:2).

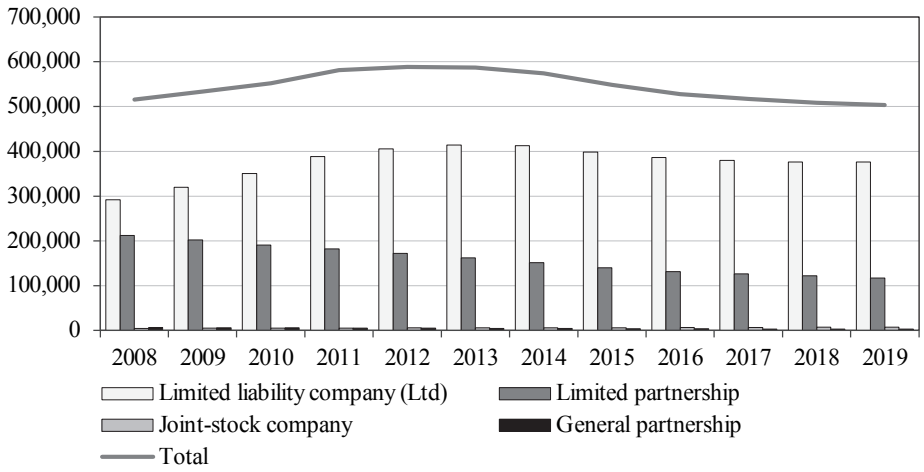
[7] With the special tax on small taxable enterprises, KATA is contained in the 2012 Act CXLVII of the Itemised Tax on Small Taxable Enterprises and Small Business Tax, the provisions of which entered into force, in principle, on 1 January 2013. The first period for which the tax authority could be registered with for the itemised tax on small taxable enterprises was 1–31 December 2012. The starting date for tax liability, in this case, was 1 January 2013.

[8] From 2013, the KATA tax regime was introduced for sole traders, sole proprietorships, limited partnerships with only individual owners, general partnerships, and law firms. The 'hoofed' entrepreneur does not have to account for their expenses; the requirements for such persons are simple administration (tax returns must be filed once per year) and a fixed monthly amount of tax payable on turnover up to HUF 12 million (side-line: HUF 25,000, full-time: HUF 50,000 and HUF 75,000); additional tax is payable above a certain amount (HUF 3 million) for the same or a related principle.

Hungary supports this claim. Taxpayers under the KATA tax regime are not included in the database processed in our research, as small taxpayers operate as sole proprietors, do not have a company registration number, and are not obliged to publish accounts (Act CXLVII of 2012).

Figure 3

Number of joint ventures in Hungary by management type



Source: Own compilation based on HCSO (2020).

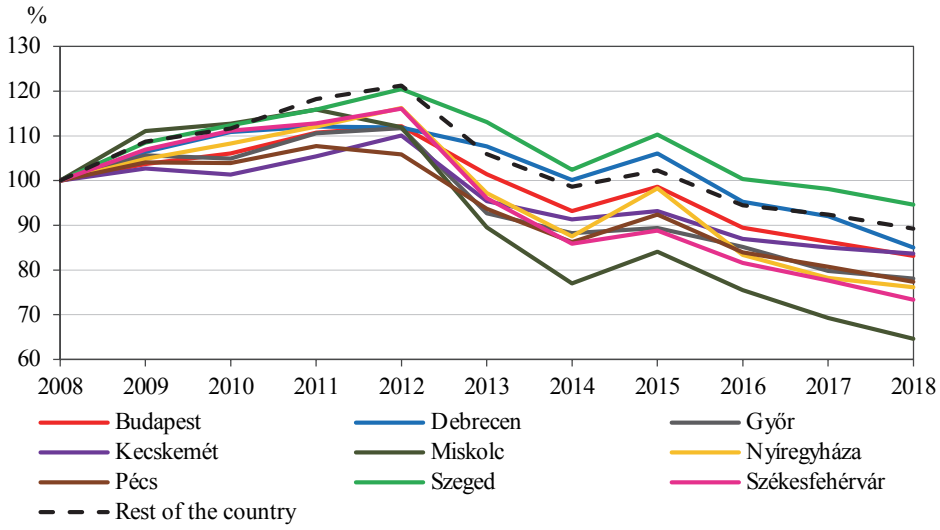
Fundamental trends can also be identified for the eight Hungarian cities, as well as for Budapest and the rest of the country, with a steady increase observed between 2008 and 2012, followed by a decrease after 2012. If we fit a linear regression function to the national trends, we find that $Y = -0.0547x + 1.1376$, where the explanatory power $R^2 = 0.8961$, i.e. the slope is –0.0547, and the constant (intercept) = 1.1376, which shows that the number of enterprises declined by an average of 5.47% per year over the period of interest. Given that the database represents the full universe of firms, no testing was performed. Regarding the function fitting, only temporal change was considered an independent variable, but keep in mind that the evolution of the number of joint ventures is influenced by a number of other factors (e.g. legal regulations, economic developments, business environment, incentive schemes, etc.). The average decrease compared to the base year of 2008 was 12 percentage points for the years 2013 to 2018.

