

**A MAGAS SZINTŰ ÜZLETI SZOLGÁLTATÓK LOKÁCIÓS
STRATÉGIÁINAK HATÁSA KÖZÉP-EURÓPA METROPOLISZAINAK
GAZDASÁGI POZÍCIÓIRA**

**THE IMPACT OF LOCATIONAL STRATEGIES OF ADVANCED
PRODUCER SERVICE FIRMS ON THE METROPOLE CITIES'
ECONOMIC POSITIONS IN CENTRAL EUROPE**

Katalin DÖBRÖNTE^a

^a Eötvös Lóránd University, Earth Studies Doctoral School, dobronte.katalin@t-online.hu

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Abstract

The paper focuses on the interrelatedness of the location strategies of the advanced producer services and the urban hierarchies in the Central European countries based on the 36 metropole cities of the region (9 countries), and focuses on how far the Central European metropolises are integrated into the international networks of the advanced producer service firms (APS firms). Along with the globalization process a transnational urban network is developing in the last few decades, the international flows of networks, information, labour and capital are getting more intense, and the global service sector tends to locate offices where a critical mass of highly skilled labour force and economic performance is present with high level physical and digital accessibility. This strategy favours the capital cities and metropole cities which are in the focus of my study. Which metropole cities can be more attractive for APSs and what are the underlying factors is the main question of my paper. The first part of the paper focuses on the location strategy of APS firms based on three aspects: the service value of a city that identifies the size of the nodal point in the network; the quantity of flows measured by the number of interactions among city-pairs among offices of a certain APS, and the measurement of network relations pointing out the ratio of all APS business interactions in the macro region appearing in a city. A complex APS location index is developed that sets up a hierarchy among the metropole cities of the sample. The second part of the paper searches for justification on the hierarchy set up, and on the underlying factors by analyzing several aspects influencing the position of a city. These aspects include the economic power of the city, the role of the city in business decisions measured by locations of production type of multinational companies, the role of the city in the administrative structure, the accessibility of the city, and other social factors, like knowledge. The paper offers answer on how the location strategies of APS firms affect the position of the metropole cities in the region, whether new division lines or peripheries occur in the macro-region.

Keywords: Advanced producer services, Urban hierarchy, Central Europe, Locational strategy

Absztrakt

A tanulmány a magas szintű üzleti szolgáltatók (APS) lokációs stratégiái és a közép-európai országok városhierarchiái közötti összefüggéseket vizsgálja a makro-régió kilenc országának 36 metropolisz városában, és azt elemzi, hogy a közép-európai metropoliszok mennyiben integrálódtak már a magas szintű üzleti szolgáltatók transznacionális hálózataiba. A globalizáció folyamatával összhangban az elmúlt évtizedekben egy transznacionális városhálózat alakul ki, a hálózatok, információ, munkaerő és tőke nemzetközi áramlása egyre intenzívebbé válik és a globális szolgáltató szektor jellemzően azon

városokban nyit irodát, ahol a magasán képzett munkaerő és a gazdasági teljesítmény kritikus tömege magas szintű fizikai és digitális elérhetőséggel kiegészülve jelen van. Ez a stratégia a fővárosokat és a további metropoliszokat hozza helyzetbe, melyek a tanulmány fókuszát képezik. A tanulmány fő kérdése, hogy mely metropoliszokat részesítik előnyben a magas szintű üzleti szolgáltatók és mik ennek a magyarázó tényezői. A tanulmány első része az APS-ek lokációs döntéseit vizsgálja, a komplex APS lokációs index három szempontot foglal magába, a város mint a hálózat csomópontjának szolgáltatási értékét, a város párokban levő APS irodák közötti lehetséges interakciók számával jellemzett áramlási mennyiségeket, és az adott város hálózati kapcsolatokból való részesedésének nagyságát. Az APS lokációs index alapján állapítható meg a makro-régió metropoliszainak városhierarchiája. A tanulmány ezt követő része a felálló hierarchia magyarázatát elemzi, és olyan tényezőket vizsgál, melyek befolyásolják egy adott város pozícióját. Ilyen faktorok a városok gazdasági súlya, a város pozíciója az üzleti döntéshozatalban, mely a termelő multinacionális vállalati székhelyek lokációi alapján vizsgálható, a város közigazgatásban betöltött szerepe, a város elérhetősége és további társadalmi tényezők, mint a képzettségi szint. A tanulmány választ kínál arra, hogyan hatnak az APS vállalati lokációs stratégiák a régiók metropoliszainak pozícióira, és az APS vállalatok új típusú koncentrációja vajon újabb belső perifériákat eredményez-e a makro térségben.

Kulcsszavak: Magas szintű üzleti szolgáltatók, Városhierarchia, Közép-Európa, Lokációs stratégia

INTRODUCTION

The paper focuses on the relative hierarchy of the metropolises of Central Europe based on the integration level to the world economy, indicated by the location strategies of advanced producer service companies (APS companies). Today, metropolises are the main centres of economic development; the main resources, information, capital and highly qualified labour are concentrated there, and flow through them (Friedmann 1995, European Commission, 2017). Metropolises – depending on their geographical location – fulfill different functions like that of a gateway city, global or macro-regional institutional and control hubs, nodes of different world-wide networks.

Actors of international economic relations can be examined based on their relations to globalization. The international flow of factors and the activities of multinational companies are the main determinants of the world economy. As a consequence of globalization, new markets emerge, global markets of banking, financial, insurance and logistical services develop, new actors appear, and multinational companies integrate their manufacturing and servicing activities world wide, manage and control global production.

