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CONTENTS

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CONTENTS

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RELATIONS BETWEEN GLOBAL CITY CONNECTIVITY OF THE PRIMARY CITY AND THE SIZE NATIONAL ECONOMY

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Abstract: Some scholars emphasize the global cities network and suggest the declining of the national power. On the contrary, many studies insist on the role of the national economy on global cities. However, there is no specific model to show this relation and no evidence to conform which factor at national level impact this connectivity. The aim of this paper is to set up a specific model to illustrate the relationship between the national economic size and global cities connectivity, and to find the factor at national level impacting on world city connectivity. Bootstrap regression is adopted to set up the model for the relation. The results reveal that the national economic size has significant effectiveness on the global city connectivity with logarithmic function. This finding gives an explicit approach to clarify the idea of 'glocal' states with the combination of global city connectivity and national urban system.

Key Words: *city interlock connectivity, global city, national economy, second nature of cities*

Introduction

A city has two natures. The first nature is the urban place which is defined by the national urban system modelled as urban hierarchies; the second one is defined by the urban network by Taylor and Derudder (2016). As Gottman (1989) declared, the majority of the sustainable cities tend to rely more on the networks with other cities than the relationship they share with their hinterlands or service regions. A rising 'network society' by Castells (1996) also suggests that information flows are becoming much more crucial than places. However, there is little about the factors that contribute to and sustain the external relations of cities; in other words, what are the factors on which the connectivity between and among cities depend? Similarly, to understand the flowing space within cities, one need to know what elements are flowing among cities and what factors impact the sizes and directions of the flowing elements.

In practice, experiences show that global cities not only connect each other but also have relations with their hinterlands (Short 2017). The world city literature has noticed a weakened linkage between a state-centric world system and the cities within it, however these studies did not give the specific relation model even failed to clarify the factors linking them. Then, they failed to interpret the reasons for the location of Advanced Producer Service (APS) firms. These firms, as banking, diversified financials, health care, insurance, telecommunication and internet service sectors, have a crucial role in enabling economic globalization with their clients locating at the host countries. In order to accurately give reasons for the location of corporate headquarters in the city, it is necessary to find the specific relation and the factor at national level affecting the global city connectivity.

This paper takes the view that the role of the nation is still relevant in the formation of a city's connections to other cities. With the typical fitting curves from the national economic size and the interlock connectivity of their primate cities among these countries, the aim of this paper is to set up a specific model to illustrate the relationship between the national economy and the

global cities connectivity and to find the factor at national level having effectiveness on world city connectivity. With this model, the evolution trajectory of the national economic size impacting on their primate city connectivity can be tracked with different countries. This result will help to interpret the formation of the world city system with the two dimensions of the national urban hierarchies (the first nature of a city) and the global city networks (the second nature of a city).

Literature review

As the global city network has been emphasized, some scholars suggest the declining of the national power. Meanwhile, many studies insist on the role of the national economy on global cities and their network with complicated ways. Brenner (1998) regards the territorial state as the 'glocal' state; Taylor (2002) suggested that world cities' national identities are enforced by incorporating their local and regional hinterlands, termed as 'hinter world', to provide new services across the world. Then, Cabigon (2006) confirms that the scale of a city's extending space determines a city position as being the center of a region; Therborn (2011) still argued the importance of the national economy on the global city. Even, the world city hypothesis by Friedmann (1986) has also indicated that the spatial distribution of labor at the global scale contributes to the formation of global cities, and it implies a new global urban hierarchy based on new labor divisions in the world system; as well as within the global cities trilogy by Sassen (1991), world cities are treated as the command centers, key locations, sites of production and innovation, and markets for the leading sector production. However, these studies failed to conduct a categorical interaction between the world city connectivity and their national economy by the absence of a specific model to show this relation. This local-global positioning is closely linked to the economic, social, political and cultural networks that support the organization of cities (Pflieger and Rozenblat 2010). Even though it seems risky to claim countries as spatial actors controlling the global economy (Faulconbridge 2007), urban systems and global systems are related to each other, and this relationship is yet to be studied further (Taylor 2014). Timberlake et al. (2012) conducted some evidence that global centrality increases income polarization with the mix of high level and low level of immigration and it suggested the need for further research for these relations. In terms of national urban hierarchies as vertical links which represent the national hinterland, and global city connectivity as horizontal links which represent the globalization, the authors of this paper insist that the formation of the world city system is determined by the two dimensions of hierarchies (vertical links) and by globalization (horizontal links) (Timberlake et al. 2012). This paper tries to set up a specific model to illustrate the relation between the global city connectivity of the primate city and the national economic size in order to combine the vertical and horizontal linkages together.

Some of the world city studies have tried to find the relationship between world cities and their locations. Grubesic et al. (2009) analyzed the distribution of the global airport hierarchies and it found that airline routes depend on the global or domestic economic conditions and the regional demand. The results of Musil (2014) show the correlation between the European global cities and the national scale depending on the capital and the statehood of the territory. Parnreiter (2014) argued that city connections should depend on the demand-supply relationships while demand is from the global city connection and the supply obviously denotes the hinterland of the city. The findings of Meijers et al. (2016) also show the significant determinants of metropolitan functions which present global city connectivity. Raźniak et al. (2015) find that the rank of global city connects with the economic potentiality of the host country but without the details. Belderbos et al. (2017) insisted on the hub function of global cities on flow of capital, people, ideas, etc. It is obvious that these studies do not confirm yet which factors impact the city connectivity at national level. Smith (2014) argued that the global city is the requirement for the global economy and not the vice versa; due to the lack of convincing empirical evidence for this relation, the global economy is subject to 'command' and

it has been thrown into doubt. Dempsey (2016) suggested further investigation for the relation between global cities and the national economy. Derudder and Taylor (2017) explained the connections beyond hinterlands by the central flow theory but they failed to give the reasons for the various situations of other cities across urban places. Obviously, these results are various and indeterminate primarily because there is no specific factor at national level being involved. In order to interpret how and why the relation is within different countries, this paper tries to find what is the economic factor at national level that impacts the city connectivity by comparing effectiveness from variables of economic size and richness.

Among the empirical studies offering explanations for the world cities' connectivity, Taylor and Aranya (2008) tested a number of hypotheses regarding the change of city connectivity in the period 2000-2004. Their regression analysis was revealed to be significant at a very low confidence level and this may have resulted from mixing the factors of country and city levels together and by confusing the causality between the national economy and city connectivity. After devel-oping an alternative measurement by taking into account both possible underestimation and conceptual problems, Derudder et al. (2010) found that Shanghai and Beijing have witnessed the most substantial connectivity in the period 2000-2008, supporting the idea that the regional economic size impacts the major cities' connectivity. However, it remains difficult to justify the view that a country's economy impacts its city connectivity at different periods of national economic development because a relatively small number of situations have been studied. As pointed out by Taylor (2014), limited empirical findings exist to explain the formation of economic actors and their practices on global cities and the world city network. In order to get complete understanding about the relation track among different countries, this paper tries to untangle the impacts with cross section data to simulating the relation track.

In view of the above, we examine the relationship between a global city's connectivity and its national economy by following the definition of the city interlock connectivity suggested by Taylor and Derudder (2016). The data from the international APS corporations in the primate cities and their national GDP were used to match the city and the corresponding hinterland so as to combine the vertical and horizontal linkages into the network. Due to the fact that the number of the involved countries is small as statistic sample, the Bootstrap method was adopted to estimate the parameters and to test the validity for the models. The significant model confirms the factor (GDP size, e.g.) at national level having effectiveness on city connectivity. The estimated model and the fitting curve can be employed to explain the formation of world city and the network and to answer the questions about the periodically 'curved' or 'flatter' world.

Methodology

Investigating the relationship between the primate global city connectivity and the national economy

Jacobs' (1984) Dynamic City Theory argues for five great economic forces acting in the city expansion, namely: new market, new employment, relocation, new technology and new capital. The increases in market, jobs, technology, inflow industries and capital can create a mix of opportunities for a city that lead to the diffusion of the city's economy; but these increases are inseparable from the economic landscape in which the city exists; ultimately, cities cannot be understood without exploring their relations with the countries (Jacobs 1992). Thus, within a national urban system, the primate city is always expressive of the national capacity and it is the national focal-point; the second and subsequently smaller cities are the hinterlands orderly. Within globalization, the city connection is beyond the national connection. Nevertheless, the 'flow space' still depends on the business distribution of cross-country firms. When the connection is calculated by APS firms, the causality between the national economy and the

primate city connectivity is explained in Fig. 1.

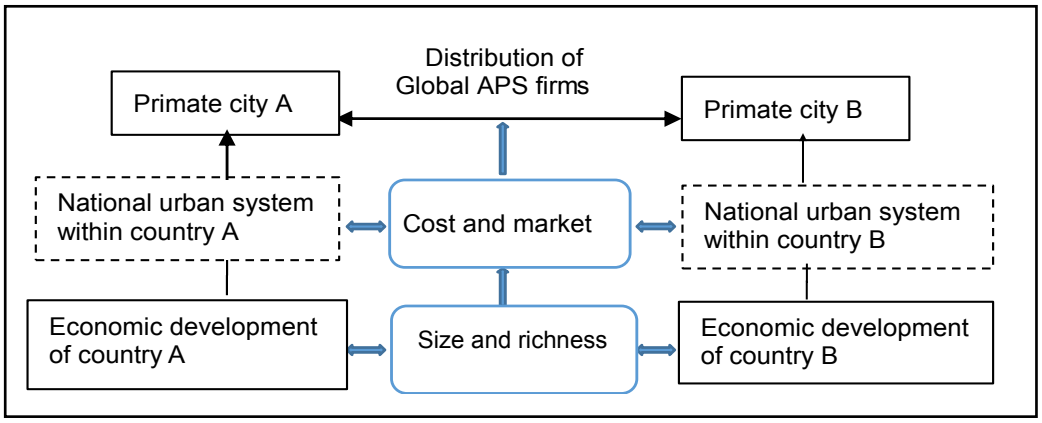

Fig. 1 **– The causal relationship between global city connectivity and the national economy**
Source: The authors

Fig. 1 indicates that the first nature of a city is intrinsic to the physical site itself. The second nature is determined by the extent of development of that location, here the country (e.g. the availability of suppliers) based on the spatial structure of the global economic system (e.g. the benefits of services access to a large market). Thus, the primate city depends on the national urban system with which the second and subsequently smaller cities are organized within the country, and it is finally determined by the market size which corresponds to the economic development of the country. As a result, the authors assume that the national economic size effects on the national urban system and then on the city connectivity, as well as the location of a city, reflect the strength of the nation within which it is embedded. The relation between the primate city connectivity and the national economy is the combination of the horizontal link and the vertical link of the two urban systems. It is nonetheless necessary to clarify the specific effects so as to better define the impact models.

Calculating the city interlock connectivity

Three types of network measurement can be found in the literature to quantify city connectivity, including airline passengers (Keeling 1995, Rimmer 1998, O'Connor 2003, Matsumoto 2004, Smith and Timberlake 1995, 2001, 2002, Derudder and Witlox 2005, 2008, Mahutga et al. 2010, Ordóñez and García 2010, Pirie 2010, Ma and Timberlake 2013), internet backbone (Beaverstock et al. 2000, Moss and Townsend 2000, Townsend 2001a and 2001b, Malecki 2002, Choi et al. 2006), and distribution of APS firms and branches (Derudder et al. 2003, Alderson et al. 2010, Van Oort et al. 2010, Jacobs et al. 2011, Musil 2013, Taylor et al. 2014). Different types of measurements reveal various aspects of global linkages. While airline passenger data reflect travel volumes across the world, air travel trips are impacted by distance (Choi et al. 2006, Hermelin 2009). The linkage by the internet backbone infrastructure is heavily impacted by accessibility – referred to as a 'digital gap' – and it overlooks the marketing size of global businesses. The linkages between affiliated offices, vital strategic information and knowledge – needed for the co-ordination of business – flow between cities. Therefore, the distribution of APS firms and branches has been used as an indicator for city interlock connectivity in this paper.

Following Taylor and Derudder (2016), city interlock connectivity in this paper can be calculated as follows:

$$r_{ab} = \sum_{j} r_{abj} \quad (1)$$

$$N_a = \sum_{i} r_{ai} \quad , \quad a \neq j \quad (2)$$

$$T = \sum_{\iota} N_a \quad (3)$$

$$L_n = (N_n / T) \quad (4)$$

Where r_{abj} represents the relation between city *a* and city *b* when evaluated by firm j; r_{ab} represents the relation between these two cities when considering all firms, N_a indicates the interlock connectivity of city a in the network and *T* is the total network interlock connectivity; L_n represents the proportion of city *a*'s interlock connectivity in the whole city network; it is a standardized measure of the interlock connectivity of city *a* in the city network and it is used to describe city interlock connectivity for the analyses reported in the rest of this paper. These expressions indicate that when cities have been involved into the calculation, the interlock values are calculated among these cities.

Data preparation

As the world economy has advanced, economic growth has become increasingly dependent on the service sector. Based on a world city hypothesis by Friedman (1986) and Sassen (1991), world cities are taken as service centers for the global economy as represented by the presence of headquarters and branches operations, financial services, information and business services, knowledge flow, advanced technological and education activities, advanced logistics and trading, global cultural activities and creativities, etc. While world cities are denoted as prime centers for the production and consumption of business services in the organization of global capital, their connectivity is also based on a city's capability to generate strategic corporate information and knowledge flows through the presence of globalised APS firms. There is, though, a need for more knowledge about how service firms develop in global structures (Boussebaa 2009). Practical observation shows that APS firms play critical roles for employment, knowledge development, innovations, value added and export incomes in developed economies, where APS firms tend to be heavily concentrated in major urban and metropolitan regions (Hermelin 2009). APS firms have increasingly become multinational firms in an international market to service existing clients and to attract new ones (Aharoni and Nachum 2000, Harrington and Daniels 2006). They have further been identified as the network makers, since transnational companies (TNC) are the prime movers in the globalizing economy through their distribution functions. Transnational APS firms are therefore widely denoted as indicator for the world city connectivity.

Thus, APS firm's headquarters and their branch distribution networks are employed as an indicator for city connectivity in this paper. The global Fortune 500 companies are usually indicated as the mainstream of transnational firms. There were 156 and 250 advanced producer service (APS) firms in the list of Fortune 500, for July 2010 and 2016 respectively (banking, diversified financials, health care, insurance, telecommunication and internet service

sectors). Among the 156 and 250 companies, 61 and 106 had headquarters plus branches listed on their websites, which were distributed among 49 and 59 cities around the world in 2010 and 2016 respectively (see Appendix I [1]). The matrix values L_n for city interlock connectivity have been calculated based on the numbers of headquarters and branches of these companies in each city among the 49 and 59 cities. The data source for the headquarters and branches distribution networks of each company is the company's website.

Following equation (4), the value of each city's interlock connectivity was calculated. Furthermore, in order to facilitate the examination of the relationship between each city and its country, only those cities that were ranked as the top in their country were kept for further analysis. Although some of these cities would not be considered 'world cities' (as defined), they have been included when transnational firms were operating there so as to connect the city with the global economy. As a result, among the universe of 49 and 59 cities, the values of 35 and 37 cities and 35 and 37 corresponding hosting countries in 2010 and 2016 respectively were valid and retained for the study.

There were 1278 and 2530 headquarters and branches distributed around the 35 and 37 cities in 2010 and 2016 respectively, which have been used to induce values of L_n for the 35 and 37 cities. The data for each national economic size represented by the Gross Domestic Production (GDP) were extracted from the report of World Bank (2010 and 2016). Aggregated GDP, the chief national-level economic variable, was used to indicate the size of each national economy. In order to distinguish further the effects of country richness, the GDP per capita was also involved into the model. Table 1 gives the calculated city interlock connectivity for each city and the national GDP and GDP per capita for the corresponding host countries.

Table 1

The cities, dependent variables, and independent variables

City	City Interlock connectivity (%)		Country	National GDP (Million USD)		National GDP/cap. Capita (USD/ person)	
	2010	2016		2010	2016	2010	2016
London	4.1345	4.0837	U.K.	2174530	2618886	37840	39899
New York	6.6187	3.1861	USA	14256300	18569100	48550	57467
Tokyo	2.3179	4.3728	Japan	5067526	4939384	45130	38894
Paris	3.7736	2.2871	France	2649490	2465454	42690	36855
Sydney	1.9191	2.0097	Australia	924844	1204616	50120	49928
Milan	1.9570	1.1257	Italy	2112780	1849970	35350	30527
Toronto	1.5975	1.8304	Canada	1336067	1529760	46730	42158
Moscow	0.8841	2.5599	Russia	1230726	1283162	10810	8748
Seoul	1.1762	1.2043	Korea	832512	1411246	20870	27539
Frankfurt	1.2998	1.1367	Germany	3346702	3466757	44230	41936
Brussels	1.4339	1.6382	Belgium	468553	466366	45840	41096
Amsterdam	0.4592	2.1338	the Nether-lands	792128	770845	49660	45295
Buenos Aires	1.0189	1.3205	Argentina	308741	545866	10871	12449

1) The other companies did not give any indication of their headquarters and branches locations. There are five levels of branches according to Taylor's definition, but we just selected the first level branches from the company's websites. Additionally, only the primary city in each country was considered. These choices did not, in our view, invalidate our results. All the branches are confirmed by checking the efficient telephone number and their active business at the end of 2010 and 2016 respectively.

City	City Interlock connectivity (%)		Country	National GDP (Million USD)		National GDP/cap. Capita (USD/person)	
	2010	2016		2010	2016	2010	2016
Mumbai	1.1663	2.1033	India	1310171	2263522	1450	1709
Sao Paulo	1.1762	1.8746	Brazil	1571979	1796187	10700	8650
Kuala Lumpur	0.9831	2.4488	Malaysia	191601	296359	8800	9503
Zurich	10.9843	1.6122	Switzer-land	523772	659827	76350	78813
Mexico City	0.6355	1.7583	Mexico	874902	1045998	8970	8201
Warsaw	1.0779	1.8740	Poland	430076	469509	12330	12372
Jakarta	1.4886	2.6417	Indonesia	540277	932259	2930	3570
Dublin	1.6312	1.4953	Ireland	227193	294054	38960	61607
Bangkok	1.3412	2.5865	Thailand	263856	406840	4620	5908
Stockholm	0.6011	1.3803	Sweden	406072	511000	53530	51600
Istanbul	0.5379	2.1143	Turkey	617099	857749	10510	10788
Prague	0.2816	1.3946	Czech Republic	190274	192925	18720	18267
Lisbon	0.2050	1.5615	Portugal	227676	204565	21420	19813
Vienna	1.7435	0.9763	Austria	384909	386428	48170	44177
Budapest	0.6214	1.5219	Hungary	128964	124343	12860	12665
Athens	0.8876	1.2653	Greece	329924	194559	24490	18104
Caracas	0.3244	0.5814	Venezuela	326498	371337	11760	9230
Auckland	0.5884	1.4628	New Zealand	125160	185017	30620	39427
Santiago	0.6994	1.2127	Chile	163670	247028	12270	13793
Beijing	2.0012		China	4984700		4940	
Shanghai		3.7064	China		11199145		8123
Madrid	2.1045		Spain	1460250		30930	
Barcelona		1.8298	Spain		1232088		26529
Singapore	2.6472		Singapore	182232		45690	
Dubai		1.3400	The United Arab Emirates		348743		37622
Manila		1.5362	The Philip-pines		304905		2951
Ho Chi Ming City		1.5576	Vietnam		202616		2186
Max.	16.6187	4.3728		14256300	18569100	76350	78813
Min.	0.2050	0.5814		125160	124343	1450	1709
Average	1.5626	1.9115		1451432.03	1779687	27991.74	26443.22
S.D.	3.1374	0.8368		2554422	3451856	19045.87	19720.92

Modeling the relationship

The objective of this paper is to illustrate the curve of the two variables, the primate cities interlock connectivity and their national GDP, to find the track of this relation. There are two steps to model the relation.

