BUDAPESTI CORVINUS EGYETEM

THESIS SUMMARY BOOKLET

Varga Virág

Urban competition for human capital:

The potential of medium-sized cities to attract the young creative class as a potential pathway to polycentric development in Hungary.

booklet for the PhD thesis

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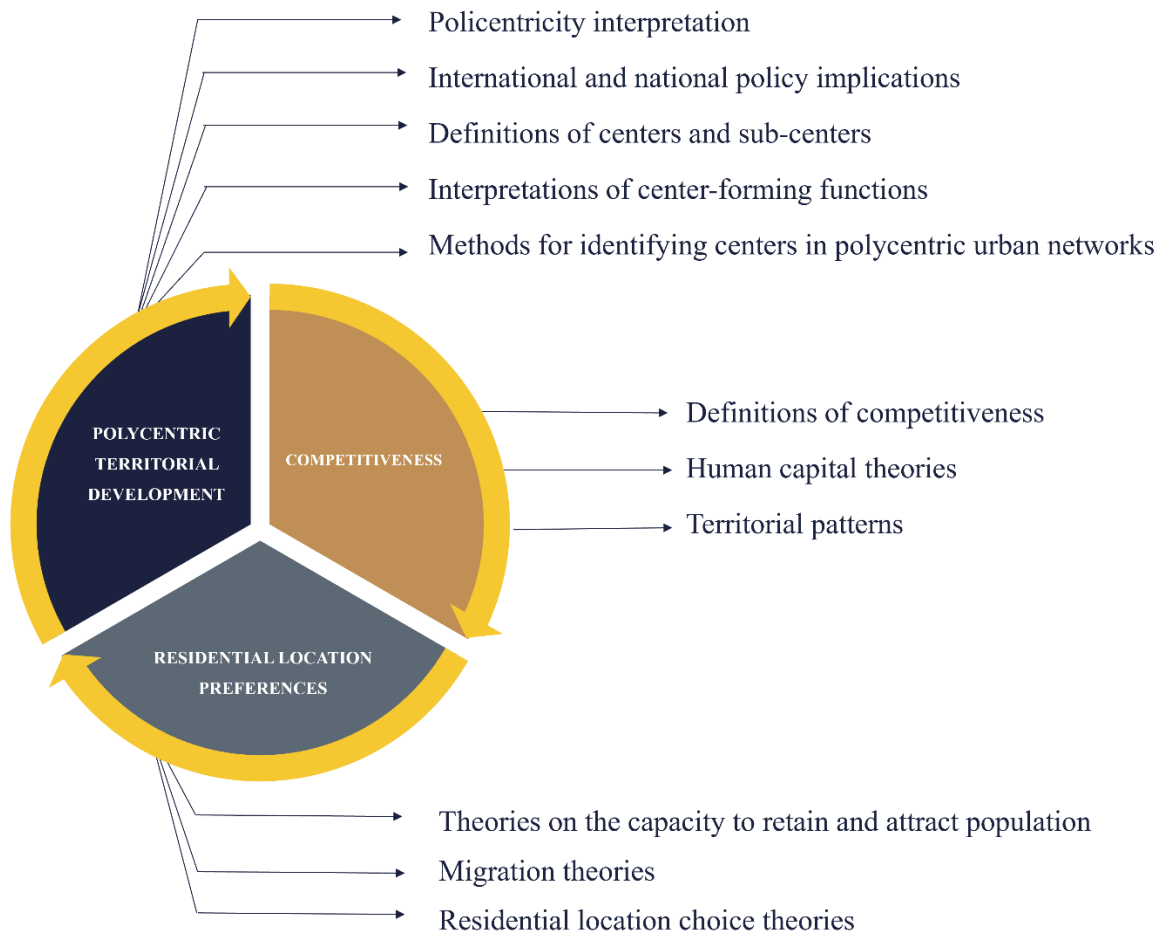Department of Economic Geography and Urban Development

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1. The focus of the research