In the 1990s, the process of economic globalization accelerated, barriers of international trade were largely liberalized, the development of info-communication technology enabled the real time transmission of information, financial markets have been globalized, thus enabling international transactions, and the global restructuring of international division of labour (Simai-Gál, 2000, Szentes, 2002). All these factors contributed to the restructuring of

the economic system. Besides national economies and governments, multinational companies (MNCs) gained power, extended their geographical scope. The growing complexity of their activities and geographical presence incited advanced producer services to develop as a separate sector, organized as multinational companies, and offering their services to the manufacturing MNCs.

The most important characteristic of globalization in world economy at the end of the 20th century is the primary role of high added value products, top technological solutions and services (Csáki, 2011). The economic distances could diminish by the reduction of transport and communication costs, the development of info-communication network and the development of mobile communication. The financial processes could become global based on these developments, as well, which was a prerequisite to the globalization of the world economy. It should be highlighted that both international capital mobility and international technology transfer works through multinational companies.

Economic globalization offered good positions mainly to cities and primarily to large cities as power centres of world economy (Sideri, 2007). The relation between urbanization and the development level of a national economy is linear, urbanization contributes to the growth of productivity that strengthens the significance of urban areas (Laakso- Kostiainen, 2007). The economic performance of the national economies mainly depends on the performance of urban areas, which concentrate innovation capacity, technology and workplaces (European Commission, 2017). Metropolises strengthened the most, their significance goes beyond national economy, and as seats of the actors of the world economy, that is, as seats of multinational companies, their economic power exceeds other cities' opportunities.

The paper examines the metropolises of Central Europe, namely, the relative hierarchical relations among them. Metropolises are understood according to Eurostat definition in the paper (cities with a population above 100,000 inhabitants are considered metropolises by Eurostat). The central indicator of empirical analyses is the location strategies of APS firms. Although the presence of APS companies already indicates the integration capability of the cities, the level of integration depends on the concentration of APS companies. The larger the concentration of APS companies is, the more important nodal role is fulfilled by the city in the world economy. The paper examines further factors besides APS location as control factors that influence the power centre role of metropolises in the world economy and that are important in the location decisions of advanced producer service firms. These factors are: the location strategies of producer multinational companies as main clients of APS companies,

the main location factors for APS offices, like economic performance, number of population, presence of highly qualified labour, accessibility of the city, volume of production. The administrative role could be an important additional factor, but, as all metropolises are regional, or at least medium level centers of public administration, which means significance in the national urban hierarchies per se, this factor does not influence the relative hierarchy of metropolises, and thus, it is not included. However, it should be stated that it represents also a locational aspect of APS companies.

The paper focuses on nine countries: Austria, Hungary, Slovakia, Czech Republic, Poland, Romania, Bulgaria, Slovenia and Croatia, and refers to them as Central Europe in the paper.

The objectives of the paper:

- Examination of the position of Central European metropolises in APS company networks, and thus, evaluation of their capacity for integration into world economy;
- Analyses of further factors and their relations influencing the Central European metropolises' positions as nodal points in urban hierarchy and APS location: metropolises as seats of manufacturing multinational companies, economic performance and number of population, accessibility, ratio of qualified labour, volume of production;
- Identification of relative hierarchy of metropolises in Central Europe based on their capacity of integration to world economy.

OBJECTIVES AND METHODS

The position of metropolises strengthened related to the new forms of international division of labour. While production is characterized by deconcentration, location of advanced producer services including financial services are characterized by concentration, which also induces changes in the urban hierarchies.

The power division between national economies and metropolises (world cities, Friedmann, 1986, global cities, Sassen, 1991, global city-regions, Scott, 2001, cities in globalization, Taylor et al., 2004) is also reorganized, economic decision-making and control functions densify in metropolises as a consequence of the presence of multinational companies, especially seats of MNCs. These cities possess functions such as production and service centres, nodes of financial transactions and information, offering metropolises a relatively stronger economic significance as compared to nation states (Taylor, 2012).

Metropolises are nodal points of diverse networks, besides their economic role, they act as political, cultural, international organizational, etc. centres, and each function results in a different global network. However, the functioning mechanism within the different networks is similar. The power of metropolises equals the accumulation of the different global networks that connects the city to the global processes (Laakso, Kostiainen, 2007). Metropolises are also important actors on national and regional levels in their countries as a result of their agglomeration capacity. Relatedly they are significant actors in the field of services, regarding both business and public services, and as public administration centres.

Urban hierarchies can be empirically examined either based on infrastructural networks (transport routes, rail network, international airport traffic, info-communication network) or based on the new agents of global economy, that is the multinational company seats and offices (Felméry, 2014). According to the infrastructural approach, the connectedness ensured by the physical infrastructure is the prerequisite for the development of transnational urban networks. According to the other approach, that is, placing MNCs to the focus of examination, the networking relations among the cities depend on the interactions and relations of the multinational seats, offices and venues in the different cities. This approach places the multinational companies' location strategies in the centre of empirical research (Taylor, 2001, Alderson and Beckfield, 2004, Hymer, 1972, Cohen, 1981, Friedmann, 1986 and Sassen, 1991).

The mentioned urban hierarchy theories based on a functional approach appeared since the 1980s and 1990s, before categorization based on the number of population was widespread in the literature. It was Beaverstock et al. (1999), Sassen (1991, 2001), Taylor (2001) who referred to advanced producer services (accountancy, management, legal, advertising and financial services) as functions capable for identifying outstanding economic centres in the world economy.