The number of firms operating in the CCI group in large cities also stands out (Figure 4), with a presence of between 11.5% and 12.3%. The largest increase in the

number of CCI firms between 2008 and 2012 was observed in Szeged,[9] where the number of CCI firms increased by the end of the period; specifically, one-fifth more enterprises were registered. The following increases were seen in the same period: Nyíregyháza (16.2%), Székesfehérvár (16.1%), Budapest (12.1%), Miskolc and Debrecen (both at 11.9%), and Győr (11.7%), followed by Kecskemét (10.5%) and Pécs (5.5%). The share of organisations operating in the CCI sector was not uniformly the highest in 2012, with Debrecen, Miskolc, and Pécs, which peaked in 2010 and 2011, respectively, and began to decline in 2012.

Figure 4

Changes in the number of enterprises operating in the CCI group in the examined territorial units (2008=100%)



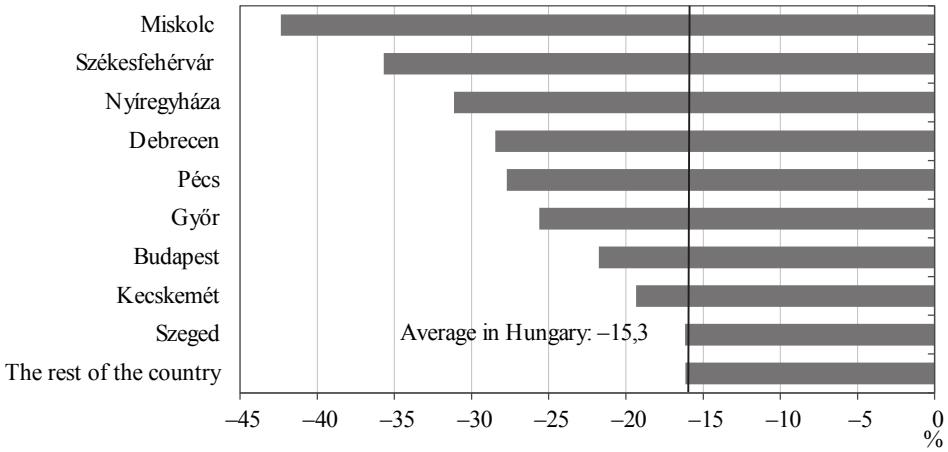
Between 2013 and 2018, the national trend showed that the number of CCI partnerships decreased by one-third, albeit to a different extent depending on the area. From 2012 to 2013, two-fifths of the organisations previously operating in the CCI sector in three large cities (Miskolc, Nyíregyháza, and Székesfehérvár) ceased to exist, demonstrating that the new form of business organisation (taxation) had spread rapidly. The largest decreases were observed in the following cities in descending order: Miskolc (47.3%), Székesfehérvár (42.8%), Nyíregyháza (40.1%), and Győr (33.6%), followed by the rest of the country (30.2%). Szeged (25.8%), Kecskemét (26.4%), and Debrecen (26.9%) recorded the smallest decreases.

[9] Of the TEÁOR activities registered in Szeged, from 2008 to 2012, 56 companies were classified as 7420 Photographic activities, 14 companies as 7311 Advertising agencies, 11 companies as 7410 Specialised design activities, 9 companies as 5820 Software publishing, and 7 companies as 5811 Book publishing.

The largest decrease in the number of CCI enterprises was recorded in Miskolc, with a decrease of 42.3% over the entire period under examination (2008–2018). However, the number of enterprises also decreased significantly in the following other large cities in descending order: Székesfehérvár (35.6%), Nyíregyháza (31.1%), Debrecen (28.4%), Pécs (27.7%), Győr (25.6%), Budapest (21.7%), Kecskemét (19.3%), and Szeged (16.1%), followed by the rest of the country (16.1%). Figure 5 shows CCI enterprises from 2008 to 2018 by area.[10] Budapest, with a 21.7% decrease, is in the middle of the range, while the rest of the country only saw a decrease of 16.1%, which confirms our earlier finding regarding concentration.

Figure 5

Change in the number of joint ventures in the CCI group, 2008–2018 (2008=100%)