The first step is to draw scatter plots with the values of interlock connectivity of the primate

cities and their national GDP, GDP/cap., which were 35 dots in 2010 and 37 dots in 2016 (Fig. 2).

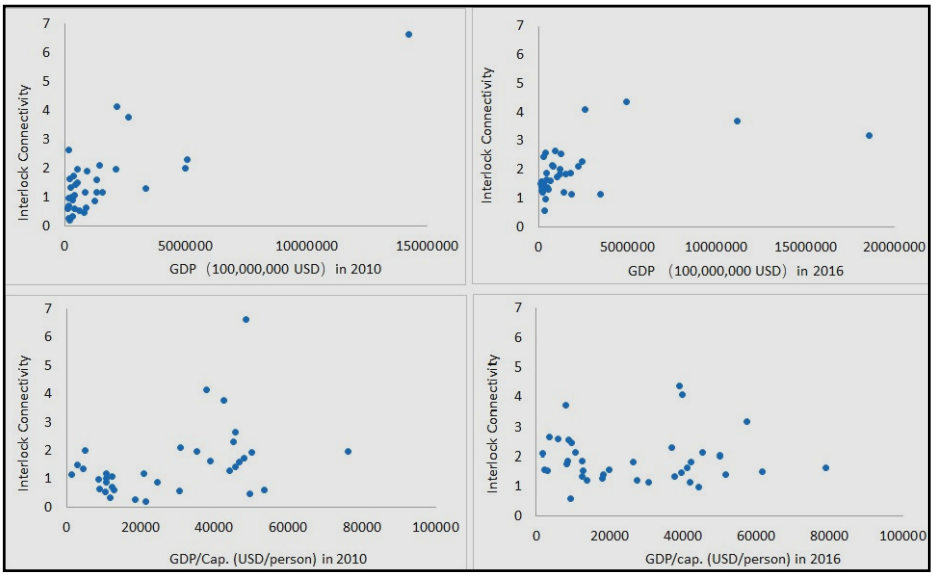

Fig. 2 – **The values of interlock connectivity of the primate cities and their national GDP, GDP/cap.**

The second step is to model the relations and to estimate parameters for the scatter plots. Due to the dull distribution of these dots, typical functions, such as linear, logarithmic, inverse, quadratic, cubic, power and exponential functions, will be adopted to estimate their parameters. With each model, there were fixed the parameters for the values of city interlock connectivity and GDP, GDP/cap. in 2010 and 2016 with regressions respectively. Bootstrap is a technique to expand the sample size by resampling it independently from the same data with OLS to meet the requirement of the regression. Owning to small sample size of data in each year, the nonparametric Bootstrap method is used to estimate the parameters for each function and to test the validity of the estimations comparing with the results of OLS (see Table 2 for the results of estimations with logarithmic and power functions)[2)].

Results

Table 2 shows that, with logarithmic and power functions, the parameters of variable GDP are all significant no matter if one or two variables are involved together, in 2010 or 2016 respectively. As well as the parameters about the constant variable show to be stable. However, the parameters of variable GDP/cap are significant only in 2010 but non-significant in 2016. These results denote that the GDP size has a stably significant impact on the primate city interlock connectivity as independent univariate; the richness of the national economy has not a stable impact on the city connectivity. The function about the relation between the global city connectivity of the primary city and the size national economy is equation (5) as the following:

2) Comparing all the results, except the logarithmic and power functions, too small coefficients in linear, inverse, quadratic, cubic and exponential functions, as well as the parameters of GDP, show no significance in 2016 with the latter models. Therefore, the results of logarithmic and power functions are listed in the text and the results for the other ones are listed in Appendix 2.

Table 2

Results of estimations for logarithmic and power functions

Variables	Year	GDP		GDP/cap		GDP-GDP/cap	
		OLS	Bootstrap	OLS	Bootstrap	OLS	Boot-strap
Logarithmic function							
lngdp	2010	0.709*** (0.143)	0.709*** (0.234)			0.672*** (0.138)	0.672*** (0.212)
	2016	0.443*** (0.0943)	0.443*** (0.115)			0.458*** (0.0956)	0.458*** (0.0956)
lngdpp				0.451** (0.219)	0.451** (0.226)	0.342* (0.170)	0.342** (0.153)
	2016			-0.0254 (0.142)	-0.0254 (0.124)	-0.112 (0.113)	-0.112 (0.0897)
Constant	2010	-4.735*** (1.273)	-4.735** (1.983)	-2.950 (2.182)	-2.950 (2.158)	-7.807*** (1.953)	-7.807*** (2.541)
	2016	-2.053** (0.852)	-2.053** (0.969)	2.161 (1.403)	2.161* (1.187)	-1.091 (1.293)	-1.091 (1.436)
Observa-tions	2010	35	35	35	35	35	35
	2016	37	37	37	37	37	37
R-squared	2010	0.427	0.427	0.114	0.114	0.491	0.491
	2016	0.386	0.386	0.001	0.001	0.403	0.403
Power function							
lngdp	2010	0.403*** (0.0890)	0.403*** (0.0843)			0.386*** (0.0884)	0.386*** (0.0833)
	2016	0.195*** (0.0485)	0.195*** (0.0477)			0.204*** (0.0489)	0.204*** (0.0480)
lngdpp	2010			0.220 (0.134)	0.220* (0.124)	0.158 (0.109)	0.158 (0.112)
	2016			-0.0264 (0.0692)	-0.0264 (0.0615)	-0.0649 (0.0579)	-0.0649 (0.0445)
Constant	2010	-3.405*** (0.793)	-3.405*** (0.778)	-2.029 (1.338)	-2.029* (1.224)	-4.819*** (1.251)	-4.819*** (1.253)
	2016	-1.180** (0.438)	-1.180*** (0.418)	0.825 (0.682)	0.825 (0.602)	-0.622 (0.662)	-0.622 (0.708)
Observa-tions	2010	35	35	35	35	35	35
	2016	37	37	37	37	37	37
R-squared	2010	0.383	0.383	0.075	0.075	0.421	0.421
	2016	0.316	0.316	0.004	0.004	0.340	0.340

Notes：① Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. ② GDP indicates the estimation with GDP variable only; GDP/cap. indicates the estimation with GDP/cap only; GDP-GDP/cap indicates the estimation with both GDP and GDP/cap together. ③ New York has a high value of city connectivity in 2010 and it seems like a singular value. However, when the value of New York in 2010 is moved away, the results do not change anymore but the Adjusted R square value is 0.459, increasing with 0.076 compared with the ones of the total values involved.

$$Cn = \alpha + \beta \ln GDP \qquad (5)$$

Where *Cn* represents the city interlock connectivity, *GDP* represents the national GDP size.α and β is constant respectively. The original formula can be a power function like:

$$e^{Cn} = e^{\alpha} + GDP^{\beta} \quad (6)$$

when $e^{Cn} = f(Cn)$ then $e^{\alpha} = \alpha_0$ $f(Cn) = \alpha_0 + GDP^{\beta}$

Factually, the power function is the transformation of logarithmic function. Thus, the relation between the city connectivity of the primary city and the size of their national economy is represented by the models of logarithmic function or power function. Furthermore, the values of adjusted R square about the independent variable GDP size for the logarithmic function are 0.427 and 0.386 in 2010 and 2016 respectively. The result indicates that the GDP size, as the independent univariate for the city interlock connectivity, can explain the effects of national economic size on city interlock connectivity at 42.7% and 38.6% levels respectively. The values of adjusted R square for the logarithmic function are 0.383 and 0.316 in 2010 and 2016 respectively. It indicates that the GDP can explain the effects at 38.3% and 31.6% levels respectively. Then, the logarithmic function is better than the power one because the parameters of logarithmic function are more efficient than the ones of power function. Finally, the results of logarithmic function are adopted to illustrate the relation between city interlock connectivity and national GDP size.

Combining the data about city interlock connectivity and national GDP size in 2010 and 2016 together, the curve of these two variables with logarithmic function is in Fig. 3.

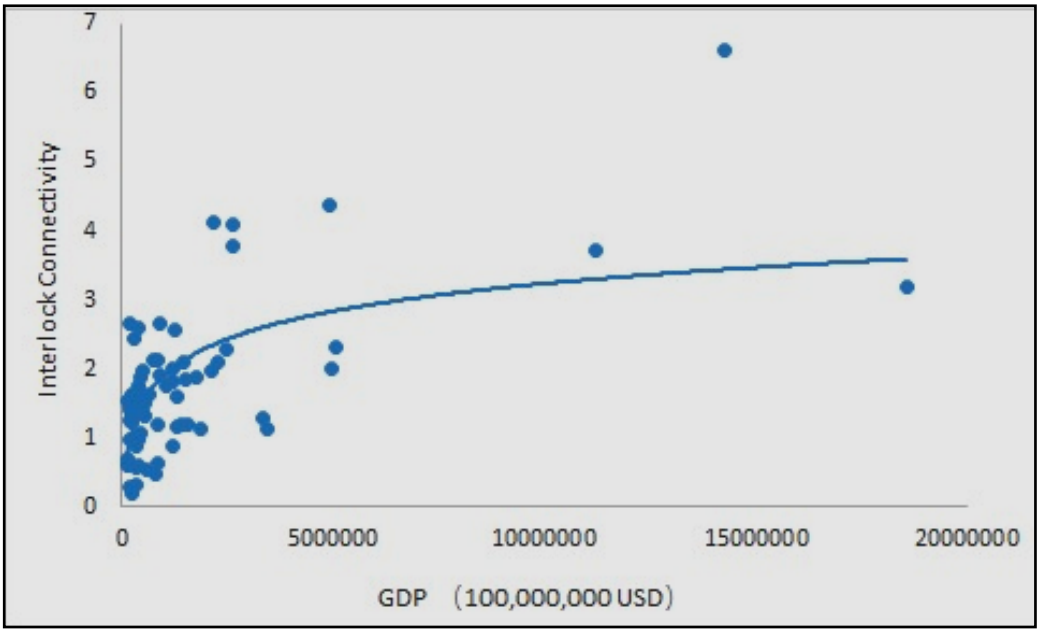

Fig. 3 – **The relation between city interlock connectivity and national GDP with logarithmic function**

The curve in Fig. 3 shows that the city connectivity increases with the national GDP size rising

significantly at two different periods. At the primary period, the national GDP is approximately less than 500 trillion USD, the value increases rapidly and most the countries are at this period; at the second period, the national GDP is more than 500 trillion USD, the connectivity value increase smoothly and a few countries are at this period.

Discussion

The analysis reported above shows that national economies have significant effects on the city interlock connectivity of the primary city in a world cities network with logarithmic function. This provides empirical evidence that the world city system is related to the general structure of the global economic system. It reveals that the primary cities in all the core countries of the world system continue to benefit greatly from the growth in the national GDP; their economic growth is showing strong and positive effects on increasing the primary cities' connectivity in a world city network. With plenty of fully-fledged high-end service firms in these cities, the growth of a national economy goes together with the strengthening of the centrality of their primary cities.
The effectiveness of national GDP other than GDP/cap on the global city connectivity conducts that it is the national economic size which determines the market size and the density of economic activities rather than national richness. Global APS firms select their location depending on the business that the market capability may supply the opportunities. Just with location at the market center, the firms can control the flow of economic factors to become the center of the world and the nodes of global city network.

This can further explain the findings in literature about the various effects that the different national economies have effectiveness on their cities' connectivity due to their different roles and positions in the global economic system. When the national economic size is small, at the primary period e.g., the primate city connectivity has more benefit from their national economy. Among the case countries of this paper, New Zealand, Hungary, Chile, Singapore, Czechoslovakia, Malaysia, Ireland, Portugal, Thailand, Argentina, Venezuela, Greece, Austria, Sweden, Poland, Belgium, etc. have less than 500 trillion USD in 2010; Hungary, New Zealand, Czechoslovakia, Greece, Vietnam, Portugal, Chile, Ireland, Malaysia, Philippines, United Arab Emirates, Venezuela, Austria, Thailand, Belgium, Poland, etc. have less than 500 trillion USD in 2016. In these countries, the national urban system is strongly vertical link due to the small number of local cities supporting the primate city to connect the world. However, connectivity increases rapidly when the national economy rises. When the national economic size is large, at the second period e.g., the primate city connectivity has low benefit from their national economy. Such countries as USA, China, Japan, German, UK, France, India, Italy, Brazil, Canada, Russia, etc., no matter if inner city connectivity or global city connectivity, have strong horizontal link due to the huge number of cities and the large size of economic development. In these countries, the global city connectivity is growing slowly within the network of the national urban system. Therefore, it can be conducted that the world becomes more curved at its primary stage due to the core economies getting more benefits from the periphery countries through the world cities network, and it will be flatter at the second stage due to the network relations of horizontal linkages.

Conclusions

This study conducts the relation between the global city connectivity of the primary city and the size of the national economy with specific function. The function illustrates the evolution trajectory of this relation while it combines the national urban system and the global city connectivity together. The conclusion does not only clarify the relation between the world city connectivity and the national economic size, but it also sets up the linkage of the first and the second natures of the city. This linkage can interpreted as the formation of the world city with the combination of two dimensions (vertical and horizontal).

This study does not just especially provide the explanation about the role of the world city in the 'flowing space' (Castells 1996) as the node of economic flowing, but it further conducts that the connectivity of the world city is determined by the economic size of the hinterland. The result provides empirical evidence supporting the theory that world cities are the function centers of command-and-control located at the sites of production, innovation and markets (Sassen 1991) due to more opportunities close to the bigger market. It further provides an explicit approach to clarify the idea of 'glocal' states which is factually the combination of the global city connectivity and the national urban system.

The relation curve from the model gives the tendency of the relation alteration among the different countries, while the tendency would be reference for the global firms to select the place of the branches with considering the location of the city under the national economic positions in the world and the stages of their global city network in the world system.

The analyses conducted in this study and the conclusions drawn above are based on considering the primary cities only for the selected national economies. It is highly recommended for future investigations to extend the study by including a more inclusive list of global cities. For example, all the world cities within a country can be involved into the connection calculation, and the average value of the cities connectivity within a country will be considered instead for the one of primate city. Then, the result could be more exact. However, the later result will diminish the cities' hierarchy for the national urban system.

Furthermore, with more comprehensive data for cities, future measurements of city interlock connectivity should explore the quantification of both vertical and hierarchical connectivity. In this way, the 'second nature' of a city can be examined not only at the world system scale but also within a hierarchical national or regional urban system structure.

APPENDIX I

APS Global firms included in this study

#AB Group Insurance (China)	Commerz bank(Germany)	NKSJ Holdings(japan)
#ACE Group (China)	Commonwealth Bank of Australia (Australia)	#Noble Group (China)
#Achmea (The Netherland)	*#CPCI (China)	*#Nord deutsche Landes bank (Germany)
*#Aegon (The Netherlands)	*#Credit Suisse (Switzerland)	# NYSE:HPE (U.S.)
#AFL (U.S)	Dai-ichi Life Insurance(Japan)	#Old Mutual Corp. (U.K.)
*#Agricultural Bank of China (China)	Dai Nippon Printing (Japan)	*#Oracle (U.S.)
#AIA (U.S.)	DanskeBankGroup (Denmark)	#Orange (France)
#AIG (U.S.)	Deutsche Bank(Germany)	#PCC (Canada)
#Alibaba Group (China)	*#Deutsche Telekom (Germany)	#PICC (China)
*#Allianz (Germany)	*#DZ Bank (Germany)	Prudential (U.K.)
Allstate (U.S.)	#Exor Group (Italy)	*#Prudential Financial (U.S.)
#Alphabet (U.S.)	Erste Group Bank(Austria)	#Poste Italiane (Italy)
#Altice (France)	#Facebook (U.S.)	*#Rabo bank (The Netherlands)
#Amazon (U.S.)	France Télécom (France)	Royal Bank of Scotland (U.K.)
#America Movil (Mexico)	#Generali Group (Italy)	*#Royal Bank of Canada(Canada)
#Anthem, Inc. (U.S.)	*#Gold man Sachs Group (U.S.)	#Santander Central Hispano S.A. (Spain)
#ANZ Bank (Australia)	#HSBC (China)	*#Sber bank (Russia)
AssicurazioniGenerali (Italy)	*#Industrial & Commercial Bank of China(China)	#SG(France)
*#Aviva (U. K)	#ING (The Netherlands)	*#Standard Life (U.K.)
AXA (France)	International Assets Holding (France)	#Sompo Holdings (Japan)
#AXP （U.S.）	Intesa Sanpaolo (Italy)	#Sodexo (France)
#Banco Bradesco (Brazil)	# Itochu Corporation (Japan)	#Soft Bank (Janpan)
Banco do Brasil (Brazil)	#JD (China)	#SPD Bank(China)
#Banco Bilbao Vizcaya Argentaria (Spain)	#JP.Morgan	State Bank of India (India)
*#Bank of China (China)	*#KDDI(Japan)	#Suning Commerce Group CO., LTD. (China)
Bank of Nova Scotia (Canada)	KFW Bank engruppe (Germany)	*#Sumitomo Life Insurance (Japan)
Barclays (U.K.)	*#Legal & General Group (U.K.)	*#Swiss Reinsurance (Switzerland)
#BNP Paribas (France)	Liberty Mutual Insurance Group (U.S.)	#Talanx (Germany
#BOCOM (China)	#LLOYDS (U.K.)	Telstra (Australia)
#Brookfield Asset (Canada)	*#Manulife Financial (Canada)	#Tencent (China)
*#BT Group (U.K.)	*#Mapfre Group (Spain)	#TIAA-CREF (U.S.)
#Cathay Insurance Co.,Ltd. (China)	# Marubeni Corporation (Japan)	#TMNCH (Japan)
#CEB Bank China)	*#Meiji Yasuda Life Insurance (Japan)	Tokio Marine Holdings(Japan)

*#China Construction Bank (China)	#Mercantil Servicios Financieros (Venezuela)	#Toronto-Dominion Bank (Canada)
#China Life (China)	#Met Life (U.S.)	#Trafigura Group (The Netherlands)
#China Merchants Bank (China)	*#Mitsubish UFJ Financial Group (Japan)	*#UBS (Switzerland)
#CHTR (U.S.)	#Mitsui & CO., Ltd. (Japan)	#UniCredit Spa (Italy)
#Cigna (U.S.)	#Mizuho Financial Group (Japan)	#Unicom (China)
#Citic Group (China）	*#Morgan Stanley (U.S.)	#United Health (U.S.)
*#Citic Group (U.S.)	*#Munich Re Group(Germany)	#US Bancorp (U.S.)
#CMCC (China)	#National Australia Bank Ltd. (Australia)	#Vodafone (U.K.)
#CMBC(China)	#NCI (China)	Westpac Banking (Australia)
#CNC (U.S.)	*#Nippon Life Insurance (Japan)	#Wells Fargo (U.S.)
*#CNP Assurances (France)	*#Nippon Telegraph &Telephone (Japan)	Zurich Financial Services (Switzerland)

Note: ① () is the name of the firm's host country. ② * and # presents the firms used to calculating the interlock connectivity value in 2010 and 2016 respectively.