Metropolises in Central Europe

Central European urban structure differs from that of the Western part of the continent, a sparser urban structure with a few development islands characterizes it (Hardy, 2011). There are smaller countries in size, and relatedly, metropolises with smaller number of population in Central Europe, and medium-sized cities in a Western European meaning are lacking (cities with a population above 500,000) with the exception of Poland. The examination area has a peripheral geographical location, which is also indicated by the GDP level, however, capital

cities and other metropolises emerge from their regions economically, as well. Large differences are to be experienced in the economic performance level of the metropolises, and show a relatively lower performance as compared to their Western European counterparts apart from the capitals and some Polish metropolises. This is due to their Central European location. There are 53 metropolises in the macro-region, but only 36 of them, including nine capital cities, appear as APS company location, however, there are further 34 non-metropolitan APS locations (Döbrönte, 2016, 2018). Thus, the statement is disproved that the metropolis status of a city positions it to a higher level of the urban hierarchy per se in the macro region as regards integration to world economy.

Table 1 APS locations in metropolises

	number of cities with more than 1 million inhabitants	number of cities with an inhabitant number between 500,000 - 1 million	number of cities with an inhabitant number between 100,000 – 500,000	sum
Austria	1	0	4	5
Hungary	1	0	1	2
Czech Republic	1	0	4	5
Slovakia	0	0	2	2
Poland	1	4	6	11
Romania	1	0	4	5
Bulgaria	1	0	2	3
Slovenia	0	0	1	1
Croatia	0	1	1	2
	6	5	25	36

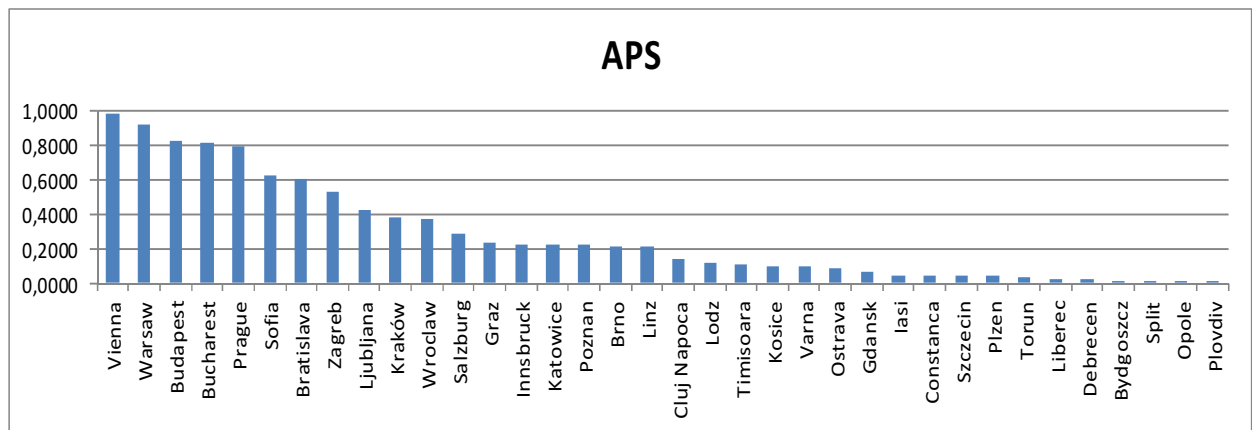
Source: own editing based on www.citypopulation.de data

The spread of advanced producer services in the macro-region

As related to economic globalization, the number and complexity of business transactions have multiplied thus increasing the complexity and volume of central functions of manufacturing multinational companies. As a consequence to this process, the expansion of advanced producer services took place. Another important impact of globalization is that service intensity of industrial production grew, and multiplied the demand for business services (Johnson, 1998). In the 1990s the main motivations were the access to new markets, taking advantage of market gaps, taking the benefit of first comers and offering business services. The higher share in volume horizontal investments that is whole scale service providers possess, the higher potential the macro-region in integration to world economic

processes has. Horizontal investments are regarded by the literature (Laakso, Kostiainen, 2007) as demand led investments, in which case a parent company offers the same scale of services on the new market as at its seat and other venues, as the aim is to cover a new market segment.

The location strategies of advanced producer service firms are examined empirically based on the presence of 64 advanced producer service companies placing 36 metropolises out of the 53 in the macro-region to the sample. The objective of the study is not the identification of the global significance of the metropolises, but the analysis of their Central European position, investigating that on what level they are able to join the network of advanced producer service firms. The presence of an APS company already indicates the presence of globalization in the city, and its connection to international economic networks (Csomós, 2011). The starting point of the methodology is offered by Taylor (2001) and the Globalization and World City research network (GaWC) adapted to the macro-region. The paper focuses on the management and accountancy companies. Management consultancies are present in already developed markets, developed economies have a demand for their services, however, accountancies, and also accountancy networks as a special type, already appear in economies with development potential, thereby preparing them for investments of working capital. Thus, the two segments of APSs can be regarded as most relevant in the macro-region offering further aspects for analyses, including which cities are considered to be developed or emerging markets according to location decisions of APS companies. Taylor examined the relation of the APS and the city from basically three aspects: service value of a city identifying the size of the nodal point in the network, the quantity of flows measuring the number of interactions among city-pairs among offices of a certain APS, and the measurement of network relations pointing out the ratio of all APS business interactions in the macro region appearing in a city (Taylor, 2001). The paper analyses the position and relative hierarchy of the 36 metropolises based on the APS locational index formed from the previously mentioned part-indices (detailed calculation and methodology in Döbrönte, 2018).

Figure 1 APS locational index

Source: own editing based on Eurostat data

Factors influencing APS locational decisions explaining the relative hierarchy among the metropolises

The metropolis position and functional nodal role of Central European cities are influenced by further factors: locational decisions of manufacturing multinational companies, economic performance and population concentration, further factors like accessibility, qualification level of labour, volume of production.