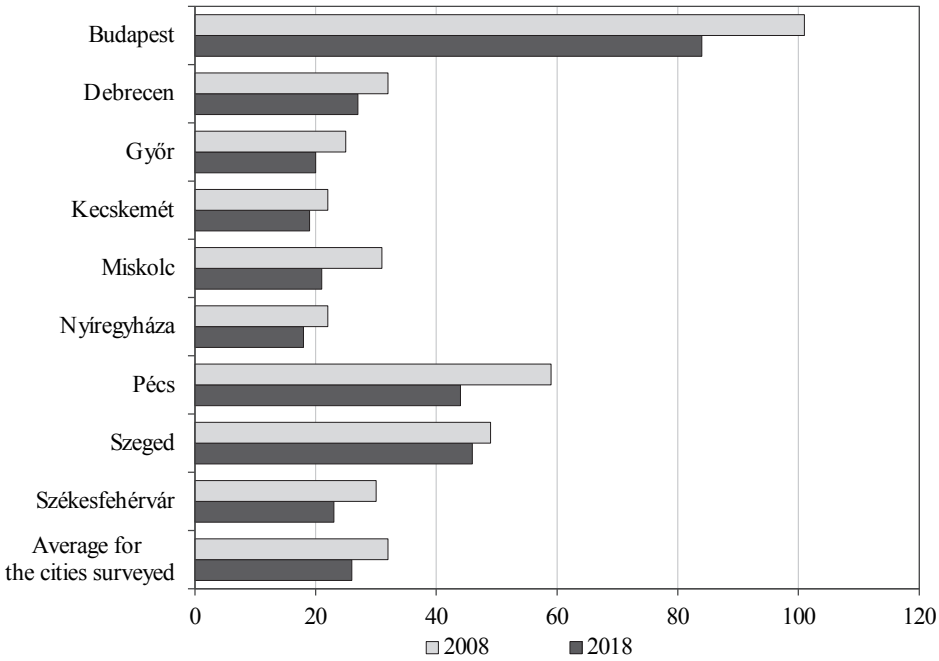


Specific values of CCI joint ventures per 10,000 inhabitants in the surveyed territorial units in 2008 and 2018 (HCSO 2008a, 2018) (Figure 6) show that Budapest has always had the highest number of CCIs per 10,000 inhabitants. The average for the large cities was calculated from the value for each city, weighted by the number of inhabitants, which was 32 per 10,000 inhabitants in 2008; in 2018, the figure was only 26 organisations. Among the big cities, Pécs, Szeged and Debrecen were at the top in 2008 and 2018. In all of these cities, the CCI per 10,000 inhabitants was higher than the average for large cities throughout the period.

[10] Basically, the number of CCI co-operative enterprises has decreased throughout the country, with 13,775 in Budapest in 2008; in 2018, there were only 10,778.

Figure 6

Number of CCI joint ventures per 10,000 inhabitants in the surveyed territorial units



Production potential and efficiency

We examined the weight of the CCI sector in terms of company turnover and the number of employees from 2008 to 2018. Figure 7 shows the ratio between turnover and the number of employees, indicating the size of the CCI group share in the country as a whole, in the large cities surveyed, and in the rest of the country.

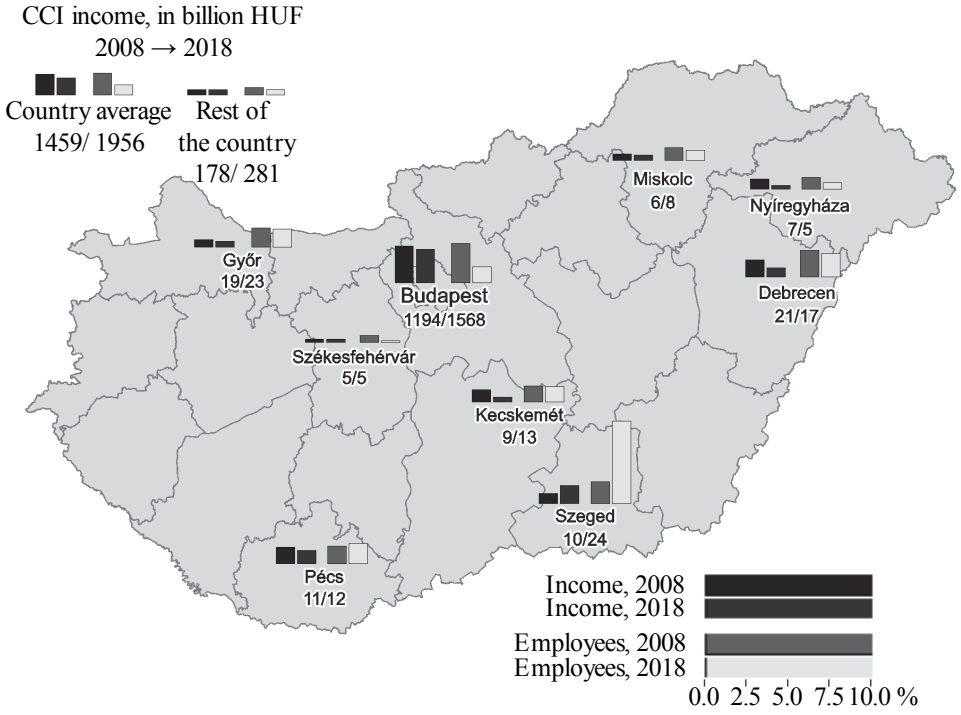
The aggregate turnover of enterprises operating in the CCIs shows a fluctuating trend over the period under review, although the fluctuations are insignificant. The economic crisis was also felt in terms of turnover, which fell steadily from HUF 1.459 billion in 2008 to HUF 1.328 billion in 2013. By 2018, it had increased to USD 1.956 billion. The changes are linked to the increase in organisational concentration, the higher-order books resulting from economic recovery, and the strengthening of certain CCI sub-sectors such as architectural engineering, R&D,[11] and the media.