In today's economic structure, human capital has gained significant value, granting a crucial role to the creative, mobile, and highly skilled young population in terms of competitiveness. The proportion of this group within a city's population can fundamentally determine its success. This is because the knowledge base, collective talent, and creativity of an economy play a decisive role in its economic productivity, capacity for innovation, and sustainability (Florida, 2002). From these perspectives, with the expansion of the knowledge economy, the role of talent and the highly educated young population, who are in a privileged position regarding future prospects, becomes incredibly important. Consequently, factors that promote the settlement and retention of this group of individuals are increasingly coming to the forefront in terms of competitiveness. These factors primarily exert their influence within specific geographical contexts, and thus, they can also be shaped at the regional level. This further enhances the importance of urban spaces. Additionally, the growing demand for exploiting economies of scale, urbanization-, and localization advantages also points towards the increasing significance of cities (Salamin et al., 2016). A growing competition among cities is emerging for "creativity," which is seen as a scarce resource and a factor of competitiveness, and consequently, for the highly skilled workforce that possesses this creativity (Enyedi, 1995). In this competition, the advantages derived from size are becoming increasingly valued, intensifying spatial concentration processes (Salamin et al., 2016). This process is characterized by the rise of larger cities and the declining significance of smaller settlements.

The policy response aimed at counterbalancing the spatially concentrated development has been the promotion of polycentric development, which has become the primary territorial policy goal, particularly within the EU. The disparities between capital cities and rural areas have intensified over the past two decades in the Central and Eastern European regions. In Hungary, this trend is further exacerbated by a historically rooted monocentric settlement structure. The largest regional cities in Hungary not only face competition from Budapest but also contend with the strong pull-effect (brain drain) of foreign cities. Accordingly, promoting polycentricity is particularly relevant in Hungary to strengthen the competitiveness of regions outside the capital. This dissertation explores the possibilities of achieving this in Hungary.

The research aims to connect three major research areas: it maps the relationship between territorial competitiveness, the residential location preferences of young creative workers at the urban level, and polycentric regional development.

Policentricity interpretation

International and national policy implications

Definitions of centers and sub-centers

Interpretations of center-forming functions

Methods for identifying centers in polycentric urban networks

Definitions of competitiveness

Human capital theories

Territorial patterns

Theories on the capacity to retain and attract population

Migration theories

Residential location choice theories

1. Figure: Focus areas of the thesis. Source: own editing

Accordingly, within the broader theme of regional development, this dissertation focuses on the development potential of medium-sized cities, seeking to answer the question of how these cities can become attractive for the increasingly valued human factor, thereby promoting polycentric development. The research aims to identify the intersection of demand, as reflected in residential location preferences based on the human capital's needs, and supply, described as the reciprocal aspect of these preferences, also referred to as urban attractiveness, encompassing the range of services and infrastructure provided by cities. Within this framework, the study examines medium-sized cities with the greatest potential to attract creative young individuals on three levels: first, by creating a typology of medium-sized cities at the national level; second, through a detailed analysis of the cities in the ring around Budapest, referred to as hub-cities; and finally, by analyzing the center-system in the metropolitan area.

The novelty of the research lies in its demand-supply approach to examining the possibilities for polycentric development from the perspective of highly skilled young groups. The added value of the dissertation is provided by the innovative methodology developed to measure the

potential of medium-sized cities to attract young creative talent, the scientific value of the comprehensive analysis and clustering of the selected medium-sized cities in Hungary, particularly the full analysis of the hub-cities, and the longitudinal focus group study, which was able to uncover significant changes, particularly in light of the COVID-19 pandemic's impact.

1.1. Research history

During my doctoral studies, all of my published articles—despite having different focuses and regional contexts—explored the question of how our medium-sized cities could become attractive to the young intellectual class by leveraging their inherent potential, thereby contributing to the reduction of the monocentric spatial structure in Hungary and enhancing the country's competitiveness. Additionally, between 2019 and 2021, I became involved in the work of the Budapest Competitiveness Workgroup, participating in workshops and studies aimed at promoting the competitiveness of the metropolitan region. These included topics such as the significance of urban and suburban sub-centers, housing issues for the creative class, and the potential of hub-cities to stimulate dynamism in the broader region.

The foundation of my dissertation is built upon these building blocks, which I aim to integrate into a coherent logical framework and synthesize in order to address the main research question: What potential lies within Hungary's medium-sized cities to serve as attractive settlement destinations for the young creative class, thereby contributing to the country's multi-level polycentric development and enhancing regional competitiveness?