1. MNC seat concentration

The spread of multinational companies was motivated by the optimization of international division of labour, making advantage of lower wage costs in certain countries, proximity to resources and markets. These factors had an impact on the present geographical spread of multinational companies. The FDI capital arriving to the macro-region in the 1990s aimed at utilising these advantages. In order to minimize costs and cap profit, multinational companies disintegrated their product chain, and deployed different segments to different countries (Wall et al., 2011). Multinational companies are able to bridge informal trade barriers within their networks, and enable organization of border crossing economic activities in different geographical destinations that offers them independent power centre status. Dunning (1993) mentioned four factors as regards international expansion: market acquisition, increase of efficiency, proximity to resources and strategic asset management, investment. Central Europe is a favourable destination for FDI since the beginning of the 1990s.

Deloitte publishes the ranking of 500 largest transnational companies in Central and South-Eastern Europe based on sales revenues and net income. The ranking is based on consolidated company incomes in financial year 2014. Data on Austria is not included in the ranking. Only

the seats of MNCs as decision-making centres are involved into comparisons that establish business relations with APS companies (Deloitte, 2015).

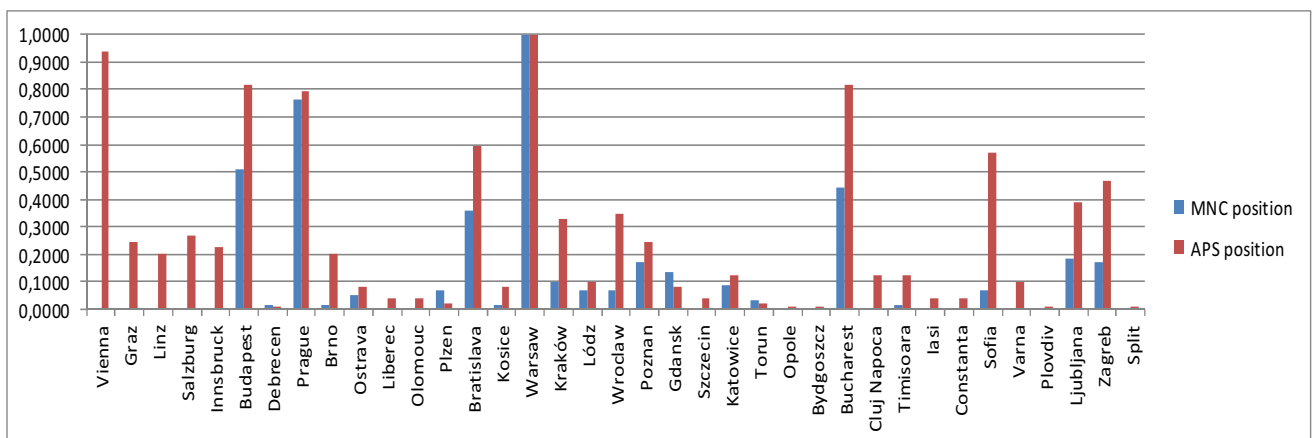
Table 2 MNC indicator values

city	MNC presence	MNC service value	MNC index	city	MNC presence	MNC service value	MNC index
Budapest	31	213	0.5019	Szczecin	0	0	0.0000
Debrecen	2	4	0.0108	Katowice	6	48	0.0964
Prague	46	300	0.7311	Torun	3	18	0.0357
Brno	2	12	0.0202	Opole	0	0	0.0000
Ostrava	4	22	0.0489	Bydgoszcz	0	0	0.0000
Liberec	0	0	0.0000	Bucharest	27	154	0.3987
Plzen	5	26	0.0621	Cluj Napoca	1	8	0.0070
Bratislava	22	130	0.3282	Timisoara	2	8	0.0155
Kosice	2	14	0.0226	Iasi	0	0	0.0000
Warsaw	60	428	1.0000	Constanca	1	2	0.0000
Kraków	7	52	0.1095	Sofia	5	34	0.0715
Lódz	5	44	0.0832	Varna	0	0	0.0000
Wroclaw	5	36	0.0738	Plovdiv	1	6	0.0047
Poznan	11	76	0.1716	Ljubljana	12	84	0.1895
Gdansk	9	78	0.1570	Zagreb	11	82	0.1786
Gdansk	9	78	0.1570	Split	0c	0	0.0000

Source: own editing based on Deloitte data, **no MNC seats from the top500**

The outstanding position of the capitals as seats of manufacturing multinational companies is obvious; the high value is also justified by the sample being the top 500 MNCs of the region. Polish metropolises with a population above 500,000 have 5-11 seats, and six metropolises have no seat from the top 500.