[11] A number of new projects have been launched, such as the Centre for Higher Education and Industrial Cooperation (CEEC) in Győr, which, with HUF 14 billion in government funding, has put Széchenyi István University's R&D on new footing (Fekete 2018).

Stagnation differs across the affected territorial units (Figure 7). The CCI in capital businesses followed national trends and was back on a growth trajectory in 2014. Budapest remained unchanged in its concentration of revenue (81.8% in 2008), although a slight decrease was observed by the end of the period (80.1% in 2018). In the eight large cities, turnover clearly stagnated at a rate of between 5.5% and 6.8% over the period of interest. The rest of the country prevailed, with CCI businesses growing by 57.9%, and their share of the country as a whole increasing (Figure 8). Those based in Budapest accounted for 31.3%, while those in the eight big cities accounted for 22.7%, giving overall CCI affiliates a 34% increase in turnover.

Figure 7

CCI group turnover and the number of employees in the examined territorial units (total companies=100%)



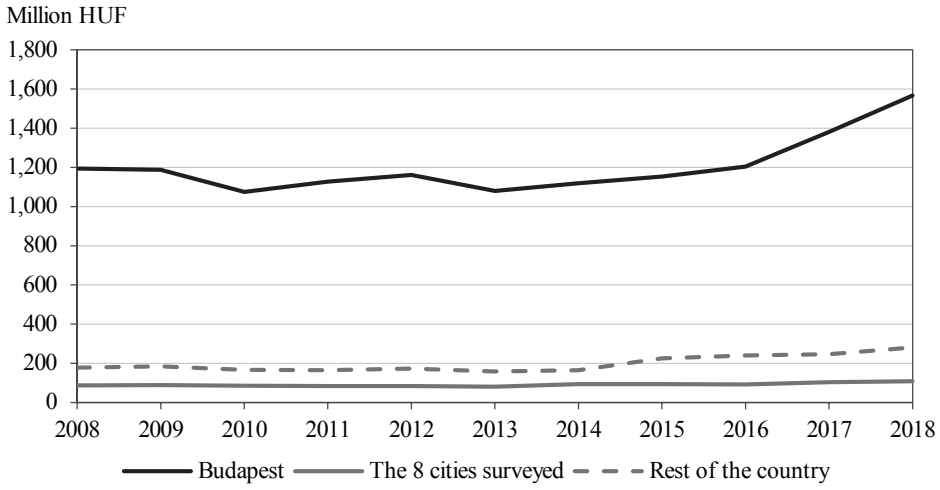
Molnár et al. (2018)[12] found significant differences in the eight large cities' specific economic performance indicators and structural characteristics, and our present research on the evolution of CCI group turnover for the eight metropolitan areas has

[12] Molnár et al. (2018), similar to the present study, have identified specific groups: foreign working capital-dominated manufacturing cities (Győr and Székesfehérvár), reindustrialising cities (Kecskemét and Miskolc), the knowledge centres (Debrecen, Pécs, and Szeged), and the rural city of Nyíregyháza.

revealed several interesting findings (Figure 9). These cities can be divided into three broad groups, according to the size and growth rate of their turnover. The first group consists of cities where the annual turnover of the CCIs reached or exceeded HUF 10 billion or more in each year: Debrecen, Győr, Pécs, and Szeged. Considering Budapest as part of the urban hierarchy, Molnár et al. (2018) identified these cities as members of the rural elite.

Figure 8

Annual turnover of CCI companies in the examined territorial units



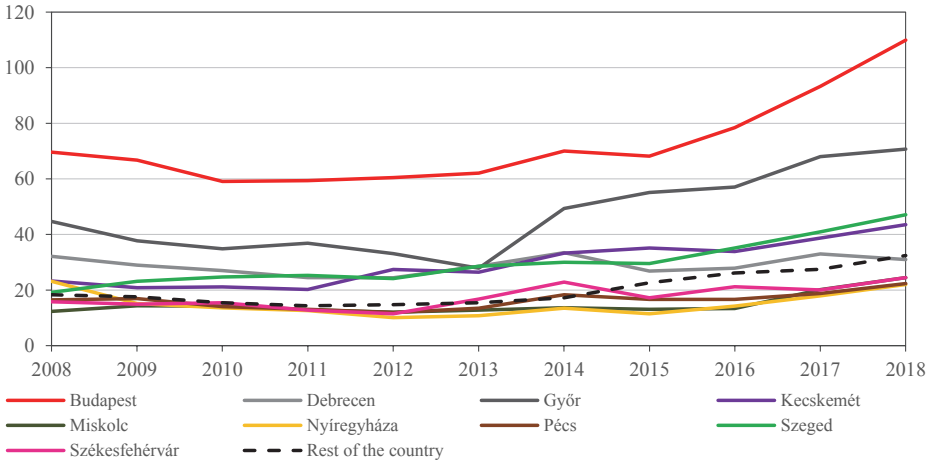
In the second group, the annual turnover of the CCIs is between HUF 8 and 13 billion (Kecskemét and Pécs) and, finally, the third group of cities did not reach HUF 1 billion in any year (HUF 10 billion in a year, with a turnover of between HUF 3 and 7 billion). Székesfehérvár and Debrecen started in first place in 2008, but in 2011, 2012, and 2016, their annual turnover of the CCIs was lower. Finally, in 2018, CCI in Szeged had the highest annual turnover of nearly HUF 24 billion.