APPENDIX II-1

Estimation results for linear, inverse and exponential functions

Varia-bles	Year	GDP		GDP/cap		GDP-GDP/cap	
		OLS	Bootstrap	OLS	Bootstrap		
Linear function							
gdp	2010	3.88e-05*** (5.29e-06)	3.88e-05*** (1.01e-05)			3.60e-05*** (5.02e-06)	3.60e-05*** (9.63e-06)
	2016	1.33e-05*** (3.43e-06)	1.33e-05 (1.14e-05)			1.38e-05*** (3.52e-06)	1.38e-05 (1.19e-05)
gdpp	2010			2.74e-05** (1.05e-05)	2.74e-05** (1.16e-05)	1.70e-05** (6.73e-06)	1.70e-05*** (6.08e-06)
	2016		2.02e-07 (7.17e-06)	2.02e-07 (6.75e-06)	-4.53e-06 (6.16e-06)	-4.53e-06 (4.88e-06)	
Constant	2010	0.959*** (0.154)	0.959*** (0.146)	0.758** (0.353)	0.758*** (0.217)	0.523** (0.224)	0.523*** (0.150)
	2016	1.675*** (0.132)	1.675*** (0.145)	1.906*** (0.235)	1.906*** (0.199)	1.786*** (0.201)	1.786*** (0.188)
Obser-vations	2010	35	35	35	35	35	35
	2016	37	37	37	37	37	37
R-squared	2010	0.620	0.620	0.172	0.172	0.683	0.683
	2016	0.299	0.299	0.000	0.000	0.310	0.310
Inverse function							
lngdp	2010	-2,436** (905.1)	-2,436** (975.8)			-2,532*** (903.0)	-2,532** (989.4)
	2016	-1,937*** (660.9)	-1,937*** (723.5)			-1,953*** (670.1)	-1,953*** (722.0)
lngdpp	2010			-1,479 (1,725)	-1,479 (3,364)	-1,875 (1,576)	-1,875 (2,424)
	2016			243.1 (1,123)	243.1 (989.7)	418.3 (1,021)	418.3 (964.0)
Constant	2010	2.115*** (0.294)	2.115*** (0.367)	1.648*** (0.258)	1.648*** (0.331)	2.297*** (0.330)	2.297*** (0.455)
	2016	2.326*** (0.189)	2.326*** (0.242)	1.888*** (0.176)	1.888*** (0.177)	2.289*** (0.211)	2.289*** (0.258)

Varia-bles	Year	GDP		GDP/cap		GDP-GDP/cap	
		OLS	Bootstrap	OLS	Bootstrap		
Obser-vations	2010	35	35	35	35	35	35
	2016	37	37	37	37	37	37
R-squared	2010	0.180	0.180	0.022	0.022	0.215	0.215
	2016	0.197	0.197	0.001	0.001	0.201	0.201

Notes：Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.GDP indicates the estimation with GDP variable only, GDP/cap. indicates the estimation with GDP/cap only, GDP-GDP/cap indicates the estimation with both GDP and GDP/cap together

APPENDIX II-2

Estimation results for the quadratic function

Varia-bles	Year	GDP		GDP/cap		GDP-GDP/cap	
		OLS	Bootstrap	OLS	Bootstrap	OLS	Bootstrap
Quadratic function							
gdp	2010	3.82e-05** (1.58e-05)	3.82e-05 (4.47e-05)			3.45e-05** (1.50e-05)	3.45e-05 (4.41e-05)
	2016	4.47e-05*** (1.05e-05)	4.47e-05* (2.48e-05)			4.57e-05*** (1.09e-05)	4.57e-05* (2.39e-05)
gdp2	2010	0 (1.17e-10)	0 (1.15e-09)			0 (1.11e-10)	0 (1.37e-09)
	2016	-1.91e-10*** (6.08e-11)	-1.91e-10 (6.24e-10)			-1.95e-10*** (6.34e-11)	-1.95e-10 (5.68e-10)
gdpp	2010			4.31e-05 (3.63e-05)	4.31e-05 (4.62e-05)	2.23e-05 (2.35e-05)	2.23e-05 (2.83e-05)
	2016			-2.60e-06 (2.36e-05)	-2.60e-06 (2.75e-05)	-1.33e-05 (1.79e-05)	-1.33e-05 (2.01e-05)
gdpp2	2010			-2.49e-10 (5.48e-10)	-2.49e-10 (8.51e-10)	-8.23e-11 (3.53e-10)	-8.23e-11 (4.74e-10)
	2016			0 (3.46e-10)	0 (4.41e-10)	1.58e-10 (2.65e-10)	1.58e-10 (3.21e-10)
Cons-tant	2010	0.964*** (0.195)	0.964*** (0.237)	0.600 (0.498)	0.600 (0.427)	0.482 (0.333)	0.482 (0.380)
	2016	1.398*** (0.147)	1.398*** (0.152)	1.934*** (0.324)	1.934*** (0.309)	1.568*** (0.257)	1.568*** (0.314)
Obser-vations	2010	35	35	35	35	35	35
	2016	37	37	37	37	37	37
R-squared	2010	0.620	0.620	0.177	0.177	0.683	0.683
	2016	0.456	0.456	0.000	0.000	0.468	0.468
Exponential function							
gdp	2010	1.67e-05*** (4.24e-06)	1.67e-05* (8.62e-06)			1.49e-05*** (4.13e-06)	1.49e-05* (8.44e-06)
	2016	5.72e-06*** (1.74e-06)	5.72e-06 (4.75e-06)			5.97e-06*** (1.79e-06)	5.97e-06 (5.22e-06)
gdpp	2010			1.59e-05** (6.32e-06)	1.59e-05*** (5.91e-06)	1.17e-05** (5.54e-06)	1.17e-05** (4.84e-06)

Variables	Year	GDP		GDP/cap		GDP-GDP/cap	
		OLS	Bootstrap	OLS	Bootstrap	OLS	Bootstrap
	2016			-1.55e-07 (3.49e-06)	-1.55e-07 (3.17e-06)	-2.20e-06 (3.14e-06)	-2.20e-06 (2.71e-06)
Constant	2010	-0.0911 (0.123)	-0.0911 (0.142)	-0.294 (0.213)	-0.294 (0.184)	-0.391** (0.184)	-0.391** (0.177)
	2016	0.464*** (0.0670)	0.464*** (0.0737)	0.570*** (0.115)	0.570*** (0.103)	0.518*** (0.102)	0.518*** (0.109)
Observations	2010	35	35	35	35	35	35
	2016	37	37	37	37	37	37
R-squared	2010	0.320	0.320	0.162	0.162	0.403	0.403

APPENDIX II-3

Estimation results for the cubic function

Variables	Year	GDP		GDP/cap		GDP-GDP/cap	
		OLS	Bootstrap	OLS	Bootstrap	OLS	Bootstrap
gdp	2010	0.000112*** (4.08e-05)	0.000112 (0.000115)			9.52e-05** (4.03e-05)	9.52e-05 (0.000122)
	2016	4.87e-05** (1.95e-05)	4.87e-05 (7.03e-05)			5.22e-05** (2.12e-05)	5.22e-05 (8.02e-05)
gdp2	2010	-2.21e-09* (1.14e-09)	-2.21e-09 (8.12e-09)			-1.85e-09 (1.11e-09)	-1.85e-09 (8.72e-09)
	2016	-2.68e-10 (3.26e-10)	-2.68e-10 (5.44e-09)			-3.28e-10 (3.54e-10)	-3.28e-10 (6.03e-09)
gdp3	2010	0* (0)	0 (0)			0 (0)	0 (0)
	2016	0 (0)	0 (0)			0 (0)	0 (0)
gdpp	2010			-9.91e-05 (9.41e-05)	-9.91e-05 (0.000131)	-1.45e-05 (6.25e-05)	-1.45e-05 (0.000126)
	2016			-7.42e-05 (6.27e-05)	-7.42e-05 (5.67e-05)	-4.61e-05 (5.00e-05)	-4.61e-05 (4.31e-05)
gdpp2	2010			4.32e-09 (2.86e-09)	4.32e-09 (5.94e-09)	1.02e-09 (1.93e-09)	1.02e-09 (5.72e-09)
	2016			2.40e-09 (1.94e-09)	2.40e-09 (2.19e-09)	1.20e-09 (1.57e-09)	1.20e-09 (1.52e-09)
gdpp3	2010			-0 (0)	-0 (0)	-0 (0)	-0 (0)
	2016			-0 (0)	-0 (0)	-0 (0)	-0 (0)
Constant	2010	0.643** (0.249)	0.643* (0.349)	1.512* (0.742)	1.512** (0.731)	0.499 (0.537)	0.499 (0.896)
	2016	1.374*** (0.179)	1.374*** (0.229)	2.362*** (0.474)	2.362*** (0.414)	1.742*** (0.396)	1.742*** (0.463)
Observations	2010	35	35	35	35	35	35
	2016	37	37	37	37	37	37
R-squared	2010	0.661	0.661	0.242	0.242	0.717	0.717
	2016	0.457	0.457	0.044	0.044	0.479	0.479

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THE IMPACT OF THE INSTITUTIONAL FRAMEWORK QUALITY ON THE OWNERSHIP STRATEGY. EVIDENCE FROM EU FOREIGN DIRECT INVESTMENTS IN SOUTH AND CENTRAL EASTERN EUROPE

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Abstract: Foreign Direct Investment (FDI) is considered by scholars as a critical factor for economic growth and development. The recent economic crisis in the European Union (EU) has brought up again the discussion of the key drivers specific to the attraction of FDI. In addition to strict economic factor, the literature emphasises the role of institutions in a country as determinants in attracting FDI inflows. This study is one of the first to address the ownership strategy of multinational enterprises from the EU region undertaking FDI in former transitional economies in South (SEE) and Central Eastern Europe (CEE) using the concept of the quality of institutions. An analysis of the impact that the quality of market supporting institutions in determining ownership structure has of foreign affiliates in former transitional economies is attempted using an econometric model on institutional, regulatory, country specific and company level data based on a sample of 285 EU companies undertook FDI in 4 South and Central Eastern European countries during 1995-2015. We apply and advance the institution-based view of strategy by integrating it with resource-based and transaction cost considerations, incorporating three of the most important theoretical paradigms of international business studies.

Key Words: *Foreign Direct Investment, South and Central Eastern Europe, institutional variables, institutional distance, ownership strategy, decision making.*

Introduction

International business (IB) is subject to higher transaction costs than most domestic business, due to imperfections on international markets making the choice of an organisational form a key issue in IB strategy (Williamson 1985, 2000, Teece 1986, North 1990). The choice of entry mode, the most critical strategic decisions for the companies entering foreign markets, has been addressed frequently in the literature (Kim and Hwang 1992, Arregle et al. 2006, Brouthers and Hennart 2007, Kaynak et al. 2007). Most of the studies focused on the choice of ownership between a joint venture (JV) and a wholly owned subsidiary (WOS) (Brouthers and Brouthers 2003, Brouthers and Hennart 2007, Dikova and van Witteloostuijn 2007, Yu et al. 2015) and on the management of JV and WOS (Meyer 2002, Meyer and Tran 2006, Bertoncelj et al. 2007).

Each host country represents a unique institutional environment which has a significant impact on companies' ownership strategy (Henisz 2003, Dunning 2004, Dunning and Lundan 2008, Estrin et al. 2009). Previous research has also focused on the importance of understanding the institutional environment to gain a comprehensive understanding of market entry strategy issues in transitional economies where institutional frameworks differ greatly from those in developed economies (Brunetti et al. 1997, Stiglitz 1999, Svejnar 2002, Meyer and Peng 2005, Wright et al. 2005, Gelbuda et al. 2008). Therefore, an increasing number of studies are using different institutional perspectives to examine the entry mode and preferred ownership strategies in their foreign markets (Hennart 1988, Xu et al. 2004, Wright et al. 2005, Estrin et al.

2009, Meyer et al. 2009a, Peng and Khoury 2009). There are reasons to believe that a sound institutional environment should attract more FDI. Nonetheless, according to the literature (Lim 2001, Blonigen 2005, Mccloud and Kumbhakar 2012), evidence in favour of institutions remains mixed. The lack of conclusive evidence has been attributed to measurement, conceptual, and methodical problems.

Three factors have contributed to the growing interest in the relationship between FDI and institutions. First, the influential study of North (1990) raised awareness on the role of institutions in establishing incentives for the economic activity in general and for investment in particular. An early attempt to study this issue is Wheeler and Mody (1992), who use the first principal component of 13 risk factors (including bureaucracy, political instability, corruption and the legal system quality). However, they did not find a significant impact of 'good' institutions on the location of US foreign affiliates. Second, FDI flows grew significantly since the 1990s and emerging market economies have become increasingly interested in attracting a greater share. Third, foreign investors have come to place a greater emphasis on institutional quality when selecting an investment location (Bevan et al. 2004, Acemoglu et al. 2005).

This study concentrates on FDI made in SEE and CEE economies as they pose particular challenges to investors because multiple market failures, such as the unregulated markets, the incapacity of commercial infrastructure, the absence of the legal framework protecting the interests of the shareholders and the proprietary assets of companies during the transition process have to be accommodated and it is not feasible to work with the efficient- market assumptions suitable for developed economies. Thus they offer a novel context for the understanding of different international management issues. These countries have a unique history in relation to the transition to a market economy system from socialism and the development of economic institutions (Meyer 2001a, Svenjar 2002, Meyer and Peng 2005, Arslan and Larimo 2010).

Previous research on developing, developed, emerging and transition economies has described different ways in which institutions affect FDI (Addison and Heshmati 2003, Edison 2003, Bevan and Estrin 2004, Pournarakis and Varsakelis 2004, Rodrik 2004, Rodrik et al. 2004, Acemoglu and Johnson 2005, Aizenman and Spiegel 2006, Bénassy-Quéré et al. 2007, Naudé and Krugell 2007, Becchetti and Hasan 2008, Dumludag 2009, Ali et al. 2010, Buchanan et al. 2012, Farole and Winkler 2012). The dominant view is that countries with good institutional governance can attract more FDI (La Porta et al. 1997, 1999, Globerman and Shapiro 2002, Kaufmann et al. 2005, Globerman et al. 2006, Busse and Hefeker 2007, Gani 2007, Buchanan et al. 2012), whereas an environment of weak governance cannot protect the investments (Globerman and Shapiro 2003). Institutional variables, specifically corruption, political restrictions, and protection of property rights, are some important determinants of multinational investments and FDI inflows (Contractor and Lorange 1988, Shleifer and Vishny 1993, Mauro 1995, Singh and Jun 1995, Henisz 1998, Wei 2000, Jensen 2003, Richards and Nwankwo 2005, Gorynia et al. 2015). Staats and Biglaiser (2012) argue that rule of law and judicial strength are important determinants of FDI inflows.

Further, some scholars argue that in countries where property rights are poorly protected, multinationals' investments face expropriation risks (Henisz and Williamson 1999, Henisz 2000a). Jimenez (2010) argues that multinationals implement their internationalisation policies by investing in countries where political risk levels are very different, aiming to achieve maximum benefit by acquiring the knowledge and access to managerial talent, as well as diversifying their FDI portfolios, to minimise risk against local fluctuations in supply and demand; thus positional advantages can be achieved by investing in countries where political capabilities can be used to gain economic benefits and healthy effects. Greater assurances to comply with contracts, respect for property rights, and economic freedom are important determinants to attract more foreign investment (Stephen and Philip 1995, Kapuria-Foreman

2007).
Dunning (1995) introduced an eclectic paradigm, known as the OLI paradigm, with three important elements needed in order to motivate investment in a particular country: ownership, location and internalisation advantages. Dunning's location advantages include: supply side (labour skills and costs, corporate taxation), demand side (market size and growth), and political and social infrastructure. Since Dunning's initial paradigm did not specifically include institutional factors, being principally focused on economic factors, Dunning (2006) emphasized the importance of institutional factors in an extension of the model. It has also been suggested that institutions affect all three components of the paradigm (Dunning and Lundan 2008).

Ali et al. (2010) concluded that property rights were more important determinants of FDI. Law and order become a serious issue for foreign investors when courts fail to enforce contracts and when the government influences court decisions for political motives (Drabek and Payne 2002, Buchanan and English II 2007). Law and order instability leads to corruption (Dahlström and Johnson 2007). Many investor surveys also suggest that one of the most important institutional factors that deters FDI inflows is corruption (Gastanaga et al. 1998, Campos et al. 1999, Asiedu and Villamil 2000, Wei 2000, Egger and Winner 2005, Cuervo-Cazurra 2006, 2008). Nevertheless, this result was challenged by Stein and Daude (2001) who argued that high correlation between corruption and GDP per capita could lead to spurious results as GDP per capita was not included in the equation.

On the other hand, institutional quality is associated with economic growth (North 1981, 1990, 2005, Butkiewicz and Yanikkaya 2006). Previous research studies on the important determinants of FDI in developing countries have argued that institutional quality is the most important factor in stimulating economic growth. North (1990) explains that institutions are formulated to reduce the uncertainty associated with human exchange and provide societies with a predictable framework for interaction. Globerman and Shapiro (2002) found that the returns for good governance are strong for developing economies, relative to other countries in their sample.

The view that economic problems in developing countries arise due to the poor quality of institutions is very common among researchers and policymakers; lower institutional quality is associated with lower investment, low productivity growth, low per capita income, and overall slower output growth (Akhter 1993, , Globerman and Shapiro 2002, Jude and Levieuge 2017). Good institutions reduce production and transaction costs (North 1990, 1991), and as a result, increase profitability and economic activity, whereas poor and weak institutions increase uncertainty and costs of production (Cuervo-Cazurra 2006, 2008). North (1990) illustrates that parties at the opposite ends of an economic activity have incomplete information about their counterparts' true intentions; who might cheat or deceive others. Due to the lack of information and uncertainty associated with economic transactions, transaction costs contain a risk premium. North (1990) argues that the risk premium is a function of institutional quality, as it depends upon property right protection, contract enforceability, and the likelihood of default by the other party.