Figure 2 MNC and APS locational positions



Source: own editing based on Eurostat and Deloitte data

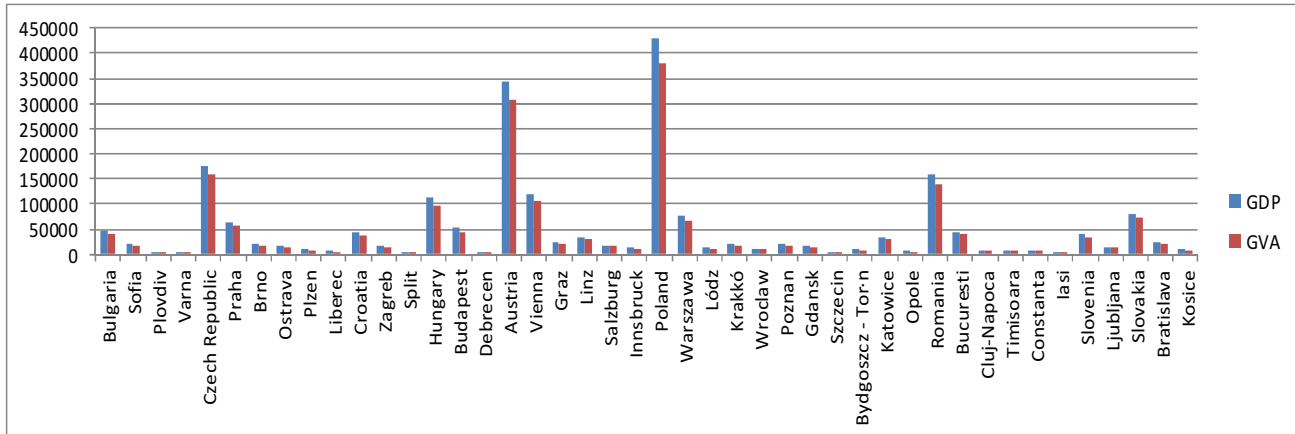
The geographical spread of manufacturing MNCs is more diversified than that of APS offices. 432 MNCs are present in the examined macro-region out of the 500 (others in the Baltic states and Ukraine and in the Western Balkans non-EU countries), and only 280 MNCs in the metropolises of the eight countries (65%). MNC seats operate in 188 cities of Central Europe, five times the number of metropolises with APS locations. However, in cities outside the 36 metropolis sample of the paper only Plock (Poland) and Budaörs (Hungary) locate more than two MNCs, both cities having an agglomerational proximity to the capitals.

On the contrary a regression analyses show a quite high coefficient of determination ($R^2 = 0.7195$), which can be explained by the outstanding role of capital cities in the location of seats, decision-making centres of manufacturing multinationals. (The sample contains only the seats of MNCs, not further venues.) Apart from the capitals, the Polish metropolises – having a high value also in APS locational index – have a higher presence of manufacturing companies. It is only Plzen and Gdansk that have a higher MNC position value than APS position, showing the industrial character of the cities.

The graph underlines the literature as APS companies realize a strong concentration, utilize location advantages in large cities, and good accessibility ensures business relations and communication with manufacturing MNCs. Relatedly, more APS offices operate in countries with bigger territories in favour of ensuring coverage of activities. The number of chosen locations by APS companies can be explained by the economic performance on the one hand, and thus, more cities are involved into APS networks in Austria, the Czech Republic and Poland, the majority of Polish metropolises located in the more developed South-Western part of the country. On the other hand, the geographical size of the country is a factor in itself for having a higher number of involved cities, this can be seen in the cases of Poland and Romania, however, the difference between the two countries is clear as a consequence of their GDP level. APS offices operate in the largest cities offering a coverage of the whole country, however, with less cities and less presence than in Poland. The larger number of Romanian cities involved is also explained by the presence of accountancy networks induced by the economic development potential in the country, and thus reaching the same level of involved cities as in Austria and Czech Republic.

2. Economic concentration

Figure 3 GDP and GVA values (million EUR) GDP at current market prices, 2016



Source: own editing based on Eurostat data

The macro-region is composed of countries with heterogeneous economic performance. The accumulated GDP is EUR 1439 billion (Eurostat, 2016), Austria representing 21 per cent, and Poland 29 per cent. The remaining three Visegrad countries have a share of 21 per cent, which already shows the overweight of the North-Western part of the macro-region both economically and regarding their role in the APS network.

The cities in the sample are the strongest urban areas of Central Europe in economic terms, however, there are huge differences between their economic performance, and their economic development potential is also rather differing. The macro-region is an economically less developed area, their economic performance can be explained by several factors.

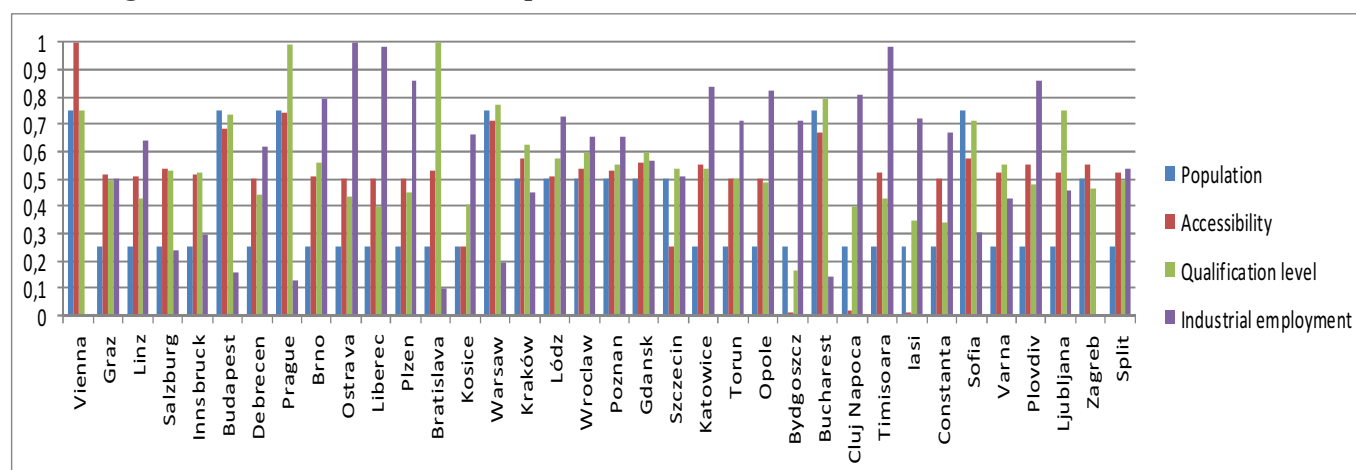
The value of the coefficient of determination in a regression analysis is around 70% ($R^2 = 0.7048$ for the GDP, and $R^2 = 0.698$ for the GVA), which is a relatively high value, however, it indicates that besides the GDP and the GVA values, further factors are also determinant in APS locational decisions.