1.2. The aim of the research and research questions

The aim of the research is to explore the potential of Hungary's medium-sized cities to serve as attractive settlement destinations for the young creative class, thereby contributing to the country's multi-level polycentric development and regional competitiveness. Accordingly, the research revolves around the central question of whether the residential preferences of the young, creative class, as demand factors, and the population-attracting and retention capabilities of the settlements, as supply factors, can contribute to Hungary's multi-level polycentric development and, thus, to regional competitiveness.

In order to answer the main research question, the dissertation addresses the following questions:

1. Table: Research question, sub-questions, and hypotheses of the thesis. Source: own editing

Research question	Research sub-questions	Hypotheses
Are residential preferences of the young, creative class, as demand factors, and the population-attracting and retention capabilities of the settlements, as supply factors, can contribute to Hungary's multi-level polycentric development and, thus, to regional competitiveness?	Q1. How is it possible to measure the attractiveness of cities for the young, creative class in Hungary, in medium-sized city context?	H1. The attractiveness of cities for the young creative class can be compared and quantified with data on city services, infrastructure and other (subjective, soft) factors.
		H2. In assessing the attractiveness of cities, hard factors carry greater weight than soft factors.
	Q2. What residential location preferences, at the settlement level, can be identified among the Hungarian young creative class?	H3. Members of the Hungarian young creative class predominantly prefer to live in localities that offer a thriving local economic environment, high-quality services, and infrastructure.
		H4. These preferences have been significantly restructured as a result of the COVID-19 pandemic.
	Q3. Which medium-sized cities in Hungary have the greatest potential to attract the young creative class, thereby fostering the possibility of a polycentric urban structure?	H5. The medium-sized cities in Hungary with the greatest potential to attract the young creative class are those that strike a balanced combination of economic dynamism, high-quality educational and cultural institutions, and services that ensure excellent quality of life.

1.3. Structure of the research

Apart from the Introduction (Chapter 1) and Conclusion (Chapter 6) chapters, the dissertation is structured into four main chapters. The second chapter, titled *Urban Competition, Human Capital, and Polycentric Development – A Literature Review*, establishes the theoretical framework for the research. It reviews the theory of urban competitiveness from the perspective of cities' ability to attract human capital, examines the residential preferences of creative human capital and their role in competitiveness, and specifically addresses the competitiveness aspects of polycentric development and urban subcenters.

Subsequently, Chapter 3, *Methodology of the Empirical Study*, presents the methodological steps and tools used in the research, with particular attention to the analytical methods applied to assess the creative human capital attraction potential of different territorial units (the Budapest metropolitan area, hub-cities, and the full spectrum of Hungarian medium-sized cities).

Chapter 4, *Empirical Results*, first focuses on the demand side, discussing the results of the focus group study. Building on this, it then reveals the findings related to the supply side for the respective territorial units.

Finally, Chapter 5, *Conclusions*, synthesizes the results obtained, answering the main research questions, exploring the possibilities of mitigating the country's monocentricity, and outlining future research directions.

2. Methods

In my research, I employed a comprehensive methodology. I qualitatively identified the range of residential preferences among the young creative class, and quantitatively and empirically analyzed the residential offerings provided by the examined city groups based on these preferences. This analysis was conducted comprehensively at three levels: for all medium-sized cities in Hungary, for the group of bearing cities, and for the settlements within the Budapest metropolitan area.

The selected methodological tools and the sources of data used for the analyses specifically tailored to answer each research question can be found in Table 2.

Research question	Methodological tool used to answer the question	Data source

Q1. How is it possible to measure the attractiveness of cities for the young, creative class in Hungary, in medium-sized city context?	– Literature review:
	  o Theories of human capital,
	  o Competitive settlement typologies
	  o Examining the methodology and indicators for international city rankings
		Gleser & Berry (2005), Granovetter (1977), Bourdieu (1989) Putnam (1995), Beluszky & Győri (1999), Beluszky & Győri (2004), Csomós (2016), Egedy (2012), Lengyel & Vas (2015), Rechnitzer et al. (2004), Rechnitzer et al. (2014), Makra & Sümeghy (2010), The Global Creativity Index (2002), Cultural and Creative Cities Monitor (2017), Millenial Cities Ranking (2017), "List of places to live if you're under 26" (2018), Sustainable Cities Index (2018), Generation Z City Index (2019), Mercer Quality of living (2019), Economist Intelligence Unit Global Liveability Ranking (2019), Mercer Cost of living ranking (2019), EC (2007), ESPON (2006), Egri & Paraszt (2013), Egri & Kőszegi (2018)