In general, it is accepted that countries that record higher economic prosperity have greater political and economic freedom, better rights protection and intellectual property rights and lower level of corruption, thus perform relatively better in terms of FDI inflow (Acemoglu et al. 2005, Bénassy-Quéré et al. 2007). Buchanan et al. (2012) pointed out that the quality of institutions not only relates to the amount of FDI but also with their variability. Wheeler and Mody (1992), Gani (2007), Groh and Wich (2009), suggest that complex and time consuming bureaucratic procedures affect the expected returns from investments, thereby negatively affect the decisions of foreign investors. Khan and Akbar (2013) employed several political risk indices such as government stability and corruption, while other studies have used corruption

as a measure of political risk displaying a negative impact on FDI (Wheeler and Mody 1992, Wei 2000, Wei and Shleifer 2000, Getz and Volkema 2001, Habib and Zurawicki 2002, Bénassy-Quéré et al. 2007). Similar factors were also indicated by Wheeler and Mody (1992), and Filippaios and Kottaridi (2013), who emphasize the particular influence exerted by corruption. Finally, Bénassy-Quéré et al. (2007) find the impact of financial efficiency, the stability of the tax system, and the efficiency of the judiciary and of supervisory instruments to be among those factors which exercise significant influence on FDI.

The impact of 'institutional distance' between the home country and the host country was recently scrutinised by Bénassy-Quéré et. al. (2007). The analysis provides robust evidence that institutions do matter independently of the countries' development level. In fact, the results show that inward FDI is positively affected by public efficiency, which includes tax system, transparency and lack of corruption, property rights and the facility to create a business.

In sum, many empirical studies stress the relevance of institutional variables supporting the idea that an efficient legal framework reduces economic uncertainties. So, most of them sustain that the existence of clear and enforceable laws to ensure property rights, low corruption and bureaucracy levels, effective tax system and macroeconomic and political stability influences positively the FDI flows and economic growth. If these conditions do not exist in host countries, foreign investors can face particularly high costs in establishing their investments (Wei and Shleifer 2000, Globerman and Shapiro 2002, 2003, Stern 2003, Blonigen 2005, Globerman et al. 2006, Busse and Hefeker 2007, Daude and Stein 2007, Gani 2007, Busse and Groizard 2008, Pantelidis and Nikolopoulos 2008, Bitzenis et al. 2009, Dutta and Roy 2009, Barthel et al. 2010, Bussmann 2010, Berger et al. 2011, 2013). Host countries with a sound business environment are able to attract more FDI (Dutta and Roy 2009) and reap the benefit of FDI and achieve economic growth more effectively (Busse and Groizard 2008, Baek and Qian 2011).

The motivation for studying the importance of the quality of institutions and the effectiveness of regulations as determinants on ownership strategy in SEE and CEE markets is that only recently these factors have been studied as determinants of FDI in former transitional economies (Meyer et al. 2009b, Arslan and Larimo 2010, Kaditi 2013, Estrin and Uvalic 2014, Choromides 2015). Thus, the objective of our study is to provide a theoretical framework and empirical evidence as to whether and to what extent the quality of institutions and regulations have an impact on the ownership strategy of FDI made by companies in these markets. For the purpose of this research, the SEE region consists of Bulgaria and Romania, and the CEE region consists of Hungary and Poland.

Our study is one of the first of its type to address the regulative institutional distance specifically and their impacts on ownership strategies of companies from the EU region in these markets. Because significant FDI into these two regions is occurring for the first time, much can be learned from the experience of foreign companies, as this is presented in this study. The opening of these markets provided opportunities for studying the conditions influencing the strategic aspects of internationalisation in transitional economies.

The paper is organised as follows. The first session presents an overview of the evolution of FDI and institutional quality in SEE and CEE, followed by the discussion about the theoretical background leading to the development study hypotheses. In section three, the econometric model is explained, along with the dependent as well as the explanatory variables, the data collection procedure, whereas the empirical results are presented in the fourth section; section five concludes with providing conclusions, limitations, and future research directions.

FDI and institutional development in SEE and CEE

In the attempt to set up market economies for the former transitional economies and being new members of the EU, much attention was devoted to measures such as macro-stabilisation, inflation, privatisation, price and trade liberalisation (Apergis and Katrakilidis 1998, Gligorov 2000, Hunya 2000, Ramcharran 2000, Petrakos and Totev 2001, Kogut and Spicer 2002). Research in these fields is necessary in order to understand the structural changes; however, the lack of research in the role of institutions as determinants in attracting FDI reflects a more general neglect of these economies. More research is needed to understand the investment modes connected with the investment motivations (Wach and Wojciechowski 2016). The strategic location of the two regions in the European continent, the opening of local markets for trade and investment, the continuous efforts in promoting institutional reforms for deeper integration in the EU, the comparatively low level of labour costs are only but a few of the determinant facts that make the two regions attractive for international investors. This is evidenced by the acceleration of FDI as illustrated in Fig. 1. However, companies operating in the region faced a distinct institutional framework, which predetermined the strategic opportunities for businesses, thus creating challenges for foreign companies. After years of growth, all regional economies experienced a deep recession as a result of the global financial crisis in 2008, with a more profound evidence in Bulgaria and Romania (Choromides 2015).

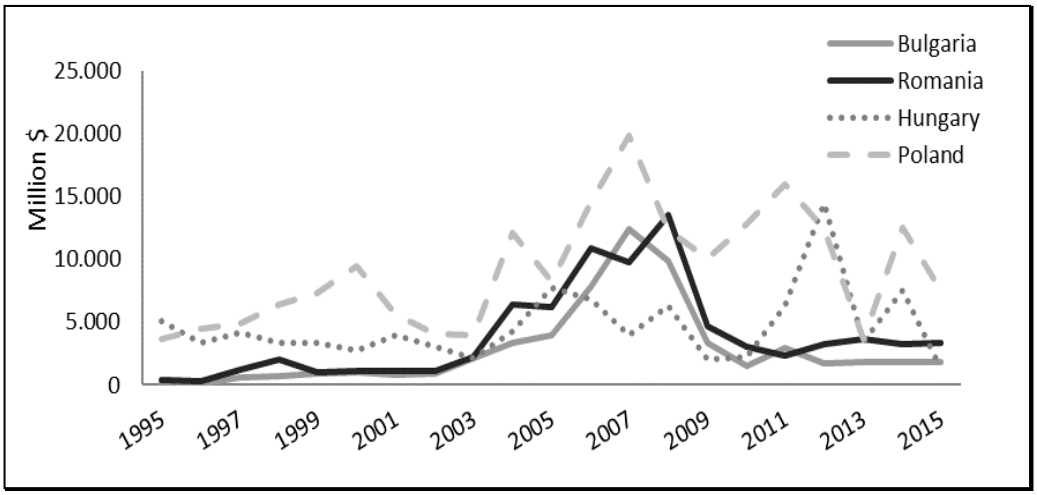

Fig. 1 **– FDI inflows in SEE and CEE regions (1995-2015)**
Source: UNCTAD statistics (processed by the author

Bulgaria's score is 67.9, making its economy the 47th freest in the world and 23rd in the region in the 2017 Index. Since 1995, Bulgaria's economic freedom has increased by 16.8 points, with gains recorded in nine of the ten categories, led by the management of government spending, tax burden and monetary freedom. Bulgaria's transition to a more open economy and flexible economic system has been facilitated by substantial restructuring. Competitive flat tax rates and an open trade regime, supported by a relatively efficient regulatory framework, have encouraged development of a growing private sector. The financial sector demonstrated a relatively high level of resilience during the 2014 liquidity crisis. The management of public finance has been relatively sound. The level of public debt continues to be among the lowest in the region, with budget deficits declining. Yet, deeper and more committed institutional reforms are needed in areas like judicial effectiveness and government integrity to help ensure long-term economic development (Chadee et al. 2014, Heritage Foundation 2017a).

Romania's score is 69.7, making its economy the 39th freest in the world and 20th in the region in the 2017 Index. Romania continues to recover from the recent global economic slowdown and it has made fiscal sustainability a priority. Economic growth rates have improved, but the benefits have not been felt by all Romanians. The country continues to have the highest poverty rate in the EU. Progress on implementing reforms and improving the business environment has been uneven. Since 1995, Romania's economic freedom has increased by 23.1 points, with gains recorded in nine of the ten categories, reflecting significant improvements in all indicators except financial freedom. Yet, the unpredictable and uneven regulatory system discourages investors from doing business. Efforts to privatise state owned enterprises have stalled in the past two years. Corruption is endemic at all levels of governments and it undermines the rule of law. Despite, the remarkable economic performance in the recent years and its accession in the EU in 2007, progression in terms of judicial independence and anti-corruption processes remain inefficient (Chadee et al. 2014, Heritage Foundation 2017a).

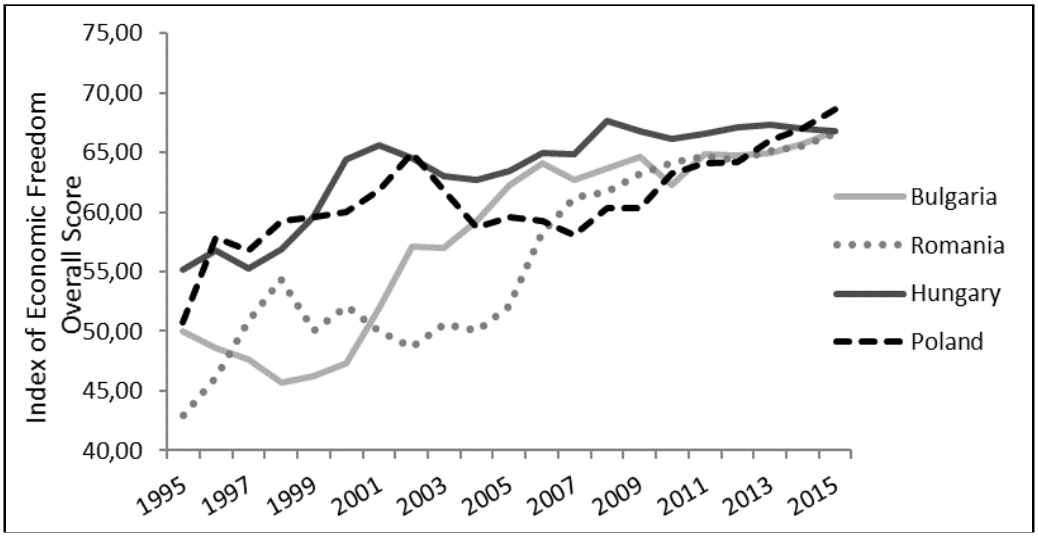

Fig.2 **– Index of Economic Freedom (1995-2015)**
Source: Heritage Foundation 2017a
(processed by the author)

Poland's score is 68.3, making its economy the 45th freest in the world and 21st in the region in the 2017 Index. Since 1995, Poland's economic freedom has increased by 17.9 points. Gains were recorded in eight of the ten categories, led by tax burden, government spending, monetary freedom, labour and trade freedom. The economy has demonstrated a high degree of macroeconomic resilience. Structural reforms that have included trade liberalization, implementation of a competitively corporate tax rate, and modernisation of the regulatory environment have facilitated the transition to a market-oriented economy but further reform is necessary if Poland is to achieve a broad-based economic freedom and growth. Indeed, institutional reforms must support judicial independence and effectiveness and tackle corruption in order to strengthen the foundations of economic freedom and to ensure progress toward greater economic dynamisms and prosperity. Fiscal consolidation and prudent management of public finance are ongoing concerns. The government needs to reduce the budget deficit and to curb the growth of public debt (Chadee et al. 2014, Heritage Foundation 2017a).

Hungary's score is 65.8, making its economy the 56th freest in the word and the 27th in the region in the 2017 Index. Hungary has implemented critical reforms in many areas. Since 1995, Hungary's economic freedom has increased by 11.6 points. Gains were recorded in six of the ten categories, led by tax burden, government spending, monetary freedom, financial freedom, labour and trade freedom. Licensing procedures have been streamlined, and the overall entrepreneurial environment is further aided by strong trade freedom, business freedom, and investment freedom. The economy has grown at a robust pace over the past few years and it has now significant momentum. Consolidating public finances and further encouraging economic growth remain policy priorities. Additional fiscal adjustments are needed to put public debt on a firmly downward path and provide more space for vibrant private sector activity (Chadee et al. 2014, Heritage Foundation 2017a).

Theory and Hypotheses Development

Companies face two strategic choices when they enter new markets using FDI as an entry strategy (Dikova and van Witteloostuijn 2007, Slangen and Hennart 2008). The first choice is referred to as establishment mode choice, where companies either opt to set up their subsidiaries from scratch or acquire an on-going concern (Brouthers and Brouthers 2000, Slangen and Hennart 2008). The second choice is referred to as ownership mode choice in the literature, where the companies decide whether they intend to establish their operation alone or jointly manage the affiliates with local partner(s) (Chen and Hennart 2002, Brouthers and Hennart 2007, Arslan and Larimo 2010). It is important to understand the impacts of the main determinants on ownership mode choice. A review of studies on ownership mode choice of companies reveals that transaction cost economics (TCE) has been used as the theoretical basis for the analysis of its determinants in many cases (Brouthers 2002, Demirbag et al. 2007, Morschett et al. 2010). TCE proposes both host country and home country related determinants that influence the benefits and costs associated with choice between WOS or JV. Scholars have also used the resource based view (RBV) (Chen and Hennart 2002, Herrmann and Datta 2002, Claver and Quer 2005) and institutional theory (IT) (Dikova and van Witteloostuijn 2007, Arslan and Larimo 2010, Arslan 2011) as theoretical bases for the analysis of ownership mode choices of investing companies in their international markets.

It is evident that IB research as a research area is multidisciplinary in nature, and international business decisions and strategies have been analysed in many cases by using multiple theoretical frameworks (Meyer and Peng 2005, Brouthers and Hennart 2007). Due to the specific nature of CEE and SEE, there is a need to adopt a more comprehensive theoretical approach by integrating arguments from all the afore-mentioned theories. So far, no previous study concentrating on CEE and SEE regions (at least to our knowledge) has comparatively analysed the determinants of ownership mode choice based on these three theoretical bases. Therefore, the main goal of our paper is to analyse the impacts of important determinants of ownership mode choices of companies by incorporating a range of ownership mode choice determinants found significant in past market entry mode analysis studies (Brouthers and Hennart 2007, Dikova and van Witteloostuijn 2007, Arslan and Larimo 2010). Our analysis will be based on the assumption that companies aim at maximising their expected rate of return from operating abroad, which, in turn, implies minimising the risk and the cost of establishing their production units abroad. The viewpoint adopted in this section is that entry mode choices are most usefully and tractably viewed as a trade-off between control and the cost of resource commitments, often under conditions of considerable risk and uncertainty (Vernon 1983, Root 1987, Hill et al. 1990).

JV and WOS are used to access resources previously embedded in another organisation. Yet, why would investors not rather buy the specific resources they need using standard market transactions? Acquiring a company exposes a company to major challenges in managing the purchased business (Capron et al. 2001), and a JV creates substantial coordination challenges

(Buckley and Casson 1998). Thus, if the local markets for the necessary resources are efficient, entrants may buy the required resources using market transactions. However, the efficiency of local markets is not always the norm. Markets for acquisitions may be especially problematic in the emerging economies, since the markets for acquiring local resources may be suboptimal because of the institutional environment governing the transaction or they may also be suboptimal because of the characteristics of the sought resources (Peng and Heath 1996, Meyer and Estrin 2001, Estrin 2002, Peng 2006).

IT has been used to assess different aspects of the market entry mode strategies (Eden and Miller 2004, Xu et al. 2004, Gaur and Lu 2007), suggesting that the institutions and the differences between home and host country institutions impact different aspects of the ownership strategies of the companies (Gaur and Lu 2007, Estrin et al. 2009, Chao and Kumar 2010). Other studies addressed the transfer and the adoption of organisational practices and strategies in subsidiaries and the impact of different institutional factors on them (Guler et al. 2002, Kostova and Roth 2002, Brouthers and Brouthers 2003, Gaur and Lu 2007). Therefore, we aim to concentrate on institutional distance in our study to analyse its impacts on ownership strategy so as to contribute to this emerging area of interest from a European company perspective. Institutions have an essential role in supporting the effective functioning of the market mechanism, such that companies and individuals can engage in market transactions without incurring undue costs or risks (Peng 2008). These institutions include, for example, the legal framework and its enforcement, property rights, and regulatory regimes (Busse and Hefeker 2007, Busse and Groizard 2008, Dutta and Roy 2009, Barthel et al. 2010, Berger et al. 2011, 2013). We consider institutional arrangements to be 'strong' if they support the voluntary exchange underpinning an effective market mechanism. Conversely, we refer to institutions as 'weak' if they fail to ensure effective markets or even undermine markets.

Institutional differences are particularly significant for companies operating in multiple institutional contexts (Meyer and Tran 2006). Formal rules establish the permissible range of entry choices but informal rules may also affect entry decisions. Thus, legal restrictions may limit the equity stake that foreign investors are allowed to hold and informal norms, such as norms concerning whether bribery is acceptable, may favour locally owned companies over MNEs. In other words, because the transactions costs of engaging in these markets are relatively higher, MNEs have to devise strategies to overcome these constraints (Peng 2003, 2008). Institutions also provide information about business partners and their likely behaviour, which reduces information asymmetries – a core source of market failure. In many emerging economies, weak institutional arrangements may magnify information asymmetries so companies face higher partner-related risks and need to spend more resources searching for information (Meyer 2001a, Tong et al. 2008). The strengthening of the institutional framework thus lowers the costs of doing business (Estrin 2002, Bengoa and Sanchez-Robles 2003, Bevan et al. 2004) and it influences foreign entrants' decisions by moderating the costs of alternative organisational forms. In consequence, the relative costs associated with different entry modes are affected by the institutional framework (Henisz 2000b, Meyer 2001b).

In particular, JV provides a means to access resources held by the local companies. However, the need for a partner may decline with the strengthening of the institutional framework (Meyer 2001b, Peng 2003, Steensma et al. 2005). For example, as the regulatory environment in an emerging economy improves, more sectors will be opened to FDI and foreign entrants will face fewer formalities, permits, and licenses. Hence, a reduction of restrictions on FDI may reduce the need for a local JV partner as an interface with local author ties (Peng 2006). Similarly, improved regulatory frameworks may reduce the need to rely on relationships of a local partner when dealing with local businesses (Meyer 2001a). Entry by acquisition is particularly sensitive to the efficiency of markets, especially financial markets and the market for corporate control (Peng 2008). Transactions in financial markets are greatly facilitated by an institutional framework that ensures transparency and contract enforcement (Beim and Calomiris 2003).