Further locational factors

Besides economic performance, population concentration, accessibility and concentration of highly qualified labour force are important factors in the locational decisions of APS companies. Metropolises are characterized by a high ratio of the service sector, but no data is available on Eurostat. The volume of production proves to be an important factor in the functional nodal position of the metropolises by showing the presence of APS companies' most important business partners. The indicator of employment in the industrial economy is used for this reason.

Indicators:

- capital city status
- number of population
- realized connection to a TEN network
- air transport of passengers by NUTS 2 regions (1000 persons)
- port city status
- higher educational institutional presence
- students in tertiary education (ISCED 5-6) by NUTS 2 regions, % of the population aged 20-24 years
- tertiary educational attainment, age group 25-64 by sex and NUTS 2 regions %
- employment in the industrial economy, by NUTS 2 regions, 2011 (% of the non-financial business economy) Industry: NACE Rev. 2 Sections B–E.

Figure 4 Characteristics of metropolises

Source: own editing based on Eurostat data

The graph shows the own impact of each factor. Regarding population concentration, only the category of above 500,000, and the category between 100,000 – 500,000 is used, and only four Polish non-capital metropolises have a higher number of population than 500,000. The Central European metropolises are less outstanding in the volume of functional centrality due to the average number of population than the Western European ones.

The examined indicators do not confirm the overall significance of capital cities, the distribution of factors suggests a more diverse picture. Regarding accessibility the value of the five most important capitals approaches or passes 70%, other capitals and majority of metropolises have a value above 40%, the accessibility of only Kosice, Szczecin, Bydgoszcz, Cluj Napoca and Iasi is critical. Adding the presence of a port to the analyses Vienna,

Budapest and Bratislava raises among the capitals and Linz, Gdansk, Constanca, Varna, Split among other metropolises.

The qualification index suggests the outstanding importance of the capitals with a value over 70 per cent with the exception of Zagreb. Further Polish and Austrian metropolises have a value between 40 and 60 per cent as an average, and Varna a value above 50 per cent. There is a trade-off between the qualification index and the index of employment in industry, the latter being high in the Czech, Polish and Romanian cities, plus in case of Linz, Debrecen and Plovdiv with a value above 60 per cent.

RESULTS

The paper offers the advanced producer service geography of the metropolises of Central Europe, based on management consultancies and accountancy companies.

Advanced producer service firms concentrate their capacities geographically. If a critical mass of economic performance is present in a city, it becomes a potential venue for APS companies that can further strengthen the city's regional economic position. The capital cities of the macro-region are the primary locations even if they show a relatively weaker economic output as in the case of Ljubljana and Zagreb. APS firms regard countries as basic frameworks for decisions, an opening of an APS office in a secondary city depends always on its relative position to the capital. Besides management consultancies operating in developed economies, accountancy networks operating in economies with development potential include further five metropolises in the sample.

APS company concentration is the highest in the capitals, however, present in all cities with a population above 500,000, and in several cities with a population above 100,000. Among the capitals Vienna, Warsaw, Prague, Budapest and Bucharest can be regarded as global cities, and also the remaining capitals (Bratislava, Sofia, Zagreb, Ljubljana) are getting integrated to the world economic processes ever stronger. Main clients of APS companies are the manufacturing multinational companies, however governments, international organizations, international non-governmental organizations are also important business partners. The outstanding significance of capitals in APS company locations is also justified by this clientele, as the majority of these organizations, institutions operate in capital cities (Csomós, 2017). Further justification for their role is offered by their outstanding number of population as compared to the average number of population of cities in the macro-region,

and by their outstanding economic performance even compared to their high number of population.

Advanced producer service companies have offices in further 27 metropolises in the macro-region, most of them in Austria, the Czech Republic and Poland, which indicates the higher level of integration of these countries to world economic processes, and indicates their higher GDP performance. Another justification for the involvement of higher number of secondary cities to the network is the territory of the country, as in Poland and Romania. The position of secondary metropolises in the other countries is rather marginal.

69 per cent of the macro-region's metropolises are integrated to the APS network, 58 per cent via management and accountancy consultants, while a further 11 per cent only via accountancy networks. This fact projects already the expectations of APS companies for economic expansion in the coming years, and the potential strengthening of the position of the mentioned cities in the level of integration to APS networks and world economic processes. The metropolises are all important public administration centres of their countries (at regional or medium level), central actors of the national urban networks. According to their positions in the APS location strategy, it can be stated that the relationship between position in national urban hierarchy and position in APS location is not linear, however connectedness exists. Further influencing factors include geographical location of the metropolis, economic performance of its wider region, and its position related to the capital city. Further explanatory factor is the lower number of population of Central European metropolises as compared to Western European ones. Thus Central European metropolises cannot offer a critical mass of population and economic performance which would underline the development of a coherent economic development zone in the macro-region. Only the South-Western Polish cities have a potential for it, which is also indicated by the level of the APS locational index following the capital cities (Kraków, Wrocław, Katowice, Poznań).