Q2. What residential location preferences, at the settlement level, can be identified among the Hungarian young creative class?	– Literature review:
	  o Population retention and attraction capacity of municipalities
	  o Migration theories
	  o Housing preferences
	– Focus group studies
		Ravenstein (1889), Hicks (1932), Stewart (1948), Sjaastad (1962), Todaro (1969), Sell & DeJong (1978), Dorigo & Tobler (1983), Rudzitis (1991), Clark & Hunter (1992), Greenwood (1997), Tassinopoulos & Werner (1999), Massey et al. (1993), Deléchat (2001), Castles & Miller (2003), Taylor (2003), Kincses & Rédei (2010), De Haas (2014), Hautzinger (2016), Stewart (1948), Alonso (1960), Haug (2008), Németh & Lőrincz (2019), Littlewood & Munro (1997), Clark et al. (1984); Kemeny (1981), Rossi (1955, 1980), Clark & Onaka (1983); Michaelson (1997); Lawton et al. (2013)
		Qualitative results of focus groups

Q3. Which medium-sized cities in Hungary have the greatest potential to attract the young creative class, thereby fostering the possibility of a polycentric urban structure?	– Developing a complex indicator of the potential to attract young, skilled workers – Cluster analysis in each region	NAV, KSH, TeIR, Profession.hu, Forbes.hu, HVG, Google Maps, palyazat.gov.hu, ingatlannet.hu

2.1. Demand-side analysis - Examining residential location preferences

To develop an evaluation method for assessing the potential of Hungarian medium-sized cities, I first conducted a literature review, covering current human capital theories, relevant competitiveness-based urban typologies, international city rankings, as well as literature on population retention and attraction capabilities of cities, migration theories, and residential preferences. Based on these factors, I began developing a measurement method with the aim of quantifying the attractiveness of cities using the developed measurement tool.

To validate and refine the measurement tool developed from the literature, I conducted longitudinal focus group studies as a form of demand-side preference research. The study involved 10 focus groups, each consisting of 5-8 participants and lasting approximately 2 hours. The first cycle of focus groups (4 groups) took place in June 2019, with 23 young participants attending in person, followed by follow-up studies conducted online with the same participants in June 2021 and November 2023. Sampling was conducted using the snowball method. The focus of the 2019 sessions was primarily on preferences, while in 2021, the research also examined the pandemic's impact on modifying these preferences, with a follow-up in 2023 to explore any potential long-term effects of the pandemic.

The creative young participants in the study were born between 1978 and 1994, with an average age of 30 in 2021 and 32 at present. They came from 12 counties, with the following distribution: six from small settlements or towns (under 20,000 residents), twelve from medium-sized cities (20,000-100,000 residents), and five from large cities (over 100,000 residents). A criterion for participation was holding a university degree, as this was essential for defining creativity. Some participants are currently pursuing doctoral studies, while others work as young professionals in technical, economic, social, and healthcare fields.

The content of the focus groups was recorded in textual transcripts, from which a tagging system was developed based on the focus group guide and transcripts. The tagged quotes were categorized in tabular form. The nine group of the identified residential preferences and their changes by 2021 and then 2023 were quantified (each participant indicated how the importance of various factors had changed for them). Finally, the content of the focus group transcripts was analyzed based on the focus group guide and the tagging system developed during the analysis.

Regarding the limitations of the research methodology, it is worth noting that although focus group studies can reveal a wide range of qualitative factors, they cannot provide representative results for the entire population. It is important to emphasize that the sample size only allows for

tentative conclusions, and thus, the purpose of this study is the validation of residential preference factors identified in the literature review within the Hungarian context. Moreover, a limitation in interpreting the results is that it is often unclear whether the value restructuring observed by the participants is a natural consequence of life cycle changes or a result of the COVID-19 pandemic.

2.2. Supply-side analysis - Quantitative analysis of the Hungarian medium-sized cities, hub-cities, and the Budapest metropolitan area

After conducting demand-side analyses, I examined the supply side, specifically the attractiveness of Hungarian medium-sized cities. Using the developed measurement method, the attractiveness of the analyzed city clusters was quantified, followed by cluster analysis to determine how our medium-sized cities are grouped based on their potential to attract young creative talent and to identify any emerging regional patterns.