However, institutional arrangements and the efficiency of financial markets vary considerably between the developed and the emerging economies (Kedia et al. 2006, Young et al. 2008, Lin et al. 2009). In addition, weak institutions lead to a lack of transparent financial data and other information on companies and a shortage of specialised financial intermediaries (Khanna et al. 2005). Many of the resources and organizational structures of local companies are built around nonmarket forms of transactions, and they are therefore harder for potential acquirers to evaluate (Tong et al. 2008). This raises the complexity and transaction costs of undertaking the due diligence and contract negotiations necessary for acquisitions and post-acquisition restructuring (Peng 2006). Thus, costs and risks increase when institutional frameworks are weaker. Combining these arguments, we posit that foreign entrants may need access to local resources in emerging economies to overcome inefficiencies caused by weak institutions. Yet, at the same time, weak institutional frameworks make it more difficult to access these resources via market transactions and they raise the costs of acquiring local companies. In contrast, JV provide a means to access local resources where arm's-length market transactions are difficult.

Economic freedom distance between home and host countries of a company can be a source of uncertainty for the investing company in a new environment (Demirbag et al. 2010) and it can lead to additional costs for the investing company's operations in that particular market. These costs result from unfamiliarity hazards as referred to in some earlier studies (Gaur and Lu 2007, Demirbag et al. 2010). Unfamiliarity hazards emerge from the investing companies' lack of knowledge about the host country institutions (Demirbag et al. 2010) and they are also a major hurdle in managing a subsidiary (Delios and Henisz 2003, Gaur and Lu 2007). The weakness of market economy institutions in any country has been mentioned as a major source of these problems for the investing companies (Meyer et al. 2009a, Demirbag et al. 2010). The weakness of market economy institutions in the host countries is also evidenced by the presence of a low level of economic freedom there (Gwartney et al. 2008). Economic freedom distance can be referred to as a manifestation of the differences in terms of strength of the market economy institutions between the home and the host countries of MNEs (Demirbag et al. 2010). As referred earlier, the ownership mode represents the important market entry mode strategies of companies and the difference in the levels of economic freedom between the home and the host country is expected to affect them significantly.

The regulative institutional distance refers to the differences in the legal institutions and the prevalent laws in a company's home country and the host country (Xu and Shenkar 2002, Xu et al. 2004). These existing laws can promote certain types of business behaviours and restrict others (Scott 2008). Therefore, these regulative institutions can influence the strategies of companies because of the risks and penalties associated with the organisational deviance from legal rules (Henisz 2005). Moreover, the host country government can use its authoritative and regulative powers to restrict or influence the behaviour of enterprises (Grewal and Dharwadkar 2002). Previous studies have also shown that the legal restrictions on foreign owned companies tend to discourage the formation of WOS (Eden and Miller 2004, Gaur and Lu 2007, Scott 2008). Further on, the regulative institutions establish a stable structure consisting of the rules to reduce uncertainty and transaction hazards for companies (Meyer 2001a, Meyer and Peng 2005).

IT proposes that FDI choices and decisions of internationalising companies are considerably influenced by the effectiveness of market economy institutions of their target countries (Child and Tsai 2005, Meyer and Peng 2005). The quality of market institutions and the resulting strength of market conforming values in the target country are important determinants of the company's foreign market entry decisions including FDI ownership mode choices (Arslan 2011). With respect to FDI ownership mode choices, restriction on ownership and entry mode options by target governments due to developing market economy institutions (Khanna and

Palepu 2010) is a major concern for the investing foreign companies (Trevino et al. 2008). On the other hand, the results by Child and Tsai (2005) indicate that when companies operate in favourable external circumstances, they tend to commit more resources to the target country e.g. formation of WOS. Some studies have also mentioned that lesser restrictions on ownership options can motivate companies to prefer WOS over JV (Chung and Beamish 2005). Finally, Li et al. (2007) also found that if market conforming values in the target country are strong, then the institutions become less restrictive and WOS become more acceptable in the target country. Consequently, in a target economy with strong market conforming values, acquisitions of local companies can be a preferred strategy of companies (Arslan 2011).

Hypothesis 1: Strong market conforming values in the target country are positively associated with the propensity of firms to choose WOS over JV.

International experience has been referred to as an important factor in the entry mode choice (Brouthers and Brouthers 2000, Brouthers and Hennart 2007). The familiarity with the international markets can reduce companies' uncertainty (Barkema et al. 1996, Meyer and Tran 2006) due to accumulated knowledge of foreign operations, which in turn influences the ownership strategy. As companies accumulate more experience in international markets, they develop efficient processes and systems for managing their global operations (Anderson and Gatignon 1986). Ellis (2008) refers that the international experience of the company can diminish the influences of psychic distance. The same can be also said about institutional distance. This is because companies with operations in multiple markets develop a structural ability to adapt (Tallman and Fladmoe-Lindquist 2002); thus, when they encounter relatively unfamiliar territory, their adaptation is rather fast. Moreover, international experience may reduce the risks and uncertainties perceived during the international expansion because companies have learned how to manage new foreign entries from their previous experiences (Caves and Mehra 1986).

Familiarity of companies with the local context may offset some of the barriers of regulative and normative distance (Gaur and Lu 2007). The international experience can help companies by providing similarity of the context and commercial experience in the country; companies develop familiarity with local environments through a process of acculturation that reduces the effects of distance (Shenkar 2001, Tang and Devinney 2015). Tallman and Fladmoe-Lindquist (2002) and Clarke et al. (2013) argued that companies with more extensive international experience may leverage more easily their resource-based or knowledge-based capabilities to further their internationalisation. It has also been referred that companies gain institutional knowledge about the host country during the process of internationalisation. Therefore, international experience has been found to reduce the "liability of foreignness" (Zaheer 1995) and the problems with understanding the laws and norms that apply in a foreign context (Zekiri 2016). Henisz (2003) argued that the ability to manage institutional idiosyncrasies is a specialised skill that requires experience over time and across countries for the companies. Hence, internationally experienced companies are more likely to replicate their home activities in the host country based on their strategic goals. Therefore, internationally experienced companies are expected to form WOS in their new international markets (Dikova and van Witteloostuijn 2007, Ellis 2008).

Hypothesis 2: The more experienced in foreign markets a company is, the greater the probability of observing fully owned affiliates.

To understand the contribution of the RBV in the framework it is necessary to review the factors that influence mode choice. Resources can be obtained in bundled form by taking over an existing local company or they can be redeployed within the company to establish a new venture, or invest together with a local company. The ownership choice depends first on the resources needed, behind which lie the strategic objectives of the project, and, second, on the

resources that are found (i) within the entering foreign company, and (ii) in bundled form in local companies. Since a major motive underlying FDI in SEE and CEE appears to be resource seeking, we explore the possibility of labour costs affecting the companies' choice regarding the affiliate ownership structure. Transaction cost considerations may lead the companies to share in order to gain access to skilled labour (Kaynak et al. 2007, Ra and Abuova 2017). On the other hand, given that it is unreasonable for companies to pay relatively high wages for nothing, the rationale behind a possible labour cost effect is that industries may experience high unit labour costs due to a skilled and highly qualified workforce. Companies operating in those industries may possess an intangible asset-workforce's capabilities, which is likely to yield large profits. Therefore, we explore whether high unit labour costs tend to lead to high foreign ownership share.

Hypothesis 3: The more labour intensive a company is, the greater the probability of observing fully owned affiliates.

In emerging economies, investing companies usually require context-specific resources to achieve competitive advantages (Meyer and Peng 2005). In contrast, the strategic management literature on entry strategies has primarily focused on the characteristics of resources to be transferred (Brouthers et al. 2008a, Cui et al. 2014) and the characteristics of the investing company (Resmini 2000, Wei et al. 2005, Meyer et al. 2009a). This suggests a need to complement this literature by considering the characteristics of these sought resources. Foreign entrants that consider local resources to be important for their competitiveness may prefer to establish their operation with a local partner as a JV as opposed to WOS. It seems plausible that access to the best resources is already in the hands of local companies, and that the best way to access these resources is to invest in the local company that holds them. Production processes specialised in the use of a particular input quality may be dependent on one source for their raw material. Such dependence arises particularly in industries processing natural resources (Faeth 2009). Resource orientated companies may not find a way to efficiently contract out the required resources and set up fully WOS thus use the JV channel to gain access to them (Helfat and Peteraf 2003).

Hypothesis 4: The more resource intensive a company is, the more likely is to choose shared ownership.

Transaction costs are determined by several factors. One of them is the capital cost of establishing a physical presence overseas (Zhao et al. 2004, Brouthers and Hennart 2007). Higher level of capital intensity of a foreign expansion demands greater resource commitment, but it may yield large profits. Such a commitment not only strains a company's capital and human resources but it also increases business and political risk (Noorbakhsh et al. 2001, Sels 2006). Although high profits may induce companies not to share ownership with local partners, high capital requirement may lead them to share potential financial risks by engaging in a partial ownership structure, thereby diminishing its resource constraint (Dunning 1995). The higher costs suggest that as the investment size increases, multinationals are more likely to choose shared control mode such as JV. Gatignon and Anderson (1988) and Erramilli and Rao (1993) find evidence supporting the reverse relationship between capital intensity and high control mode.

Hypothesis 5: The higher the capital intensity of a company is, the greater the probability of sharing ownership.

Companies with a high level of R&D intensity are likely to transfer a significant amount of knowledge to their subsidiaries. These companies are expected to face great difficulties in pricing the technology and enforcing the contracts with JV partners (Anderson and Gatignon 1986, Hennart 1991). Consequently, companies spending more on R&D prefer to choose WOS

in order to completely control their proprietary know-how and/or best exploit such know-how in their international markets (Deng 2009, Meyer et al. 2009b). Results in several previous empirical studies (Padmanabhan and Cho 1996, Cho and Padmanabhan 2005, Chiao et al. 2010, Lee 2010) have supported the view that high R&D intensity tends to increase the probability of companies to choose WOS rather than JV, however in CEE specific studies, the empirical results regarding the impacts of R&D intensity on the ownership mode choice have been mixed. Brouthers (2002), Dikova and van Witteloostuijn (2007), and Paul and Wooster (2008) found a non-significant impact of R&D intensity on the ownership mode choice whereas results by Brouthers et al. (2003, 2008b) discovered a positive relationship between the R&D intensity and the higher degree of ownership.

Technology intensive companies face information asymmetries in the transfer of production technology, in uncertain assessment of market opportunities for innovative products, in the necessary feedback from sales to product development, in the training-needs of sales and service personnel (Caves 1996), as well as the free-rider potential for users of brand names who may degrade the quality of products (Anderson and Gatignon 1986). Product sensitivity also increases with the transfer of product innovations, which are more difficult to evaluate than process innovations (Brada 1981) and with the transfer of unstructured, poorly-understood products and processes (Anderson and Gatignon 1986).

Kogut and Zander (1995) differentiated between JV and WOS in their study of the impact of knowledge transfer on mode choice. Noting that knowledge-transfer is most efficient in WOS, they showed that the more tacit, less teachable and more complex company specific knowledge is, the more likely it will be transferred via a WOS. This suggests that companies with greater reliance on difficult to transfer knowledge will prefer the wholly owned mode to others (Claver and Quer 2005, Canabal and White 2008). Caves (1996) argues that the choice of ownership structure for the affiliate can be significantly affected by the potential risk of misappropriation of the technological developments.

When the company is research intensive and property rights are weakly protected, foreign companies are more likely to establish WOS (Dikova and Witteloostuijn 2007), thus protecting the long-term viability and a company's competitive position from sharing or exposing core resources to a potential competitor. In case of partial ownership, the cost of co-ordinating, monitoring and defining the proprietary rights may outweigh the potential gains of a partnership with local agents.

Hypothesis 6: The more research intensive is the company, the more ownership it demands in its affiliate and, hence, the greater the probability of observing fully owned affiliates.

The marketing of goods is information-intensive. Moreover, the control of product quality is essential to maintain the reputation of a worldwide brand. It would be expected that in industries where sales-promotion expenditures are important, this might lead the company to be strongly concerned about free riding on its brand name. The reputation of the expanding company is also affecting the choice of the foreign mode of entry. Companies must invest heavily in advertising and their brand name to obtain a good reputation. This process of reputation building is time consuming and uncertain. High investments in reputation do not automatically lead to a good reputation. Each minor deviation from the behaviour that the company prescribes may have a disastrous impact on the company's reputation.

Taking a full ownership in the affiliate may be the way selected by the company to protect its intangible assets from misappropriation (Meyer et al. 2009b). The assumption implicit in this proxy is that money spent on advertising generates company specific assets in the form of brand recognition and product differentiation. We suggest that when companies operate in marketing intensive industries they are more likely not to share ownership (Kamal 2009).

Therefore, companies that invest heavily in brand-name capital will avoid free riding by other companies by preferring WOS.

Hypothesis 7: The more marketing intensive is the company, the greater the probability of observing fully-owned affiliates.

The attractiveness of a foreign market depicted by its economic size has been a predominant factor in market selection as well as in the ownership mode choice of the firms from the TCE perspective (Brouthers and Brouthers 2003, Walkenhorst 2004, Cui and Jiang 2009, Vijayakumar et al. 2010). Firms are expected to enter attractive markets via WOS because it is expected that this alternative provides the greatest long term profit potential (Taylor et al. 1998, Brouthers 2002). The large market potential justifies the high risk and high control modes because of benefits of economies of scale and long-term market presence.

Large market size is assumed to lead to an enhanced resource commitment in the country but the expected increased returns will compensate the higher risks associated with the greater commitment of resources (Agarwal 1994). Higher returns are expected to come from the opportunity to gain economies of scale (Agarwal and Ramaswami 1992), based on the assumption that a high proportion of the cost of internationalisation is fixed (Buckley and Casson 1996, Chen and Hu 2002). Following the TCE rationale, market size can also be seen as a proxy for transaction frequency, which also enhances the firm's propensity to internalise (Williamson 1985). The empirical results of past IB studies about the impact of this important variable on ownership mode choice of firms are again quite mixed. The results in some studies like Barkema and Vermeulen (1998) support the positive relationship but the results in other studies like in Lu (2002) indicate a non-significant relationship and some results like in Gomes-Casseres (1989) and Herrmann and Datta (2002) indicate a negative relationship.

Hypothesis 8: Target country economic size is positively associated with the propensity of companies to choose WOS over JV.

An important indicator of the attractiveness of target country market used in the past studies following the transaction cost economics logic is the economic growth in the target country (Larimo 1993, Meyer and Peng 2005). Economic growth in the target country, however, differs somewhat from the other facets of market attractiveness e.g. from market size due to its dynamic nature. As an implication of this, economic growth is expected to lead to a negative relationship with the WOS alternative, because using the JV alternative the investing company can avoid the opportunity costs associated with the delayed entry (Hennart and Larimo 1998).

Empirical results concerning the influence of economic/market growth on WOS ownership choice are again mixed i.e. results in some studies indicate a positive and in other studies a negative relationship. The meta-analysis by Morschett et al. (2010) indicates, however, that the assumption of a negative relationship between market growth and a JV ownership mode receives statistically significant support. In CEE focused studies of ownership mode choice, Arslan and Larimo (2010) found high economic growth to result in the choice of WOSs by Finnish firms, while Dikova and van Witteloostuijn (2007) indicated a non-significant influence of economic growth on the ownership mode choice of Dutch firms in the CEE region. Therefore, based on the transaction cost theory argument, the findings of Arslan and Larimo (2010) and the meta-analysis by Morschett et al. (2010), it is expected that:

Hypothesis 9: Target country's economic growth is positively associated with the propensity of companies to choose WOS over JV.

One of the key issues addressed in TCE as well as RBV and IT is uncertainty and how it can

impact the entry mode choices of the firms (Brouthers and Hennart 2007, Estrin et al. 2009). In case of high uncertainty, the transaction cost logic recommends a higher level of vertical integration. Due to bounded rationality, the anticipation of all future contingencies for which adaptations of a contract with a partner may be required is difficult under the conditions of strong uncertainty. Hence the internalisation of the activity may contribute to the absorption of external uncertainty (Klein et al. 1990, Agarwal 1994). However, TCE reasoning ignores the advantages of strategic flexibility (Brouthers et al. 2008b) and from the RBV perspective the high country risk implies the need to save firm resources and it suggests the avoidance of WOS (Agarwal and Ramaswami 1992, Contractor and Kundhu 1998). Target country risk has been used as a measure for external uncertainty in past IB studies (Zhao et al. 2004, Brouthers and Hennart 2007, Morschett et al. 2010); the results gave strong support for the increased preference of the JV alternative in cases of high country risk (Morschett et al. 2010). Empirical results of studies in transitional economies also support the general results as Brouthers (2002) and Brouthers et al. (2003) found that the higher country risk increased the preference of JV formation rather than WOS.

Hypothesis 10: Target country risk is negatively associated with the propensity of firms to choose WOS over JV.

Trade openness is used in several studies to explain the role of trade in FDI inflows (Gao 1996, Hoskisson et al. 2000). Theoretically, more open economies are more integrated to international markets. International companies may want to invest more in such countries to benefit from the easiness of international trade, so the probability of observing fully owned affiliates is greater, and therefore expect a negative sign for its coefficient.

Hypothesis 11: Target country trade openness is positively associated with the propensity of companies to choose WOS over JV.

Moreover, it is important to note that an important political-economic change that occurred in these regions during the past two decades, along with the transition to market economy, has been that many countries have become members of the EU (Zweynert and Goldschmidt 2006). Therefore, we also examine EU membership as a determinant ownership mode choice in the region, along with the above-mentioned important company, industry and country level determinants.

An important issue stressed by the IT refers to the level of advancement of the institutional environment in a particular target country (Peng 2003). The more advanced the environment is, the more stable the environment is, and this could be expected to lead to increasing preference for a WOS alternative. Institutional development can be used as an indicator of the progress of transition, but EU membership can be used as another indicator of progress, because the EU demands certain level of progress and stability before a new applicant country is accepted as a member. Dikova and van Witteloostuijn (2007) present somewhat different views about the impact of institutional advancement on ownership mode; stating that in an underdeveloped institutional environment characterised by weak property rights, WOS modes are more efficient because they reduce the transaction costs of unwanted dissemination. Arslan and Larimo (2010) did not find EU membership as a significant variable for the ownership strategy of companies in CEE. Based on the discussion presented, the literature offers different perspectives about the impacts of EU membership of a CEE or SEE country on the ownership mode choice of investing companies.

Hypothesis 12: EU membership of a target country is positively associated with the propensity of companies to choose WOS over JV.

Methodology

Following Meyer et al. (2009a), we investigate the impact of market-supporting institutions on business strategies by analysing the entry strategies of foreign companies entering the emerging economies. We apply and advance the institution-based view of strategy by integrating it with RBV and TCE considerations. Alternative modes of entry allow companies to overcome different kinds of market inefficiencies related to both the characteristics of the resources and to the institutional context. We argue that the institutional development in the emerging economies directly affects the entry strategies and the companies' needs for local resources impact the entry strategies in different ways in different institutional contexts. In essence, we advocate an integrative perspective calling not only for explicit considerations of institutional effects, but also for their integration with resource-based and transaction cost considerations. This research thus responds to the call issued by Meyer and Peng (2005), Wright et al. (2005), Peng (2008), and Yamakawa et al. (2008) for more integration between the institutional, resource-based and transaction cost views.