The statements of the literature (Sassen, 2005, Taylor, 2012), as the largest cities are venues of APS companies offering outstanding economic performance, a concentration in highly skilled labour and good accessibility are underlined by control examinations in previous chapter also in Central Europe. The number of cities chosen for location can be explained by its economic performance on the one hand, a larger number of metropolises are involved in Austria, Czech Republic and Poland, the majority of Polish cities concentrating in the Southwest. The accessibility factor is rather homogenous among the metropolises in the macro-region, all metropolises (with one or two exceptions) have a good accessibility via

main transport routes and international flights as well. Some metropolises are port cities which is a further locational advantage.

Empirical analysis justifies the relationship between locational decisions of APS companies and general producer multinational companies also in Central Europe as explained in the literature (Alderson and Beckfield, 2010), thus, APS companies have a stronger concentration of offices by utilizing the advantages of large cities, and high level of accessibility ensures personal contacts with the client multinational companies. Producer companies have a wider spread locational pattern according to the special features of their production activities. Although capital cities are further on prioritized venues for manufacturing MNCs, they tend to deploy their decision-making centres in capital cities in high proportion. Further seats for producer MNCs are offered by cities with a traditionally higher volume of production, thus their integration to APS network and world economic processes are ensured.

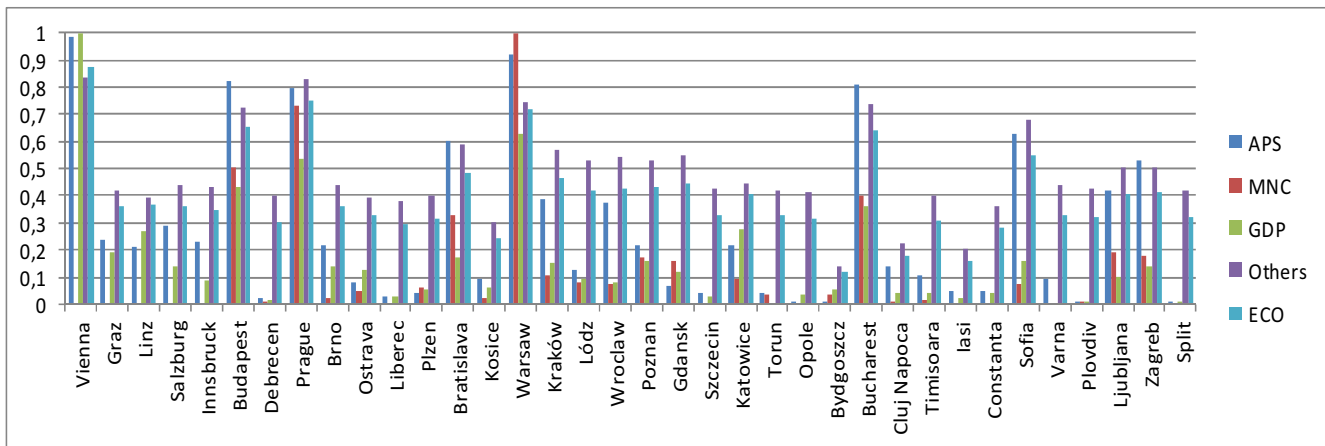
DISCUSSION AND CONCLUSION

Table 3 Metropolises' classification based on economic index

ECO index	At least 5 APS company presence	2-4 APS company presence	1 APS company presence
0,8	Vienna		
0,7			
0,6	Warsaw, Prague		
0,5	Budapest, Bucharest		
0,4	Linz, Bratislava, Poznan, Gdansk, Katowice, Sofia		
0,3	Graz, Brno, Ostrava, Kraków, Łódź, Poznan, Timisoara, Varna, Ljubljana	Liberec, Plzen, Constanca, Szczecin, Torun	Opole, Split, Plovdiv
0,2	Salzburg, Innsbruck, Kosice, Cluj Napoca, Zagreb	Iasi	Bydgoszcz, Debrecen

Source: own editing based on Eurostat data, metropolises only with an accountancy network

75 per cent of the sample concentrates at least five APS companies, which already represents a critical mass (less than half of all metropolises of the macro-region). Cities with less APS presence have a weaker economic performance and are primarily industrial cities. Here the presence of manufacturing companies justifies the presence of the advanced producer service firms. Five metropolises have only the presence of a network type of accountancy, which indicates an even lower economic performance at the moment, however with a development potential in the near future.

Figure 5 Indicators of metropolises

Source: own editing based on Eurostat and Deloitte data; others: population, accessibility, qualification level, industrial employment aggregated, see Fig. 4.

The APS location examination area is a macro-region with a lower economic performance with capital cities' outstanding economic levels where secondary cities have only a relatively higher GDP in comparison with cities in their region, but not with metropolises in Western Europe. At the same time the metropolises with a regional or medium level public administration center function have high values in indicators like accessibility, level of qualification of labour and number of population that are important location factors for advanced producer services. In case of general manufacturing multinational companies, a capital city concentration can be seen, besides some of the industrial centers of the macro-region appear in the sample, mainly in Poland and Czech Republic, thus strengthening the role of these cities in APS location. The metropolises of the macro-region do not identify a coherent economic development zone, or power center as compared to metropolises in Western Europe, they are not able to act as counterparts, or as an expansion of Western European economic zones, but rather act with a regional role in their surrounding region.