It is important to highlight that this was an iterative process, meaning that each focus group study was followed by further development and revision of the measurement method. Only after this did I perform the supply-side attractiveness analyses for the various city clusters. Differences in analysis and modeling can be observed across the different city clusters—metropolitan areas, hub-cities, and medium-sized cities—due to temporal differences in the studies and the impact of COVID-19 on preferences. Additionally, the analysis considers how these different city clusters respond to varying needs. For example, the proximity to the capital influences the factors central to the attractiveness and population-drawing capacity of metropolitan areas differently than for hub-cities or rural medium-sized cities.

Furthermore, it is important to address why the analysis of the metropolitan area and hub-cities was emphasized following the examination of medium-sized cities. The analysis of the medium-sized city cluster revealed that the most potent cities for attracting young creative talent come from the aforementioned clusters, justifying a deeper investigation of these areas. Enhancing the polycentricity of the Budapest region is a key objective in promoting Hungary's multipolar development, making a thorough examination of the hub-cities and metropolitan area settlements a crucial part of this dissertation.

During the analysis of all Hungarian medium-sized cities, a competitiveness typology was inductively created based on infrastructural, economic, and socio-cultural characteristics to assess the potential for attracting human capital in Hungary's medium-sized cities. The behavior of the identified city types was then further explored using additional variables. Based on indicators and

recommendations from the literature, variables were determined to appropriately capture different aspects—particularly those relevant to attracting highly educated workers. In the second step of the analysis, a principal component analysis grouped the variables to generalize measurable aspects of cities' status. The third step, determining urban typology, was conducted through cluster analysis.

It is essential to note the limitations of the methodology: current statistical data collection provides limited information suitable for measuring the territorial capital and success of settlements. Although incorporating soft indicators into the analysis may reduce reliability and validity, this could also be a significant strength of the method. Another key point is that the analysis relies solely on quantitative elements, which could be further nuanced by qualitative data collection or case study analyses.

Subsequently, the hub-city cluster was analyzed using a methodology developed in line with the international attractiveness measurement and ranking methodologies relevant to this topic. Based on international and domestic examples, six factor groups (dimensions) were identified that influence a city's attractiveness and population retention capacity for the target group: basic infrastructure, service richness, jobs and economy, digitalization, education, and communication activities aimed at attracting residents. The ability of settlements to retain (and attract) young, educated population was interpreted and identified based on these six dimensions, measured by the creative skills-attractiveness index developed for the hub-cities. The index indicates the strength of a city's potential to retain young, educated residents (Creative Skills Attractiveness State Indicator) and the trends in their development between 2010 and 2017 (Creative Skills Attractiveness Change Indicator).

3. Table: Structure of the creative human capital attractiveness index to measure the creative human capital attractiveness potential of bearing cities. Source: own editing, published in Varga et al. (2020)

Creative skills-attractiveness index		
Creative Skills Attractiveness Status Indicator		Creative Skills Attractiveness Change Indicator
Attractiveness subindex	Equipment subindex	

Finally, I conducted an analysis of the suburban centers within the metropolitan region of the capital city. During the process of model creation used to define these centers, the foundation for the index developed for this measurement was provided by the integration of central functions identified in the literature. By creating a complex indicator from these dimensions, it became possible to quantify the construct under investigation. In the model, the major dimensions

identified include the centralizing economic activities and higher-level services, as well as the "soft" functions that indicate and reinforce centrality. The weights of the subdimensions associated with these major dimensions were determined based on the number of indicators employed within them.

Subsequently, a hierarchical cluster analysis procedure (using the between-groups linkage method based on squared Euclidean distances) was employed to differentiate suburban center types and determine the position of the examined settlements within the suburban hierarchy. The inductive methodology of the analysis justifies the choice of this method. In the examination, nine groups were initially created based on the centralizing and then on the centrality-indicating dimensions. From the combinations of these groups, five final settlement types were delineated through expert clustering, ensuring that the types are well-differentiated and easily interpretable.

The validity of the model was then tested by incorporating two additional elements: using Spearman's correlation, it was examined whether the identified suburban center types are reflected in commuting patterns and property prices observed within these areas.