The average annual turnover per CCI enterprise (Figure 9) in Budapest was HUF 70 million per company per year in 2008, reaching a low in the period 2010–2011 (HUF 59 million per company), before beginning a rapid upwards trend after 2012 and reaching a level 57% higher than in 2008 (HUF 110 million per company) by 2018. Győr stood out by far among the big cities in terms of average annual turnover per enterprise in the period under review. The lowest point for Győr was in 2013; dynamic development began at HUF 28 million/company, and by 2018, it exceeded HUF 71 million/company. In Debrecen, continuous stagnation was observed: HUF 32 million in 2008 and HUF 31 million per company in 2018. In Szeged, there was a steady increase, albeit in small steps, from 19 million HUF to 47 million HUF by the end of the period. Overall, in 2018, compared to 2008, the average annual turnover

per CCI enterprise decreased in only two cities, namely Nyíregyháza (–5%) and Debrecen (–4%), while increases were observed in Szeged (146%), Miskolc (98%), and Kecskemét (88%).[13]

Figure 9

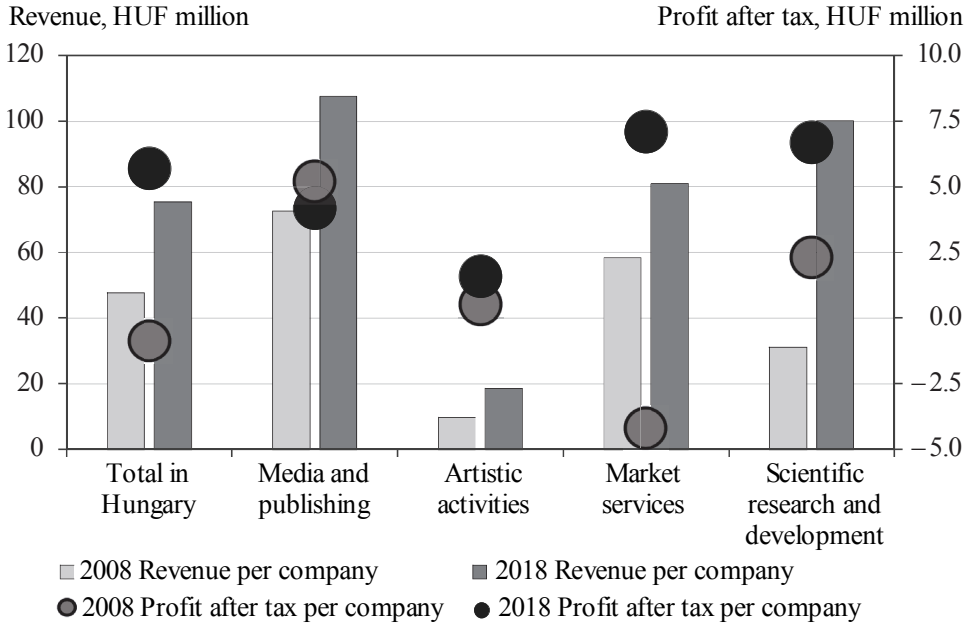
Turnover per CCI corporation in the examined territorial units



[13] Between 2008 and 2018, the turnover per firm of the following activities increased several times in the latter cities: In Kecskemét, activities related to 9004 Operation of art facilities increased 396-fold, while those related to 5829 Other software publishing increased 24-fold, 7220 Research and experimental development on social sciences and humanities increased almost five-fold, 5819 Other publishing activities and 9002 Support activities to performing arts increased nearly three times over, 7311 Advertising agencies increased by 2.5 times, and 6020 Television programming and broadcasting activities, 7420 Photographic activities, and 9003 Artistic creation increased two-fold. In Miskolc, 5912 Motion picture, video and television programme post-production activities increased by 6.6 times, 6020 Television programming and broadcasting activities and 7311 Advertising agencies increased by five times, 5829 Other software publishing and 7410 Specialised design activities increased by four times, 5819 Other publishing and 5913 Motion picture, video and television programme distribution activities increased by three times, and 9003 Artistic creation increased by two times. In Szeged, 5912 Motion picture, video and television programme post-production activities increased 18-fold, while 5819 Other publishing increased by six times, and 7410 Specialised design activities increased by three times.