The economies of Bulgaria, Romania, Poland and Hungary are selected because they show substantial variation in formal and informal institutions. The cross country diversity implies that data pooled provide significant variations in terms of institutions that may affect entry strategies of foreign investors. The company-level data used have been retrieved from two commercial databases, ICAP and Amadeus. After deleting companies with incomplete and missing data, an unbalanced panel data was constructed which included 285 European companies that have invested in SEE and CEE between 1995 and 2015. The ownership mode choice of the sample companies consisted of 146 JV and 139 WOs, focusing only on the ownership mode at entry, thus any later changes in the ownership arrangement of the same investment are not included. Across regions, variation can be observed; in SEE, 57 have invested in Romania (36 JV and 21 WOS) and 64 in Bulgaria (47 JV and 17 WOS), while for companies reporting FDI in CEE, 76 companies have invested in Hungary (27 JV and 49 WOS) and 88 in Poland (36 JV and 52 WOS). Although the existing literature in transition markets suggests that the acquisitions are confronted with many challenges that incur high transaction costs (Dikova and van Witteloostuijn 2007, Meyer et al. 2009b, Haar and Marinescu 2014, Poznan et al. 2015, Choromides 2017), yet WOS is the most popular choice of companies expanding into CEE.

Considering our research theme, it is our intention to select different sized companies, with diverse activities in different industries. The base population covers manufacturing as well as service companies headquartered in EU; both under European ownership and subsidiaries of non-European companies. The sample came not from a single industry and hence the generalisability of the results is not limited. Thus the characteristics underlying the different companies in our sample vary considerably, and for this reason the biases may cancel one another out to an extent (Simon 1969). In this way, the emerging theory may be tested in different settings, extending it and improving its external validity. Though we have considered the idiosyncrasy of the service companies as discussed by Buckley et al. (1992), Li (1994), and Brouthers and Brouthers (2003), we have decided to include them in our research, following the example of Iammarino and Pitelis (2000), and Uhlenbruck and De Castro (2000), who also included service companies in their research on FDI. Although we have tried to include a dummy variable 0,1 to differentiate between the manufacturing and the service companies, yet the results were statistically insignificant and not robust. Also gathering data during the same time period in all cases has ensured validity issues and the comparability across companies and countries. The use of parallel cases from the four transitional countries also helps to guard against biases within any country, especially because cross-country comparisons are facilitated by efforts to match some companies across countries by sector, size or by ownership type. However, caution must be also exercised in drawing cause-effect inferences from the study because of the use of cross-sectional data.

Location factors are not stressed, but they are controlled (partially) since only homogeneous areas are studied, following the proposition of Woodcock et al. (1994) and Nitsch et al. (1996). Their common experience under the central planning regime suggests that they are all members of a broader, clearly identifiable class of social-political-economic systems. Their transition toward democratisation and market-based economies, albeit with different speed and pace, and becoming full members of the EU have led to similar changes in their institutional infrastructure (Fig. 2), thus, we are able to absorb any specific locational differences (Estrin and Uvalic 2014). Both Bulgaria and Romania joined the EU in 2007, and have made considerable progress in promoting the private sector development. Since 1995, their institutional and regulatory frameworks have been reformed at various extents, but following similar patterns. Hungary and Poland joined the EU in 2004, and their transition pattern towards the free market economies has been similar to Bulgaria's and Romania's (Heritage Foundation 2017a). Following the proposition of Dauti (2015), we keep out from our analysis some other transitional countries (e.g. Serbia, Croatia, Bosnia and Herzegovina) because circumstances throughout much of the period considered in this study make them special cases that would need country specific explanations.

The quality of institutions and regulations in the four transitional economies is expected to affect the investment decision of foreign investors. Overall, weak institutions are assumed to positively affect JV, while high quality institutions are expected to positively affect WOS. In order to examine the role that the quality of regulations and institutions has as determinants of ownership structure, a group of explanatory variables is employed (Table 1). We proxy the strength of market-supporting institutions by ten items of the Economic Freedom index developed by the Heritage Foundation. The Index of Economic Freedom from the Heritage Foundation is an indicator which is calculated for 186 countries and it takes into account 50 independent variables, which are broken down into ten different categories and their operational definitions are available from the Heritage Foundation (2017b). The index is graded on a scale of 0 to 100, with higher values indicating more rigid regulations. The results from these variables were used to measure institutional distances in the SEE and CEE countries. Following Xu et al. (2004), the institutional scores of the countries are calculated by the numerical average of the items used to measure them. The regulative and normative institutional distance is measured by the difference between the scores of host countries and EU countries.

To control for any possible correlation problems since various institutional variables measure similar economic freedoms, we group those institutional variables that measure similar economic freedoms (Daude and Stein 2007). The average of *Property Rights* and *Government Integrity* will be used in the equation as an indicator on *Rule of Law*, the average of *Tax Burden and Government Spending* will be used as an indicator on *Government Size*, the average of *Business Freedom, Labor Freedom* and *Monetary Freedom* will be used as an indicator on *Regulatory Efficiency*, while the average of the remaining variables, *Trade Freedom, Investment Freedom* and *Financial Freedom* will be used as an indicator on *Open Markets*.

Following Kaynak et al. (2007), and Arslan and Larimo (2010), we are using a bionomial logistic regression model to address the ownership mode choice of the companies; to test our hypotheses, to analyse the impact of the selected independent variables on the ownership mode and to explain the ownership mode choice of foreign investors in SEE and CEE economies. In general, the model can be expressed as:

$$P(yi = 1) = 1/(1 + \exp(-\alpha - XiB))$$

where y*i* is the dependent variable, *Xi* is the vector of independent variables for the ith observation, *α* is the intercept parameter and *B* is the vector of regression coefficients

(Amemiya 1981). The dependent variable has value of 1 if the ownership mode choice is JV; therefore, a positive regression coefficient indicates that a particular variable increases the probability of JV formation in the ownership strategy of a company.

Table 1

Definitions of variables

Company Characteristics		**Unit**	**Source**
FDI MODE	Dummy variable, 0 if the establishment mode is WOS, 1 in the event the foreign subsidiary is a JV	[#]	ICAP AMADEUS
LABOUR	Number of sales/employees	[% of rate]	
RESRC	The resource intensity is measured by a dummy variable, equal to 1 if the main economic activity of the company is in a resource-intensive industry and 0 otherwise	[#]	
R&D	Technological intensity is proxied by the percentage ratio of R&D expenditures over sales	[% of rate]	
ADVERT	Advertising intensity is proxied by the ratio of advertising expenditures/sales of the parent company, and it attempts to control for possible sales promotion effects on the ownership choice	[% of rate]	
GEOGR	Number of different geographical markets in which the parent company is active	[#]	
CAPINT	Capital intensity is proxied by the ratio of total assets/ sales	[#]	
Country Variables		**Unit**	**Source**
GDP	Total GDP in the year of investment	[% rate]	UNCTAD, Euromoney (country risk ratings), The Heritage Foundation (Index of Economic Freedom)
GDP GROWTH	The annual percentage change rate of GDP in the target country in the year proceeding the investment	[% rate]	
TRADE OPENNESS	The total volume of exports and imports as a share of GDP	[% rate]	
RISK	The country risk in the year preceding the investment	[#]	
EU ACCESS	Dummy variable, 0 if the investment made before EU Accession of the host country, and 1 for the investment after EU accession	[#]	

Results and Discussion

Table 2 shows that our model has a good explanatory power because the chi-square value is significant at $p<0.001$ level. Hair et al. (1998) recommend analysing the fit of the logistic regression model to the data by using correct classification rate criteria. Model 1 (CEE) correctly classified 61.4% of the cases, while Model 2 (SEE) correctly classified 62.7% of cases respectively, providing good classification accuracy comparable to previous studies (Kaynak et al. 2007). The predictions are adequate given how unbalanced and non-homogeneous – by including both manufacturing and service companies – our sample has been (Greene 1997).

The explanatory power of all models is also good, as their Chi-squared values are all significant.

Table 2

Logistic Regression Estimates of Ownership Mode Choice (CEE results in parenthesis)

Variables	**CEE**	**SEE**
FDI MODE	-0.627***	0.782***
GDP	-0.0054**	0.033**
GDP GROWTH	- 0.0079**	0.052**
TRADE OPENNESS	- 0.588	-1.431
RISK	-0.051**	0.038**
EU ACCESS	- 0.0166	0.154
LABOUR	-1.673***	- 0.418*
RESRC	- 0.093**	0.792***
R&D	-0.753*	1.673***
ADVERT	-1.812**	0.741*
GEOGR	- 0.816***	0.645**
RULE OF LAW	- 0.204***	0.182***
GOVERNMENT SIZE	-0.544***	0.601***
REGULATORY EFFICIENCY	-0.379*	0.128*
OPEN MARKETS	-0.132*	0.286*
Constant	0.300	0.349
N	164	121
Model x^2	55.958***	56.174***
2 Log Likelihood	403.36	412.25
Nagelkerke R^2	0.084	0.174
Correctly Classified (%)	61.4	62.7

Significance levels: p<0.01***, p<0.05**, p<0.1*

We observe that three variables – country risk, establishment mode, and economic growth – have a statistically significant impact on the ownership mode choice in CEE. We also observe that these variables have a negative sign, which indicates the probability of not choosing JV in the ownership strategy. We believe that companies entering countries with a high level of economic growth prefer WOS formation due to the market potential and business opportunities offered by those markets. To appropriate these benefits, firms are often likely to choose WOS, rather than JV (Agarwal and Ramaswami 1992, Brouthers 2002). These results are consistent with the findings of Fung et al. (2002), Baniak et al. (2005) and Al Nasser (2007), who conclude that the macroeconomic growth potential of the economy is among the main determinants of IB strategy. The impact of country risk on preference of WOS formation can be explained by referring to the fact that companies may desire to have more control on the operations of subsidiaries in the countries with high risk. On the contrary for SEE countries, the choice of JV can be explained by referring to the investing companies' desire to share risks and costs in a risky environment (Agarwal and Ramaswami 1992, Brouthers et al. 2008a). In addition, the finding concerning the economic growth of the target country increasing the probability of JV is

not similar to the findings of previous studies like Agarwal and Ramaswani (1992), Brouthers (2002), Arslan and Larimo (2010), Morschett et al. 2010. A reason that companies prefer to establish a JV, can be that they were motivated by survival instincts thus they opt for shared ownership to quickly counter the potential loss of regional market share to other foreign companies (Larimo and Nguyen 2015). The threat and costs associated with the potential loss of regional market share to competitors would be greater than the additional costs of assimilation of new routines into the overall corporate system, as would be necessary under a WOS. The negative sign of the EU dummy shows that the EU accession of the CEE and SEE countries in our sample has influenced the preference for the formation of WO and JV subsidiaries respectively, though it does not receive significant statistical support.

Regarding the institutional and regulatory variables, it is evident from the coefficients that the ***Rule of Law*** and ***Government Size*** are the explanatory variables with the highest statistical significance at less than 1% level, and appear to have an effect on ownership mode choice of companies. The indicators related to ***Regulatory Efficiency*** and ***Open Markets*** appear to play a less, still statistically significant role respectively in affecting the decision on ownership mode choice. Therefore, we conclude that the high institutional distance in the CEE region results in the formation of WOS (Yiu and Makino 2002, Xu et al. 2004, Kaynak et al. 2007, Meyer et al. 2009a). It can be argued that the cost and uncertainty in shared ownership structure are greater in culturally distant target countries due to the volatility of the environment in the target country (Brouthers and Brouthers 2000). Accordingly, companies investing in culturally distant target countries are more likely to prefer the formation of WOS in order to exert greater control over their subsidiaries in order to minimize transaction costs and risk (Hill et al. 1990). However, the opposite is truth for the SEE region; low institutional distance between the home and host countries leads companies to prefer JV in the ownership strategy. Because of the high non-recoverable costs, FDI is particularly prone to any form of instability; given the lower score for the quality of institutions evidence supports that they are influenced by the uncertainty arising from the political volatility, the effectiveness of the legal system and the extent to which the laws on property rights are enforced (Stern 2003). According to Zweynert and Goldschmidt (2006) and Kshetri (2010), Poland and Hungary have been more successful in creating institutions existing in other market economies, while Bulgaria and Romania have been less successful on this front (Bitzenis 2009). Therefore, the companies' ownership strategy is also expected to be influenced by these differences in regulative and legal infrastructures within SEE and CEE countries because the companies' preference for the formation of WOS may decrease in a country with less-developed regulative institutions (Peng 2003). Therefore, the formation of JV offers investing companies a viable option to commit fewer resources and to consequently reduce the risk (Tihanyi et al. 2005).

The results show that a company with high labour costs will opt for the WOS mode. This finding is interesting if we consider that post-socialist economies are experiencing a major industrial restructuring process, which increase the post-investment costs for investors. Increasing productivity often requires to lay off a large number of employees. This is costly to organise and it could severely damage the investors' local reputation. We can suggest that the higher the labour intensity of an industry, the higher the post-investment costs due to the over-employment problem. Therefore, they preferred WOS to JV, since acquisition provides more managerial control compared to a JV. Thus they have more freedom and autonomy in the relations with the labour force and they can reduce its labour force more easily, than in a JV where the influence of the local partner may be stronger (Monteverde and Teece 1982, Anderson and Schmittlein 1984) and investing companies would have to tackle and cope with the corporate difference of the local partner (Barkema et al. 1996).

Companies with high R&D intensity tend to internalise their transactions having complete control over their proprietary know-how in order to preserve and/or best exploit the knowledge, given the imperfections in the external markets for technology. Transferring tacit or poorly

protected proprietary know-how to their subsidiaries, the pricing and the enforcement of contracts with potential JV partners will be fraught with difficulties. According to TCE, the loss of control increases the transaction costs in the case of a transfer of specific assets in combination with the possible opportunistic behaviour by the partner(s) (Makino and Neupert 2000, Yiu and Makino 2002, Zhao et al. 2004). Based on the statistical significance of the propensity to form a WOS, we argue that a company's transfer of technological know-how varies directly with its R&D intensity, thus there will be an inverse relationship between the R&D intensity and the propensity to JV. The decision to establish a WOS can be justified since technology transfer influences the subsidiary ownership choice and performance not only because a transfer is difficult and costly but also because the transferred technology may not always be successfully commercialised in the local marketplaces, and since in a JV the foreign partner might lack control over the networking and distribution system necessary for the commercialisation of technology, that leaves WOS as the most appropriate for the control and commercialisation of technology in the host market (Brada 1981, Williamson 1981). On the contrary for the SEE, the companies did not opt for that entry mode; a plausible explanation might be that these companies are not transferring to their subsidiaries the complex company specific technological knowledge of recent origin (Williamson 1981), thus there is a low possibility to be significantly affected by the potential risk of misappropriation of the technological developments (Caves 1996), by sharing or exposing core resources to a potential competitor. Thus for these companies the cost of co-ordinating, monitoring and defining the proprietary rights might not outweigh the potential gains of a partnership with local agents (Davidson 1982).

The variable RESRC affects positively the probability of observing JV. It seems plausible that the access to the best resources is already in the hands of local companies, and that the best way to access these resources is to invest in the target country company that holds them. In these companies, the need for complementary inputs appear to be a dominating over considerations concerning the post-investment costs of restructuring and integrating the local company (Gomes-Casseres 1989, 1990). We suggest that companies that formed JV are strongly depended on local inputs at the time of the initial investment since the transportation costs for raw material were high and trade barriers inhibit international trade at that time. Even to supply the local markets, they needed access to local raw materials. Thus, they preferred to form JV. In this case, a JV simply provided a concessionary right to exploit a resource. Under the conditions of systemic upheaval towards the transition to the market economy access to essential and often scarce material inputs was eased by forming JV, thus inheriting local networks, which enjoy privileged links with primary materials producers. On the contrary, companies in CEE seem to be less dependent in local resources, suggesting that either they do not operate in industries processing natural resources (Williamson 1981), or they may have found a way to efficiently contract out the required resources and set up WOS thus use the joint venture channel to gain access to them. The redeployment of resources from the home country can in part offset the costs of entry, reducing the entry costs of WOS vis-à-vis JV. Therefore, WOS could be more feasible for companies with resources that can be transferred and constitute core competences of the new business subsidiary in CEE. Such resources can be employed in the subsidiary without incurring the initial sunk costs of their development, and the subsidiary can attain competitiveness from competences and resources shared with the investing company. This makes WOS a natural choice for companies with a strong competitive advantage. Companies that can transfer their resources wish to build a subsidiary, which replicates the production technology and/or the organizational structure of their existing operation.

The variable ADVERT performs as it was expected but only in the CEE region. The sign of its estimated coefficient suggests that marketing intensive companies are more likely to prefer WOS. Companies invest heavily in advertising to obtain a good reputation. This process and experience of reputation building is time consuming and uncertain. This process and

experience, which are often applicable to new markets, may be difficult to communicate to a JV partner. Full ownership is a way to avoid having to persuade the partner that they are choosing the optimal level and mix of advertising expenditures. High investments in reputation do not automatically lead to a good reputation. Each minor deviation from the behaviour that they prescribe may have a disastrous impact on their reputation. Therefore, companies that invest heavily in brand-name capital will avoid free riding by other companies using the names in an inconsistent manner thus diluting or confusing the international position of the brands. High-control entry modes are considered to be the most efficient governance structures in situations where the risk of free riding is high (Kamal 2009). On the contrary for SEE region, the companies did not opt for that entry mode. A reason might be that they distributed in the market heavily advertised products that could be unsophisticated goods, which local agents are capable of handling, making low control appropriate for protecting brand names from degradation by free-riders or preventing the local operation from using the names in an inconsistent manner thus diluting the international position of the brands. Therefore, a transaction cost theory of entry choice is not supported, favouring JV for the purpose of brand label or product adaptation (Caves 1996).

The variable GEOGR performs as it was expected in the CEE region in line with previous studies that mentioned that the internationally experienced companies prefer to establish a WOS (Das and Teng 2000, Evans et al. 2008, Li and Meyer 2009, Chiao et al. 2010, Lee 2010). International experience would lead to better capabilities to manage and integrate a WOS. In their internationalisation process, companies would make incrementally stronger commitments along various dimensions. Knowledge of foreign markets is experiential knowledge, which cannot be taught. It can only be acquired through experience and active involvement in foreign markets. Such knowledge is essential for resource commitment because it enables the recognition of business opportunities and it reduces market uncertainty (Dierickx and Cool 1989, Chang 1995). Therefore, past commitment and accumulated international market experience determines current activities as well as future resource commitments. Companies with related experiences can organise a given transaction at lower costs, and share their resources, such as international management cadres and organisational capabilities, across operations. Their experience reduces the costs of internal organisation, and thus it facilitates internalisation. Hence, the marginal costs of an additional entry are lower. Another reason can be that these companies do have the international business experience required to bear the risks associated with a wholly owned affiliate and to integrate foreign subsidiaries of diverse managerial nationalities into their systems, thus they find it more compatible to form a JV to share the risks (Chang 1995, Das and Teng 2000). Although JV arrangements may be more appropriate from a risk reduction perspective, they may not allow the strategic control and flexibility that are needed to secure long-term competitiveness, and to cope with the institutional transition going on in those markers. Regarding the SEE, we observe a positive effect of the increase in international experience. Experienced companies would find a weaker need to depend on a WOS to deal with the unexpected contingencies. The greater international business experience may enable the companies to deal effectively with the costs and uncertainty associated with accepting equity partners and to become more willing to choose the shared ownership (Dikova and Witteloostuijn 2007). Another explanation can be that these companies are more concerned with the international strategic position than with the transaction costs associated with a given market (Porter and Fuller 1986), or they prefer to share the risk with the local partners and to avoid costly mistakes in the new environment. Empirically, Gatignon and Anderson (1988), Erramilli (1991) and Agarwal (1994) support this position. Moreover, the local partners in the JV can also be helpful in overcoming the unfamiliarity arising from the high normative distance between the foreign companies' home and host countries (Kaynak et al. 2007).