Table 4 Results of regression calculations

Independent variable	Regression equation	Coefficient of determination
MNC	$y = 1.0494x + 0.1128$	$R^2 = 0.7195$
GDP	$y = 1E-05x + 0.0585$	$R^2 = 0.7048$
GVA	$y = 1E-05x + 0.0602$	$R^2 = 0.698$
number of population	$y = 1.2272x - 0.1935$	$R^2 = 0.6534$
accessibility	$y = 0.9549x - 0.2015$	$R^2 = 0.3908$
index of qualified labour	$y = 1.3472x - 0.4676$	$R^2 = 0.6295$
ratio of employees in industry	$y = -0.8658x + 0.7561$	$R^2 = 0.6605$
Complex economic indicator (ECO)	$y = 1.6331x - 0.3762$	$R^2 = 0.8145$

Source: own editing based on Eurostat data

The complex economic indicator contains indicators of GDP, number of population, accessibility and level of qualified employees with the same weight. Concentration of general manufacturing multinational companies are examined independently. The latter and the indicator of employees in industry is not merged into the complex indicator, as it would distort the results.

While some time ago the statement, the more multinational seat a city has, the more economic power it has in world economy, was still valid, today the picture is more diverse. In many cities the connection is still expressed, however the business centre and venues of production activities do not coincide in regions with an outstanding infrastructure and excellent accessibility. Proximity of markets mean the relative closeness of manufacturing multinationals for APS companies, in which case the same venue is not a prerequisite, however a location is needed, from where a broader scope of markets in a country is accessible, and where travel costs are lower as compared to costs of establishing a new APS office. This interrelatedness is shown by the examination of relations between APS and MNC locations. The high R^2 value (above 70%) is justified by the outstanding values of the capital cities that have a high MNC concentration with decision-making seats.

The macro-region was characterized by a low level of urbanization in the 1950s, level of urbanization exceeded 50% only in Austria, Czech Republic and Hungary, and also today it falls behind the level of Western-Europe by 10% (70% vs. 80%).

Although operative communication is ensured by the info-communication technology, personal strategic negotiations remained part of the business protocol. Communication costs were highly reduced by ICT infrastructure in the daily operation of APS offices, which can be tracked in bandwidth and speed. However, physical accessibility is a decisive location factor in case of APS companies further on. In order APS companies identify the most optimal market coverage and office number, the locations should be accessible via main transport routes and international airports. The indicator of accessibility shows a rather homogenous region of metropolises with a general value around 50%, however the realization of the TEN network shows still large differences, and in many cases it is not sufficient.

The location of higher education institutions in Central Europe is not concentrated, characteristically medium level administration centers are all seats of universities, thus the metropolises of the sample are all locations of higher educational institutions. Regarding tertiary educational attainment in age group 25-64 by NUTS2 regions, a similar tendency can be seen as with other indicators, capitals are at the top above 60%, Polish metropolises in the Southwest of the country follow with 40-50%, and the rest of metropolises have a 20-30% value at an average. Examining the coefficients of determination it can be stated that the individual factors do not explain fully the location strategies, but the high value of the complex indicator, exceeding 80% shows a strong correlation with the aggregated factors.

A different urban hierarchy can be identified based on the complex economic indicator as compared with the urban hierarchy of the APS locational index. As far as the economic

indicator suggests a rather homogenous macro-region as regarded the metropolises with an outstanding value of five capitals, the APS locational index shows a strong concentration. Besides Vienna, Warsaw, Prague, Budapest and Bucharest further two cities, Sofia and Bratislava are able to join the global economic processes, however, Ljubljana, Zagreb, Kraków and Wrocław have a relatively high value in the sample as well. It can be stated that no direct linear connectedness exists, APS location decisions are influenced by further factors other than complex economic factors. As regards complex economic performance there are five Polish metropolises forgoing the two Western-Balkan capitals, however their central role in the administrative structure offers them priority in the APS locational hierarchy. APS companies make their decisions on a country level, secondary cities appear in APS locational decisions only in relation to the capital cities. This can be witnessed in case of Austria, where the Austrian metropolises' economic indicator level falls behind several Polish metropolises, however overtaking them in APS locational hierarchy. The mountainous landscape in Austria, and relatedly the even spread and good accessibility of the historically developed regional seats explain the values. The factors are more complex in case of Polish metropolises, there are bigger differences in accessibility, and geographical spread of the cities is uneven with a concentration in the South-western part of the country. Romania is less developed, but a country with large territory and number of population within the examined macro-region, with weak in-country accessibility relations. As the capital city location is unfavourable, it is like an island within a less developed area in the South-eastern part of the country, further cities like Cluj Napoca and Timisoara receive a relatively more powerful position in APS ranking.

Geographical and spatial factors as additional locational factors specify APS firms' locational strategies further. Such a factor is the distance from the capital cities, the farther a metropolis from the capital city lies, the more chance it has for getting integrated into a network, however a minimum level of economic development or manufacturing companies' proximity is needed. Kosice in Slovakia, Debrecen in Hungary and Split in Croatia has a market position justified by the distance from the capital, however, the latter two are involved only by an accountancy network.

The geographical location of the capital also influences the positions of other metropolises in the APS network. In some countries, like Austria, Slovakia and Bulgaria the capital city lies in the very East or West of the country, but it can be stated in the case of Warsaw and Bucharest as well that they are located in a less developed area. In such cases secondary cities gain more significance than expected as a consequence.

The APS company locational decisions mirror the poly- or monocentric structure of the countries. The metropolises involved in Austria, the Czech Republic and Romania show a polycentric distribution, however, the GDP level of Romania does not demand the whole polycentric coverage of the country, the main nodal points are the metropolises with outstanding economic performance.

Thus, the main development nodes of the macro-region are: 1) the five global capitals (Vienna, Warsaw, Prague, Budapest, Bucharest), but also the remaining capitals are catching up, 2) Western part of the macro-region showing a better economic performance (Austria, the Czech Republic, the Western part of Poland), 3) the South-western part of Poland concentrating powerful metropolises. Although the new type of concentration does not form new inner peripheries, their dispersion can be said to be even, albeit not with the same density in countries with different economic levels.

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