Figure 10

Turnover and profit after tax per CCI joint venture in the main CCI groups



Continuing the structural analysis, we also provide an overview of economic performance[14] and its effectiveness based on the CCI activity groups that we developed (Figure 10). Growth was dynamic, partly nationally and partly across the main groups. Media and publishing grew the most, although performance in that area was not outstanding, with scientific research and publishing ranking second, accounting for the largest share of specific turnover development, as relatively few companies are active in this field and, presumably, resources (e.g. new opportunities for tenders) have increased. Creative segments of market services have also grown overall, with relatively positive performance. Artistic activities are the sector's 'orphan', ranking last with barely detectable profitability.

Urban trails, features, and trends

In the concluding segment of our study, we first compare metropolitan areas (Figure 11) and then present the internal structure of the CCI groups (Table 3).

As Molnár et al. (2018) highlighted, in Hungary, following the Budapest agglomeration, the largest rural cities, such as Debrecen, Szeged, Pécs, Győr,

[14] Figure 10 does not include the inflation rates for the period as these ranged between 6.04% and –0.23% (6.04% in 2008, 5.65% in 2012, –0.23% in 2014, and 2.85% in 2018 [3].

Székesfehérvár, Miskolc, Kecskemét, and Nyíregyháza, stand out for their creative economy beyond the classical sectoral framework and for relatively creative economic activity. Figure 10 shows the specific turnover and profit after tax in the CCI activity groups by metropolitan area. Minor peaks and troughs are marked by the group's share of the two time periods under consideration. The peak in media and publishing activities shows the sectors' dynamism, their territorial distribution, and sector concentration. The troughs, on the other hand, show that economic activity is rising in one or, in the best case, two sectors per city (Győr and Szeged), and in several large cities, enterprises' performance can be considered weak, with some sectors even showing losses (Budapest: market services; Miskolc, Pécs, and Székesfehérvár: scientific research and development).

In the following, we present the internal structure of the CCI groups, and, within this, we identify the activity groups that were dominant during the study period. Therefore, we looked for the specific characteristics of creative activities, the nodes of persistent resources, and the development trajectory of a given city (Table 3).

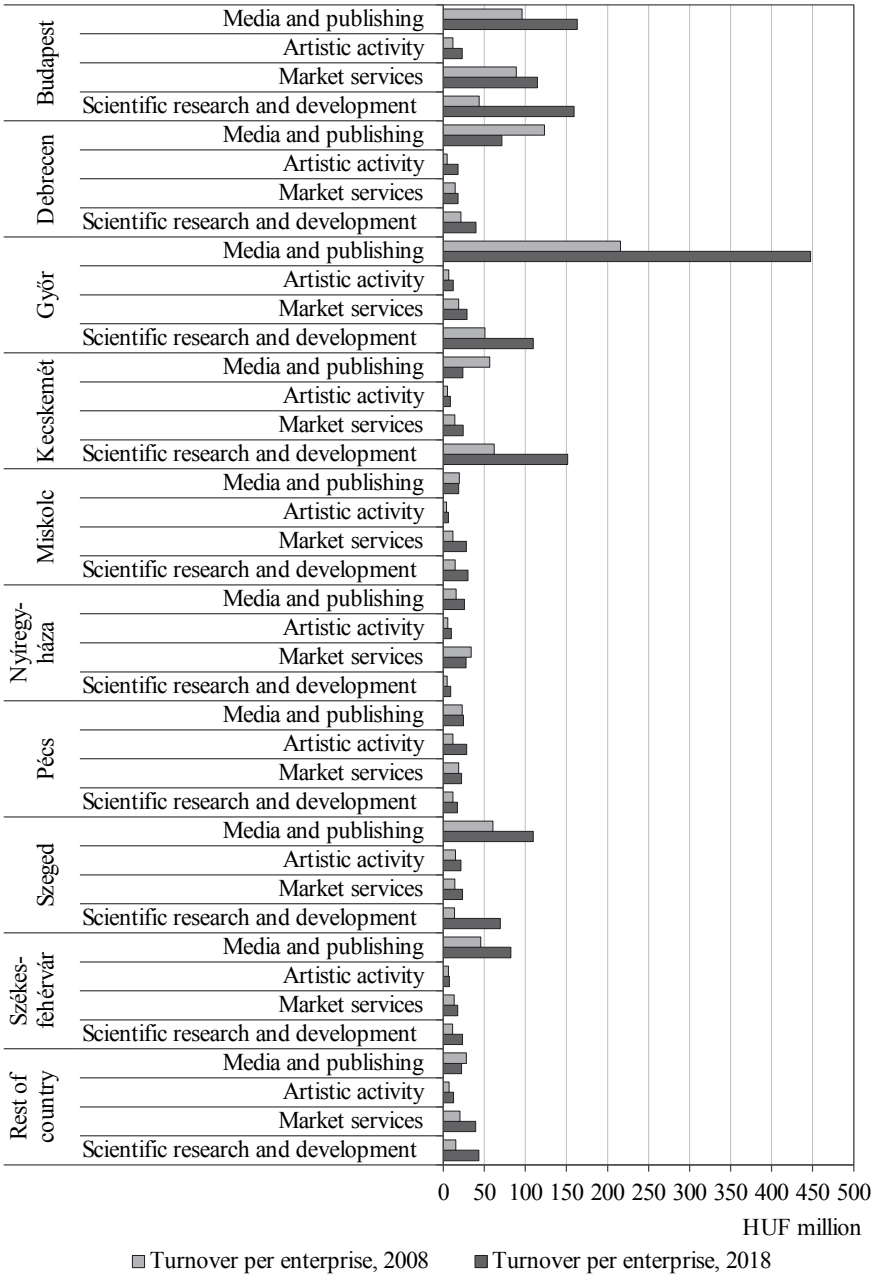
In doing so, we followed the procedure of taking the available data for 27 sectors and selecting the five highest-performing sectors per year. Overall, 18 sectors stood out, as some were among the top five in terms of turnover in at least one year, with varying degrees of frequency. Therefore, we took performance as a basis and compared it with the metropolitan areas of the CCI sector in which the best performers ranked highly over the period under review.