3. Results of the thesis

3.1. Measuring the ability of cities to attract a young creative class

The human capital theories, urban competitiveness typologies, as well as the methodologies and indicators used in international and domestic city rankings reviewed in the literature, along with a qualitative study that explored the residential preferences of creative young people in Hungary, led to the development of a model designed to measure the creative human capital attraction potential of Hungarian medium-sized cities. This model quantitatively determines the aforementioned construct through a complex indicator. **Based on the sources mentioned, the dimensions that contain the most critical hard and soft factors for attracting human capital can be summarized as follows: basic infrastructure (housing conditions, urban built environment, transportation conditions, digital infrastructure), service richness (recreation, healthcare and public services, shopping opportunities, sports, cultural offerings), education (availability of secondary and higher education institutions, alternative educational facilities, teacher training, career orientation), natural environment (parks, water and air quality), local economy (wage levels, availability of alternative employment forms, number of creative jobs, innovation ecosystem, entrepreneurial environment), image (city marketing activities), community and local identity (presence of a social network, preservation of traditions), and public safety.**

Thus, the H1 hypothesis was partially confirmed, but subjective factors such as the perceived safety by city residents and the social network (primarily family) also play a significant role in the attractiveness of cities and in making settlement decisions. Moreover, it can be noted that due to the spread of remote work as a consequence of the COVID-19 pandemic, local employment opportunities have lost their previously prominent role in terms of attractiveness, contrary to what was stated in the H1 hypothesis.

The H2 hypothesis, which posited that hard factors carry more weight than soft factors when measuring the attractiveness of cities, was partially validated. Empirical studies reveal that while hard factors such as the quality of jobs and the local economy play a significant role in attracting young, educated workers (though their importance has diminished since 2019), soft factors such as social and cultural elements are equally important, especially in terms of long-term retention.

3.2. Identified residential preferences among the young creative class

In the literature review of this dissertation, the theories and models concerning the population retention and attraction capacity of settlements, the presented migration theories, and the theories of residential choice preferences were discussed. Additionally, based on a qualitative study that explored residential choice preferences at the settlement level among domestic creative youth, the settlement attributes that attract this group were identified as demand factors.

It became evident that factors such as employment opportunities and the local economy, the internationalization of cities, cultural and recreational opportunities, natural and built environmental factors, transportation, affordability of living, local educational opportunities, the quantity and quality of basic and higher-level services (e.g., healthcare facilities), essential infrastructural conditions (e.g., utilities, digital opportunities and capacities), public safety, the local community, demographic characteristics, as well as income levels and inequalities, play a prominent role among settlement attraction factors in the literature. However, residential choice at the settlement level can also be influenced by life-cycle events or unexpected phenomena, such as the COVID-19 pandemic, which, for those already contemplating relocation, catalyzed and accelerated the decision-making process of migration.

The findings of the research suggest that these two factors significantly elevated the importance of the natural environment, safety, local community, and social networks in residential choice decisions at the settlement level. Consequently, both Hypotheses H3 and H4 were confirmed.

3.3. Cities with the greatest potential for attracting the young creative class

The development of a complex indicator to assess the potential of attracting the young, creative class in Hungary, along with the subsequent cluster analysis across different regions, has highlighted the East-West divide in the country, as well as the role of Budapest's spillover (or brain drain) effect on the attractiveness of settlements.

It has become apparent that proximity to Budapest facilitates self-reinforcing exploitation of settlement attributes: while settlements in more advantageous positions can capitalize on their positive attributes in a self-amplifying manner, the negative attributes are also exacerbated by the capital's spatial structure, exerting a strong draining effect on these areas.

In the context of COVID-19, the significance of both physical and digital accessibility has been emphasized, with those settlements that build upon the innovations linked to the pandemic potentially standing out even more. The changes in residential choice preferences, partly associated with the pandemic, and the pre-existing trend often described as the "suburbanization of degrees," also point to the potential reevaluation of rural settlements. This could become a self-reinforcing process, similar to the outflow of highly educated, young creative individuals from less potent regions. The presence of higher education in a settlement could further intensify this process: its absence may lead to early outmigration of the younger generation preparing for university, while its presence could contribute to the local production of intellectual capital.