These findings also confirm the findings of previous studies that used these variables to

address the ownership mode choice of the companies in transition economies (Dikova and van Witteloostuijn 2007) as well as in the generally emerging economies (Arslan 2011). Therefore, based on TCE and RBV and the strength of market conforming values in the target country, companies receive empirical support for their impacts on ownership mode choice in both regions. Although the transfer of organisational practices, policies, resources and strategies to an acquired business unit operating under local rules in a distant market can be problematic for the acquiring investor (Kostova and Roth 2002), our results for CEE countries suggest that these concerns did not deter the foreign investors to opt for a WOS.

Conclusions

The purpose of our study was to examine the impacts of institutional distance and company ownership characteristics on the ownership strategy of companies in the former transitional economies of SEE and CEE regions. This study originally presented the evolution of FDI in the two regions briefly. The focus then turned to the analysis of the role that the quality of institutions has in determining the ownership structure. In this context, the relevant literature was explored and conclusions were drawn in order to discuss the status of the institutions in SEE and CEE. Using company and country-level data during 1995-2015, the significance and the effectiveness of a broad set of institutional and regulatory variables as factors that might have an effect on the ownership decision in the region and whether the contribution of regulatory and institutional factors driving ownership structure in the former transitional economies of SEE are different than of CEE was explored. Overall, the results confirm the universal belief that the quality of institutions and regulations in a country are important factors in the decision of ownership structure. In addition, company and country explanatory variables had a statistically significant influence on the ownership structure decision.

We hypothesised the probability of the use of JV or WOS in relation to the institutional distance and the ownership characteristic of the company. Our dataset of 285 companies in 2 SEE and 2 CEE countries allowed us to perform a robust analysis of our hypotheses. Our study contributes to the entry mode choice literature addressing the impacts of different aspects of institutional distance on the ownership strategies. The empirical context of FDI in SEE and CEE countries appears to be really useful because of the relatively large differences in the regulative and normative institutions of these countries and their unique history of transition to the market economies.

Our results indicate that the institutional distance's impact on the ownership strategy is statistically significant. From our control variables, we found out that the establishment mode, the country risk and the economic growth in the host country are also significant. Finally, we found evidence that foreign investors select their ownership share based on R&D and technology, the resource intensity of the company, the labour and advertising intensity, and the geographical diversification of the international business activity.

In response to the recent calls for more integration between the institution-based and the resource-based perspectives in the emerging economies (Peng 2003, Meyer and Peng 2005, Wright et al. 2005, Yamakawa et al. 2008), this article enriches the institution-based view of business strategy and it makes three contributions – theoretical, empirical, and methodological, by providing a conceptual analysis of the relationship between the institutional frameworks and the entry strategies. Theoretically, we argue that the level of development of an emerging economy's market-supporting institutions directly influences the entry strategies and that institution-based considerations complement the resource-based considerations when crafting entry strategies. Therefore, we enrich an institution-based view of business strategy (Estrin et al. 2008, Gelbuda et al. 2008, Peng 2008) by providing a fine-grained analysis of the relationship between institutional frameworks and entry strategies. Empirically, and in line with the literature, we argue that institutions moderate resource-based considerations when crafting

entry strategies and we find that the stronger the institutional framework, the more likely investors are to choose WOS (Meyer 2001b, Brouthers and Brouthers 2003, Wan and Hoskisson 2003, Kedia et al. 2006, Dikova and van Witteloostuijn 2007). Our primary hypotheses suggest that institutional development reduces the need for a JV partner and thus it facilitates WOS entry, while resource needs increase the preference for both WOS and JV. Finally, by amassing a sample from four diverse but relatively under-explored countries, we extend the geographic reach of empirical research on the emerging economies.

Our study also has certain limitations. First, though our indicators of regulative and normative institutional distance provide objective country-level measures of these concepts, they rely solely on the Index of Economic Freedom developed by the Heritage Foundation, which could be considered as a limitation. Moreover, our study concentrates on FDI made only by European companies, which could also be considered as a limitation. However, conversely, the focus on FDI made by these companies provides an opportunity to analyse the impacts of regulative institutional distance and the normative institutional distance on the ownership strategy, from the European companies' perspective.

In addition, our study is limited in its static perspective, implicitly assuming that ownership strategies are constant over time. The ownership mode choice of the sample companies in target countries is focusing only on the ownership mode at entry, thus any later changes in the ownership arrangement of the same investment are not included. In contrast, a group of strategy process scholars emphasized the dynamic nature of ownership strategy (Nelson and Winter 1982, Mintzberg and Quinn 1992). These researchers argue that companies adjust their ownership strategy to accommodate the changes in the internal and external environments (Nelson and Winter 1982, Chang 1996, Greenwood and Hinings 1996). In addition, it would be quite interesting to examine any differences in the significance of determinants of ownership choice of the early investments of foreign firms (during the 1990s) vs. later investments (during the 2000s); this will enhance the academic contribution of the current research. It has been mentioned in the past literature that these regions went through a period of relatively high uncertainty in the 1990s due to the transition to market economies which also affected the strategies of foreign firms (Peng 2003).

While location and industry factors were partially controlled, a more fine-grained analysis which controls for these and various other variables would provide further insight. The relationship between company-specific factors, country factors, transactions, entry mode, and finally, performance, is much more complex than the methodology employed here is hoping to reveal. Our empirical evidence provides support for the theoretical model developed in this study. It must be acknowledged, however, that this study represents only an exploratory investigation of an otherwise complex causal relationship. As such, it establishes a base theoretical model and evidence upon which subsequent work can be based. In addition, industry-specific factors, such as barriers to entry and exit, may improve the explanatory capacity of the model.

For future research, we suggest that the sample should be divided in two parts, before and after the EU accession, and then the influences of regulative and normative institutional distance on the ownership strategies. This would especially be useful in the context of many SEE and CEE countries, where market reforms have been implemented successfully (Zweynert and Goldschmidt 2006), and to compare them with countries wherein the reform process has been relatively slower, or, to give a more regional dimension, we could compare the context of the SEE countries to the context of CEE countries. By doing so we could differentiate the early stages of the transition to market economies from the later ones, as risk and uncertainty around market economy institutions were higher in the early stages, which also impacted the strategies of the companies operating there (Peng 2003, Meyer and Peng 2005, Zweynert and Goldschmidt 2006). The theoretical implication of this links to the fact that timing is an important element for testing the established IB theories in transition and emerging

economies. Hence, the timing issue needs further region specific exploration in the future because it will also augment the scholarly understanding of market entry mode choices of the companies from the perspective of different IB theories.

In addition, it would be very useful to compare and contrast the findings from the investors of other regions with the experience and the strategic decisions of the European companies. By including an expanded dataset comprising the FDIs made by the companies from other regions, the findings of the study can be more easily generalised due to the multiple home countries of the investing companies. Moreover, future research has the potential to advance the use of institutional distance in international business studies by addressing its impacts on the company's diversification strategies, management of acquisitions, and divestment decisions.

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POPULATION STRUCTURE AND ECONOMIC CYCLES IN GREECE: A MULTIDIMENSIONAL REGIONAL ANALYSIS (1988-2016)

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Abstract: Demographic structures have undergone important transformations driven by economic cycles because of population movements and spatially-variable patterns of fertility and mortality. Understanding the latent relationship between changes over time in population structure and sequential waves of expansion and recession is a relevant issue in economic demography. In this regard, the recent history of southern European countries, and especially of Greece, is representative of consecutive economic expansions and recessions. The present study aims at investigating relevant modifications in population structure across Greek regions between 1988 and 2016 using a multi-temporal factor analysis. Being characterized by a relatively young population with traditional family structures, out-migration and moderate immigration up to the late 1980s, Greek demography shifted towards ageing, mononuclear families and a rising immigration rate during the early 2000s economic expansion, with an overall increase of resident population. The subsequent 2007 recession has represented a turning point in Greek demography, consolidating changes in traditional family structures, while stimulating out-migration to northern and western European countries and reducing immigration from developing countries. A diachronic analysis of population structures at sub-national scale indicates a substantial heterogeneity of demographic processes across Greek regions. Metropolitan areas and highly accessible coastal and flat districts including islands experienced rapid population dynamics, while peripheral rural regions underwent a moderate population ageing. Taken together, these processes had a short-term, synergic impact on Greek demographic structure determining a rapid increase in the median population age with possibly negative consequences for the ability of the country's economy to recover from crisis.

Key Words: *economic crisis, regional demography, multi-temporal factor analysis, Europe.*

Introduction

Long-term development of European countries is the result of a complex interplay between socioeconomic transformations and the underlying demographic trends (Van Nimwegen 2013), at least since the XIXth century (Khan 2008). The so-called demographic transition (DT) has occurred in the 18th century, with a shift from high fertility and mortality rates (and overall young populations), to declining demographic rates and population ageing (Lee 2003), signing "a pathway to change" in the modern industrial societies and economies (Lee and Reher 2011). Lifespan became longer with joint declines in mortality and fertility, and spatially-varying population growth rates (Lee 2003, Blue and Espenshade 2011, Howell et al. 2016). Earlier studies have attempted to ascertain the linkage between demographic dynamics and major economic episodes (Khan 2008, Goldstein et al. 2013), as well as direction and intensity of the causal relationship between socio-demographic and economic changes (Reher 2011). Following Walford and Kurek (2016), DTs reflect a socioeconomic development affecting urban configurations, shaping socio-spatial gradients and altering the distribution of economic functions at the metropolitan scale (Chorianopoulos et al. 2010, 2014, Salvati and Sabbi 2014). Social interactions and their effects on population structure and dynamics have been

considered in recent studies addressing fertility decline in both advanced and emerging countries (Watkins 1990, Bongaarts and Watkins 1996, Montgomery and Casterline 1996, Behrman et al. 2002).

After a peak of urban concentration around the 1970s – corresponding to the end of the First Demographic Transition – a new demographic wave, defined as the Second Demographic Transition (SDT), has occurred, together with social transformations and demographic redistribution processes at regional scale (Alperovich 1983, Lesthaeghe and van de Kaa 1986, van de Kaa 1987). The SDT gave rise to greater heterogeneity in population dynamics, individual choices about marrying or cohabiting, time of child-bearing, households' size and a widespread population ageing (Billari and Kohler 2004, Haase et al. 2010, Kreyenfeld et al. 2012). Based on SDT outcomes, a new territorial structure, from cities to suburban centres (Bourne 1996, Liu 2005, Kulu et al. 2009), has progressively established in the European countries (Lesthaeghe and Neidert 2006, Caldwell and Schindlmayr 2003, Coleman 2006, 2008, Kalmijn and van Tubergen 2006, Sobotka and Toulemon 2008, Goldstein et al. 2009, Rontos 2007, 2010).

The SDT has interested Southern Europe later than western, central and northern European countries (Council of Europe 2001), with negative rates of population growth prevailing in the region, reaching the minimum level in Greece during the 1990s (Van Nimwegen 2013). Effects of SDT on urban population resulted in the slow transition from compact forms to more polycentric and spatially-balanced settlements (Rontos 2010, Kabisch and Haase 2011, Salvati et al. 2015). Internal and foreign migration plays a major role on demographic changes (Plane 1993, Johnson et al. 2005, Van Criekingen 2010, Blangiardo and Rimoldi 2013, van Bavel and Reher 2013, Taulbut and Robinson 2015). In Greece, internal migration flows were directed to the main urban areas (Athens and, at a lesser pace, Salonika) since the 1950s; conversely, a strong internal migration occurred toward peripheral and rural areas over the last decades, in parallel with a stagnant population growth in central cities, emphasizing new settlement models (Boyle et al. 1998, Sayas 2006, Kasimis 2008, Morelli et al. 2014, Rontos et al. 2016).

Recession is considered a process altering spatio-temporal demographic dynamics, affecting fertility rates (Cherlin et al. 2013, Goldstein et al. 2013, Salvati and Carlucci 2017). Under recession, pro-cyclical fertility trends are explained with economic uncertainty (Hofmann and Hohmeyer 2013), unemployment (Adserà 2004, Vignoli et al. 2012, Tragaki and Bagavos 2014, Cazzola et al. 2016), and forces that influence fertility indirectly such as marriage postponement (Goldstein et al. 2013) or declining marriage rates (Kohler et al. 2002, Billari and Kohler 2004, Kreyenfeld et al. 2012, Lee and Painter 2013). In this regard, the average age of women at marriage and childbearing in Greece, as in other Mediterranean countries, has exceeded the 30 years (Rontos 2007, 2010), in line with what was observed in Western, Central and Northern Europe.

Across Europe, demographic developments contingent on economic pressures are designing a framework of demographic ageing and urban shrinkage, with decreasing growth rates of the working age population, less compensated by migratory flows. These dynamics are prefiguring a risk for regional competitiveness and territorial cohesion due to the inherent spatial variability in the fertility and mortality rates (Rees et al. 2012). Although the country's response to recession depends on specific social, cultural, political and institutional decisions – such as the existence of specific policies to support families and the employment status (Goldstein et al. 2009, Bacci 2012) – the most recent crisis has altered the recovery potential of southern European regions (Bongaarts and Sobotka 2012), because of cuts in public spending which produced a negative influence on social policies (Van Nimwegen 2013).

In Europe, Greece is one of the countries most affected by the recent crisis (Goldstein et al. 2013, Goldstein and Kluge 2016). During the pre-crisis period, especially after the Olympic

Games (2004), the birth rate and wealth have increased coherently because of the better living conditions (Santow and Bracher 2001, Sobotka et al. 2011), and the contribution of foreign young women that come as immigrants during the 1990s (Lianos 2001, Rovolis and Tragaki 2006, Maloutas 2007, Goldstein et al. 2009). Unemployment rates have increased rapidly during the last recession, while the gross domestic product dropped significantly (Grigoriadis and Salvati 2015). On the purely demographic side, the trend of rising births in the pre-crisis period (from 100 643 in 1999 to 118 302 in 2008) experienced a drastic reversal, with births decreasing by nearly 15% between 2008 and 2012 (Horton 2009, Vrachnis et al. 2014). If current fertility oscillations are related to socioeconomic conditions largely variable over space (Martín-García 2013), the need for social and family policies may influence the actual situation of the (future) parents (McDonald 2006, Gauthier 2007). Current research indicated that the role of the state supporting decisions such as marriage or childbearing is of statistical significance in contemporary Greece (Rontos 2007).

Based on these premises, the present study aims to investigate the Greek demographic changes testing for short-term recessional impact on regional demographic structures. Greece is regarded as a paradigmatic case for studying the impact of economic crisis on population dynamics, deriving from migration, suburbanization, and long-term socioeconomic transformations. Featuring intermediate conditions between advanced and emerging countries (Carlucci et al. 2017), the Greek context may provide insights on demographic studies contributing to policy analysis (Salvati and Morelli 2014). In the face of a gloomy prospective scenario of shrinking active population and increasing territorial disparities, European countries are increasingly required to develop effective policy aiming to foster regional demographic resilience to the on-going economic crisis.

Methodology

Study area

This study investigates the population structure and the related demographic variables in 13 Greek administrative regions ('*periferias*') corresponding to the NUTS-2 level of the European Union Territorial Statistical classification adopted by Eurostat. Among these regions, two of them can be considered as 'metropolitan', with urban settlements prevailing on rural areas (Attica and Central Macedonia, respectively hosting Athens and Salonika, the largest cities in Greece, concentrating together nearly 50% of the country's population); two regions can be regarded as mixed 'urban-rural' areas (Thessalia and Kriti, hosting large cities such as Larissa, Volos, Iraklio and Chanià); three as 'tourism-oriented' coastal areas including islands (Ionia Nissia, Notio Aegeo, Vorio Aegeo); two as rural-accessible areas (Peloponnisos and Sterea Ellada hosting head towns such as Patras and Lamia); and the last four as rural, peripheral regions (Ipeiros, Dytiki Ellada, Dytiki Makedonia, Anatoliki Makedonia-Traki).

Demographic data

Data were derived from the national population register held by the Hellenic Statistical Authority (ELSTAT). Long-term demographic trajectories were assessed using homogeneous time series at regional scale available since 1988 and considering the age population structure (7 classes: 0-14, 15-19, 20-24, 25-29, 30-44, 45-64, 65+ years; total and by sex), citizenship (native Greeks, European Union, extra-European) and marital status (single, married, divorced and widowers). Thus, a total of 21 indicators were computed: (i-vii) percent share of population by age class in total population ('0-14%', '15-19%', '20-24%', '25-29%', '30-44%', '45-64%', '65+%'), (viii) elderly index ('Eld'), (ix) male-to-female ratio ('MtoF'), (x-xvi) male-to-female ratio by age class ('MtoF0-14', 'MtoF15-19', 'MtoF20-24', 'MtoF25-29', 'MtoF30-44', 'MtoF45-64', 'MtoF65+'), (xvii-xviii) percentages of (non-Greek) European Union citizens ('EU%') and non-European citizens ('Abroad') in total population, (xix-xx) percentage of single ('Single') and

married ('Married') people in total population and, finally, (xxi) percentage of regional population in total country population. Percentages of native Greeks and divorced people (or widowers) in total population were not included in the statistical analysis to avoid multicollinearity.

Statistical analysis

A preliminary outlook of long-term population trends in Greece was derived from a descriptive analysis of the indicators described in section 2.2 by year. This analytical framework was enriched with a spatio-temporal analysis of population growth rates in the 13 Greek administrative regions using 4-years time windows partitioning the study period into 7 homogeneous intervals (1988-1992, 1992-1996, 1996-2000, 2000-2004, 2004-2008, 2008-2012, 2012-2016). A Principal Component Analysis (PCA) was run on the data matrix mentioned above with the aim to extract the two most relevant axes and plotting indicators' loadings and regions' scores (years from 1988 to 2016). PCA enables a meaningful data exploration by summarizing large tables of statistical data into few latent (and understandable) dimensions based on a restricted number of key variables, obtaining a comprehensive outlook of the main demographic patterns observed over time and space in Greece (Salvati and Carlucci 2017). A hierarchical clustering was finally run on the whole data matrix (standardized data) using Euclidean distances and the Ward's agglomeration rule for two distinct years (1988 and 2016) representing the beginning and the end of the study period. The cluster analysis ordered data in a hierarchical sequence through a dendrogram, identifying regions with homogeneous demographic characteristics (Pili et al. 2017).