We scored the outstanding individual sectors, as there were a total of 99 possible occurrences (nine cities in 11 years) and then ranked them in order of percentage activities. Over the 11 years examined, more prominent activities are highlighted in dark grey, and less prominent activities are highlighted in light grey.

Advertising agency activities (7311) appeared with a frequency above 0%, as did scientific and technical research and development (7219), architectural activities, and engineering activities (7111). Publishing is also noteworthy, with 53% prevalence (5811), followed by a larger break in the highest value-producing branches. With a frequency of between 20% and 30%, there were newspaper publishing (5813), other software publishing (5829), photographic activities (7420), biotechnological research and development (7211), and at the bottom of the range, the publishing of periodicals (5814). Nine branches remained in the last band; most had more dispersed publication or, on the contrary, were concentrated in a single large city.

Figure 11

Specific turnover of the main CCI activities in the examined territorial units



The cities can be divided into four groups: The *first group* comprises Budapest, where we find a more diversified structure with only two sectors: advertising agency activities (7311) and motion picture, video and television programme distribution activities (5913). As persistent leaders, they were in the highest-performing category each year. Other scientific and technical research and development, software publishing, and distribution of motion pictures, videos, and television programmes are outstanding creative industries, with the latter two outperforming all major cities, meaning that media-related CCI activity is the dominant sector in the capital. This seems obvious, given the concentration process that has been occurring in the media industry in recent years. Real victims have essentially been from other large cities and the countryside. While the concentration of the CCI economy in Budapest was described earlier, in this context, the structural concentration has been in media and publishing, as well as in creative activities serving the market. Regarding the national domestic artistic scene, it is interesting to note that no single sector is among the highest in terms of turnover. This may partly reflect the nature of the business (e.g. sole proprietorship), but also the fact that other, more important performers' economic performance is insignificant in comparison to other businesses with higher performance.

The *second group* is a highly mobile metropolitan cluster. We have shown that relatively few sectors have high performance, but their occurrence is frequent; that is, they have a lasting presence in the local economy. In the case of Pécs, for example, the performance of all four activities is the best each year (advertising, other natural sciences, engineering research and development, architectural engineering, and photography). Győr follows the same path with other scientific and technical research, development,[15] architectural engineering, and newspaper publishing as the overall leaders among CCI activities, but photography and publishing have also emerged.

The *third group* is less diverse. In addition to the main sectors indicated, we find new sectors emerging in Debrecen (a new entrant is book publishing), Miskolc (new entrants are other software publishing and other publishing activities), and Szeged (new entrants are biotechnology research and development and performing arts). In the case of traditional large cities, the path dependency indicated for the former group is likely to be somewhat alleviated, with the emergence of additional creative activities that may be stimulated by their local economy and intellectual milieu (significantly higher education).

[15] Győr has undergone successful model changes over the past centuries and has put the R&D activities of Széchenyi István University on new footing thanks to programs such as the CEEC. Within the framework of this project and the services the university provides to small and medium-sized enterprises. new perspectives have opened up for R&D cooperation between the university and businesses (Fekete 2018).

Table 3

Aggregation of the highest-selling sectors in large Hungarian cities (2008–2018)

(pieces)

Hungarian Unified Sectoral Classification System (TEÁOR)	Budapest	Debrecen	Győr	Kecskemét	Miskolc	Nyíregyháza	Pécs	Szeged	Székesfehérvár	National
	Media and publishing									
5811 Book publishing		11			1	10	9	11	11	
5813 Publishing of newspapers		11	11	8					1	
5814 Publishing of journals and periodicals	2	4	5	2		4			4	3
5819 Other publishing activities					7					
6020 Television programming and broadcasting activities	7				3				7	6
	Market services									
5829 Other software publishing	8		4		6	4		3	4	8
5911 Motion picture, video and television programme production activities	4			1		10				4
5913 Motion picture, video and television programme distribution activities	10									9
7111 Architectural and engineering activities		7	11	10	11	11	11	1	10	
7311 Advertising agencies	11	9	10	10	11	7	11	11	10	11
7312 Media representation	5	1		1		1			1	5
	Scientific research and development									
7211 Research and experimental development on biotechnology		1		11				10		
7219 Other research and experimental development on natural sciences and engineering	8	11	11	11	11	3	11	11	4	9
	Artistic activity									
7410 Specialised design activities					1					
7420 Photographic activities			3	1	4	4	11	1	2	
9002 Support activities to performing arts							2	7		

Finally, there is a *fourth group*, the less concentrated group, in which only one of the main sectors is identified; however, certain specificities can be identified, such as newspaper publishing and biotechnological research and development in Kecskemét, publishing in Székesfehérvár, or film, video, and television production in Nyíregyháza.