Based on these findings, it can be concluded that settlements with a critical mass of degree holders and population, providing adequate (higher) education facilities and capable of leveraging the capital's spillover effects due to their inherently better attributes, possess significant potential to attract young, creative individuals. This is especially relevant in the context of ongoing de-urbanization processes and the digital innovations spurred by the pandemic (such as the rise in remote work). Conversely, further decline can be predicted for settlements in less advantageous positions.

Accordingly, the H5 hypothesis related to the research question has also been confirmed.

In summary, and in response to the main research question, it can be stated that, by consciously capitalizing on regional attributes through urban development and effectively harnessing the local knowledge that arises from attracting creative human capital, it is possible to lay the foundation for an endogenous development path for these settlements (and by revitalizing their surrounding areas, their broader regions). This would contribute to the enhancement of territorial

competitiveness and thereby support the polycentric development of Hungary.

As a result, a center system based on functional division can be mapped out in relation to the capital, where the agglomeration knowledge hubs (e.g., Szentendre, Gödöllő), leading-edge hub-cities (e.g., Kecskemét, Székesfehérvár, Dunaújváros), and county centers (e.g., Debrecen, Miskolc, Nyíregyháza, Pécs, Veszprém, Eger) could serve as knowledge-intensive R&D sub-centers and main centers. Meanwhile, the metropolitan region's sub-centers (e.g., Dunaharaszti, Dunakeszi, Érd, Szigetszentmiklós, Vecsés, Vác) and western medium-sized cities (e.g., Győr, Mosonmagyaróvár, Sopron, Szombathely) could emerge as infrastructurally developed labor sub-centers and main centers.

In conclusion, and as an answer to my primary research question, I argue that the residential choice preferences of the young, creative class, as demand factors, along with the population attraction and retention capabilities of settlements, as the supply side, can contribute to the polycentric development of Hungary—understood at multiple levels—and thereby to territorial competitiveness. Through more conscious development guided by the policy recommendations outlined in the dissertation, the polycentric development of Hungary can be advanced. The currently limited potential of medium-sized cities, compared to the capital and major foreign cities, could be enhanced to attract creative young people, thus contributing to the competitiveness of the country.

4. Publications of the candidate on the subject

Teveli-Horváth, D. & Varga, V., 2023. A magyar kreatív fiatalok lakóhelyválasztási preferenciái és annak változása a COVID-19 fényében. *Tér és Társadalom, 37*(1), pp.71–91.

Varga, V., Salamin, G. & Teveli-Horváth, D., 2021. Versenyben a tehetségekért. In *Városok - tervezés - ingatlanpiac*. pp. 214–227.

Varga, V., Teveli-Horváth, D. & Horzsa, G., 2021. Magyar közép- és nagyvárosok versenyképességi tipológiája és humán tőkét vonzó potenciálja. *Földrajzi Közlemények, 145*(2), pp.135–153.

Varga, V., Teveli-Horváth, D. & Salamin, G., 2020. A fiatal, képzett lakosságot vonzó potenciál a Budapest körüli csapágyvárosokban. *Területi Statisztika, 60*(2), pp.179–210.

Varga, V., 2019c. Budapest100. *Hungarian Geopolitics, 2019*(4), pp.204–207.

Varga, V., Salamin, G. & Teveli-Horváth, D., 2019. A kreatív osztályt vonzó városi tényezők budapesti nézőpontból. *Hungarian Geopolitics, 2019*(4), pp.136–145.

Varga, V., 2019b. Az okos közösséggé válás elméleti és gyakorlati kérdései Paks példáján. In *XXXIV. Országos Tudományos Diákköri Konferencia*. pp. 255–255.

Varga, V., 2019a. A Z generáció pénzügyi kultúrájának fejlesztésére irányuló nemzetközi és hazai gyakorlatok értékelése. In *Geopolitikai tényezők hatása a Kárpát-medencei magyar oktatási struktúrákra*. pp. 84–96.

Varga, V. & Teveli-Horváth, D., 2019. Measuring retention and attraction potential of Hungarian middle-size cities. In *1st International PhD Conference of the International Relations Multidisciplinary Doctoral School of CUB*. pp. 110–115.

Varga, V., 2018. Az okos közösséggé válás elméleti és gyakorlati kérdései Paks példáján. In *Közgáz diáktudós - Információ és pszichológia*. pp. 43–58.