Regarding the main groups of activities in the CCI sectors included in the analysis, it can be concluded that the group comprising *media and publishing activities* is complex. In our period under review, county newspapers had either organisational autonomy or operated within a few organisations, so the range of activities was effective. Local publishers supply local economies, so that in several large cities, there is a concentration of significant staff and output (Győr, Debrecen, and Szeged). With the centralisation of the media market, this group of CCIs is also gradually restructuring, and its links with the local economy are likely to diminish.

Organisations related to *market services* are prominent in large cities, both in terms of number and performance. However, they can achieve meaningful results where the metropolitan economy provides sufficient activity or has attractiveness that will positively and sustainably shape the functioning of these knowledge-based organisations and their performance. Civil engineering organisations are barometers of this process and interdependence, as their economic activity has been outstanding throughout the period under study.

The number of market-based *scientific research and development organisations* is low, as is the number of employees, but their performance indicators are positive. A clear link exists between the higher education potential of large cities and this group, as the sectoral analyses have confirmed. There is, therefore, a second business sector operating in the rural centres of higher education that, alongside public universities and the increasing number of private universities, is also carrying out R&D contracts, partly on the strength of the local intellectual base. The question arises as to how the privatisation of universities will affect this CCI group in the future.

The performance of *artistic activities* in the CCI sector is not significant either nationally or in large cities. As the profitability of CCI-sector enterprises is low, their role in large cities' economies is insignificant.

Conclusion

Our research results are similar to those of Montalto et al. (2019), who found that in more polarised countries, such as Central and Eastern European countries, cultural vibrancy is concentrated around the capital. The economic weight of the CCI sector did not change significantly between 2008 and 2018, with Budapest being the leading centre in terms of its spatial distribution, while the rest of the country showed a slight increase in economic potential. Regarding the economic performance of the eight large cities, the shift was minimal and tended to be negative. Generally, the sector is

vulnerable to positive changes affecting business organisations, and from 2012, a steady decline in the number of organisations occurred both nationally and at the regional level. As mentioned in the Introduction, the rest of the country includes, in addition to the eight large cities and the capital, 15 cities with county status and agglomerations, towns, and rural municipalities. In the rest of the country, the CCI group is moving forward, and its share is increasing, with increasingly diversified activities. It is likely that the increasingly strong agglomeration trends around the capital, as well as around the large cities and other cities with county status, will have varying intensities at different levels and will become the host for these activities. It is not insignificant that work conditions have also changed significantly. For example, digitalisation has made markets instantly accessible, but there is also a growing demand for a high-quality, sometimes rural, environment in terms of lifestyle, especially for those who are self-employed in intellectual work. The general trends in the structure of CCIs in the large CCI area showed a slow shift, along with structural stability.

Our analysis is based on economic parameters; therefore, we have drawn conclusions, highlighted the dominant CCI activities, and outlined possible development paths. The focus of this study comprises eight Hungarian cities and Budapest, where 29% of the Hungarian population lives, and the other areas considered to comprise the rest of the country, that is, 15 county cities and their agglomerations, in addition to the capital, towns, and rural settlements, where the majority of the Hungarian population, almost 7 million people, live (Eurostat 2019). Large cities' creative economy could be the subject of further research analysing internal content, the functional interdependencies of structures and organisations, their network of connections, their cooperation systems, and their actual integration into the local and regional economies.

Acknowledgements

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Appendix

The TEÁOR codes examined:

5811 Book publishing

5813 Publishing of newspapers

5814 Publishing of journals and periodicals

5819 Other publishing activities

5820 Software publishing

5821 Publishing of computer games

5829 Other software publishing

5911 Motion picture, video and television programme production activities

5912 Motion picture, video and television programme post-production activities

5913 Motion picture, video and television programme distribution activities

6010 Radio broadcasting

6020 Television programming and broadcasting activities

7111 Architectural activities

7200 Scientific research and development

7210 Research and experimental development on natural sciences and engineering

7211 Research and experimental development on biotechnology

7219 Other research and experimental development on natural sciences and engineering

7220 Research and experimental development on social sciences and humanities

7310 Advertising

7311 Advertising agencies

7312 Media representation

7410 Specialised design activities

7420 Photographic activities

8552 Cultural education

9002 Support activities to performing arts

9003 Artistic creation

9004 Operation of arts facilities

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