Analysis of long-term demographic trajectories in Greek regions

A Multiway Factor Analysis (MFA) was finally applied to the 21 demographic indicators observed at each time point (1988, 1992, 1996, 2000, 2004, 2008, 2012, 2016) for every administrative region with the aim to identify specific demographic trajectories at the regional level in Greece. The multiway data analysis, a generalization of the PCA, identifies complex structures in higher-order datasets, where data have three or more dimensions (Kroonenberg 2008). The MFA constitutes of four distinct steps: (i) comparing (and analyzing the relationship between) data sets over time; (ii) combining them into a common multivariate structure called 'compromise', (iii) analysing the 'compromise' data matrix to reveal the common structure between the observations and, finally, (iv) projecting each of the original data sets into the compromise to analyze communalities and discrepancies (Coppi and Bolasco 1988). Absolute eigenvalues >1 define relevant factors, i.e. factors extracting a proportion of variance not less than the original variables (Zambon et al. 2018). By linking variables with coherent spatio-temporal patterns represented by the few factors that explain a large proportion of variance, the MFA provides an indirect measure of redundancy among demographic indicators. Based on a joint analysis of changes in all dimensions considered (21 indicators, 13 administrative regions, 8 points in time), the MFA allows evaluating if the position of each variable (or region) is stable or variable over time by projecting them into a biplot illustrating the same multivariate factor plane.

Results

Spatio-temporal changes in the structure of Greek population

Following a continuous population increase up to 2009 (11.061 million inhabitants) and a subsequent decline by nearly 300 thousand inhabitants along the last 7 years, the demographic structure in Greece changed during the study period resulting in a progressively elder population (Table 1). The mean population age for the whole of Greece increased from 36.8 years in 1988 to 41.9 in 2016. The share of children aged 0-14 years in the total

population declined from 20.4% (1988) to 14.6% (2016) and the reverse pattern was observed for the population aged 65+ years (from 13.8% in 1988 to 21.1%). Male-to-female ratio increased moderately over time between 1988 (92.9) to 2000 (96.4), decreasing slowly in the most recent time period to 94.8 in 2016. Non-Greek inhabitants increased progressively during the study period amounting to 5.2% of the total population in 2016. Inhabitants born in a European Union country (excluding Greece) increased from 0.1% in 1988 to 1.3% in 2009-2012, declining slowly to 0.9% in 2016. The same temporal pattern, although with higher percent values, was observed for inhabitants born in a non-European country, increasing from 0.5% in 1988 to 6.4% in 2012, and subsequently decreasing to 4.3% in 2016 as a consequence of economic crisis. The analysis of marital status in Greece indicates a continuous decline in the number of married people since 1997 (when the highest value of the available time series was observed: 53.7%), reaching the lowest values in 2015 and 2016 (49%). Singles showed a less defined temporal patterns, with relatively similar values observed at the beginning and the end of the study period (38.7% in 1988 and 39.2% in 2016) and the highest figure recorded in 2003 (40.2%). A PCA biplot was used to summarize the most relevant changes in the Greek population structure of the 1988-2016 period (Fig. 1). Components 1 and 2 (60.9% and 21.5% of total variance) aggregate demographic indicators with similar temporal patterns, distinguishing three time intervals along component 1: (i) years between 1988 and 1997 (clustered along the negative side of component 1 associated to a relatively young demographic structure, (ii) a transitional period constituted by three years (1998, 1999 and 2000) characterized by the highest incidence of population aged 20-24 and (iii) a more recent, heterogeneous time interval including the years from 2001 to 2016, separated in two groups along component 2: (a) the years from 2001 to 2008, associated to a population structure characterized by the dominance of working age classes (25-64 years) and migrants from extra-European countries and (b) the years from 2009 to 2016, outlining a process of population ageing, with reduced migration rates possibly driven by the 2007-2008 recession.

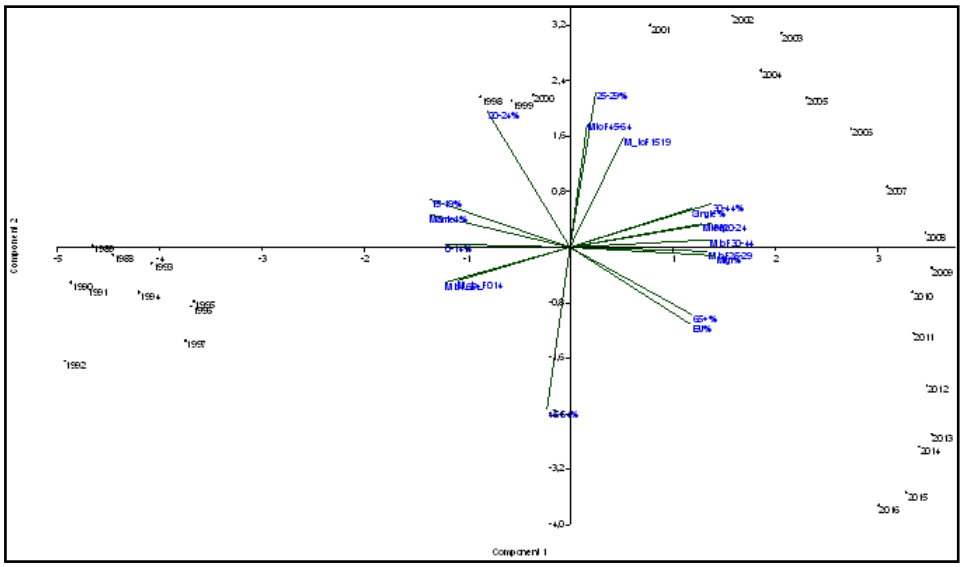

Fig. 1 **– The Principal Component Analysis biplot illustrating the evolution of population structure in Greece, 1988-2016**
(see Table 1 for time series indicators)

Table 1

Trends over time in population structure of Greece, selected years (1988-2016)

Year	Population	Elderly	Age structure (% class, yrs.)							Male to	Citizenship (%)		Marital status (%)	
	(1000 inh.)	index	0-14	15-19	20-24	25-29	30-44	45-64	65+	Fem. ratio	EU	Abroad	Single	Married
1988	9 739	36.8	20.4	7.2	6.3	6.5	20.3	25.6	13.8	92.9	0.1	0.5	38.7	53.2
1992	9 943	38.4	17.4	7.3	6.6	6.2	20.1	26.5	15.8	94.0	0.2	0.9	37.6	53.7
1996	10 254	39.4	15.9	7.1	6.3	6.8	20.5	25.5	17.8	92.7	0.1	1.2	37.0	53.6
2000	10 472	39.0	15.6	7.0	6.9	7.5	22.1	24.1	16.8	96.4	0.2	2.6	39.6	51.6
2004	10 925	39.6	15.0	5.8	6.9	7.5	22.6	24.0	18.2	95.9	0.6	4.6	38.6	51.9
2008	11 059	40.3	14.7	5.4	5.8	7.3	23.0	25.0	18.7	95.6	1.2	5.3	40.0	50.4
2012	10 967	41.1	14.8	5.2	5.1	6.4	22.7	25.9	20.0	94.9	1.3	5.7	39.8	49.7
2016	10 783	41.9	14.6	5.0	4.9	5.6	21.7	27.2	21.1	94.8	0.9	4.3	39.2	49.3

Population growth in Greek regions

Greek regions presented different demographic structures resulting in spatially-heterogeneous rates of population growth during the study period (Table 2). Four regions totalized a negative rate of population growth in the first time period (1988-1992). Results for time intervals until 2008 have identified a period of demographic stability, with moderate (and spatially-homogeneous) changes in the regional population structures. Starting from 2008, the number of Greek regions totalizing a negative population growth increased to 6 in 2008-2012 and to 13 out of 13 in 2012-2016. Consequently, the population grew in the whole of Greece from 1988 to 2009, declining moderately in the following period. Population decline was likely the most relevant demographic change along the crisis' period, affecting (more or less) markedly the Greek regional population structure.

Table 2

Annual population growth rate (%) in Greek administrative regions by 4-year time interval, 1988-2016

Year	1988-1992	1992-1996	1996-2000	2000-2004	2004-2008	2008-2012	2012-2016
Anat. Makedonia-Thraki	0.15	0.72	0.45	0.74	0.21	0.40	-0.43
Attiki	1.66	0.06	0.00	0.40	0.33	-0.54	-0.63
Dytiki Ellada	-1.00	-0.71	4.59	0.11	-0.11	-0.65	-0.32
Dytiki Makedonia	1.21	3.10	-0.60	0.32	-0.19	-0.37	-0.59
Ionia Nissia	-0.06	-0.62	3.50	-0.12	0.32	0.13	-0.33
Ipeiros	-2.11	1.46	3.60	1.09	0.14	-0.01	-0.41
Kentriki Makedonia	0.57	1.97	0.24	1.01	0.44	-0.28	-0.25
Kriti	-0.51	3.29	3.50	1.35	0.81	0.30	-0.02
Notio Aigaio	1.27	0.80	3.15	3.03	0.94	1.20	-0.47
Peloponnisos	0.76	1.12	1.52	-1.33	0.19	0.08	-0.23
Sterea Ellada	-1.24	0.90	3.55	0.18	0.25	0.24	-0.26
Thessalia	-0.63	0.95	0.98	0.69	0.16	-0.28	-0.31
Voreio Aigaio	-2.12	-0.37	1.65	0.61	-0.18	0.72	-0.71

Components 1 and 2 (74.3% and 13.7% of total variance) aggregate demographic indicators with similar time patterns (Fig. 2), distinguishing 5 time intervals along both components: (i) years between 1988 and 1991 (clustered along the negative side of components 1 and 2),

negatively associated to urban regions, such as Attica and central Macedonia (respectively with Athens and Salonika as head cities), and to some rural regions including Peloponnese and western Macedonia; (ii) years between 1993 and 1997, connected with the previous cluster by an intermediate point representing year 1992 and clustered along the negative and positive sides respectively of components 1 and 2; (iii) years between 1998 and 2000, clustering along the positive and negative sides respectively of components 1 and 2 and being associated with rural regions such as western Greece, central Greece and northern Aegean Islands; (iv) years between 2001 and 2010, clustered along the negative side of both components 1 and 2 and strongly correlated with tourism-specialized regions such as Crete and southern Aegean Islands, and finally (v) years between 2012 and 2016, connected to the previous group by an intermediate year 2012, and clustered along the positive and negative sides respectively of components 1 and 2. Taken together, component 1 represents the varying intensity of population growth over time and component 2 indicates the regional differentiation in population structures across Greece, separating the high-density areas (such as Attica and central Macedonia) from the low-density areas such as western Greece and northern Aegean Islands.

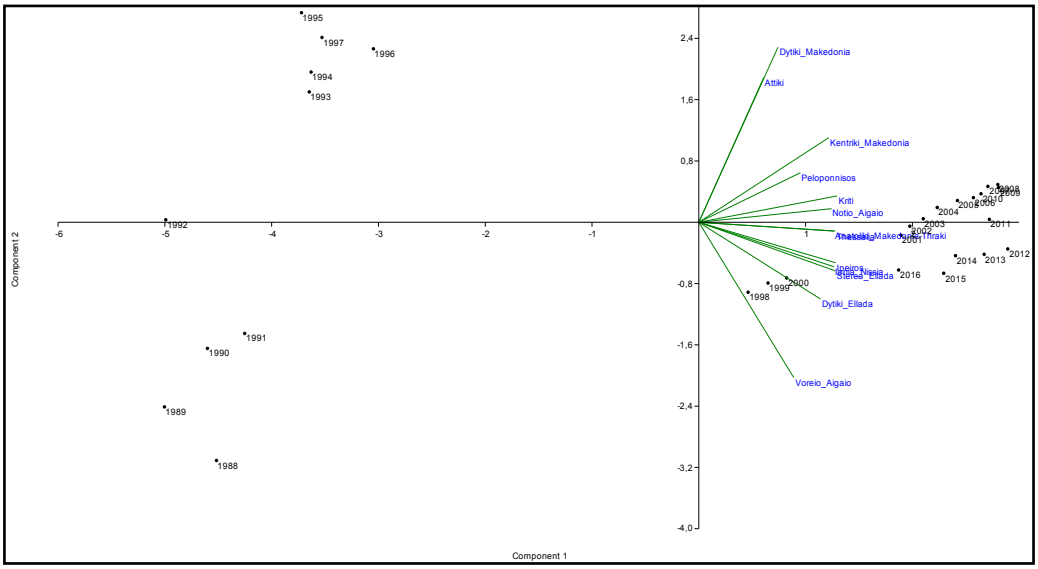

Fig. 2 **– Principal Component Analysis biplot illustrating population growth in Greece, 1988-2016**
(see Table 2 for time series indicators)

Hierarchical clustering of population structure in Greek regions

Fig. 3 illustrates the results of a cluster analysis assessing similarities among Greek regions in terms of population structure at the beginning (1988) and the end (2016) of the study period. The 1988 dendrogram separated urban regions (Attica and central Macedonia) from tourism-specialized regions (Thessalia, Ionian Islands, and Northern Aegean Islands), accessible rural regions (Crete, western Macedonia and Sterea Ellada) and more peripheral rural regions (Ipiros, Eastern Macedonia and Trace, western Greece, southern Aegean Islands and Peloponnese). The 2016 dendrogram indicates a different spatial configuration evidencing a subtle geographical gradient distinguishing highly-populated regions from more remote and rural regions. Regions with medium-high population density clustered together (central

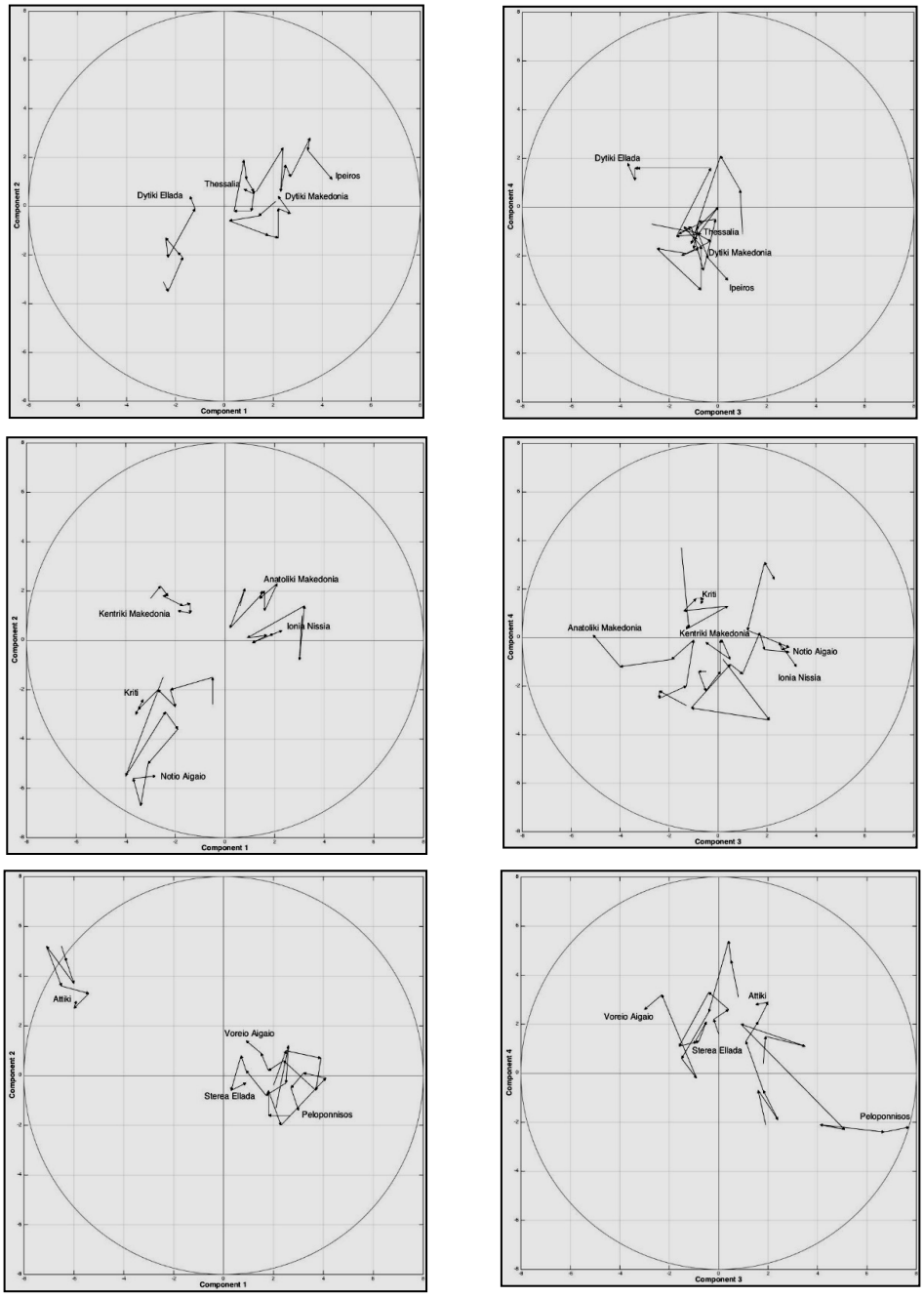

Fig. 3 – **Results of a Multiway Factor Analysis applied to population structure indicators in Greek regions (1988-2016) by 4-years' time interval**
(selected variable's trajectories in each plot)

Macedonia, Crete, Thessalia, southern Aegean Islands and western Macedonia); however, Attica was grouped with northern Aegean Islands in another cluster. The discrimination in accessible and remote rural regions was less evident in 2016 than in 1988, evidencing only some dynamic areas of the country (Peloponnese, Ionian Islands, Ipiros) and some remote districts (central Greece, Eastern Macedonia and Trace, western Greece).

Multiway Factor Analysis

MFA extracted 4 significant components explaining 68.7% of the total matrix variance (Table 3). Factor 1 (30.3%) represented a typical ageing gradient opposing elder population segments and married people (positive loadings) to young population segments (negative loadings) in turn associated with non-EU citizens, singles and higher values of the regional population size. This indicates that regions with the highest absolute population (Attica, central Macedonia, Crete, Thessalia) are those with the youngest and most dynamic population structure. Factor 1 loading structure was relatively stable over time opposing young and old population classes in more recent years, too. In 2016, the male-to-female ratio of the population class 45-64 years was associated positively with component 1, being higher in regions experiencing more rapid ageing processes. Factor 2 (17.4%) opposed regions with a population structure dominated by young population segments from those dominated by population segments in working ages. The structure of factor loadings changed over time, illustrating a geographical gradient associated with the migrant population and the male-to-female ratio for age class 65+ years (negative score) and the absolute population size (positive score). Factor 3 (13.1%) was relatively depolarized in 1988 (attributing positive loadings only to the young population segment), being relatively more structured in 2016 and separating a working age population class between 45 and 64 years (positive loadings) from students and young workers (from 15 to 24 years, receiving negative loadings). Non-Greek native citizens (both from other European

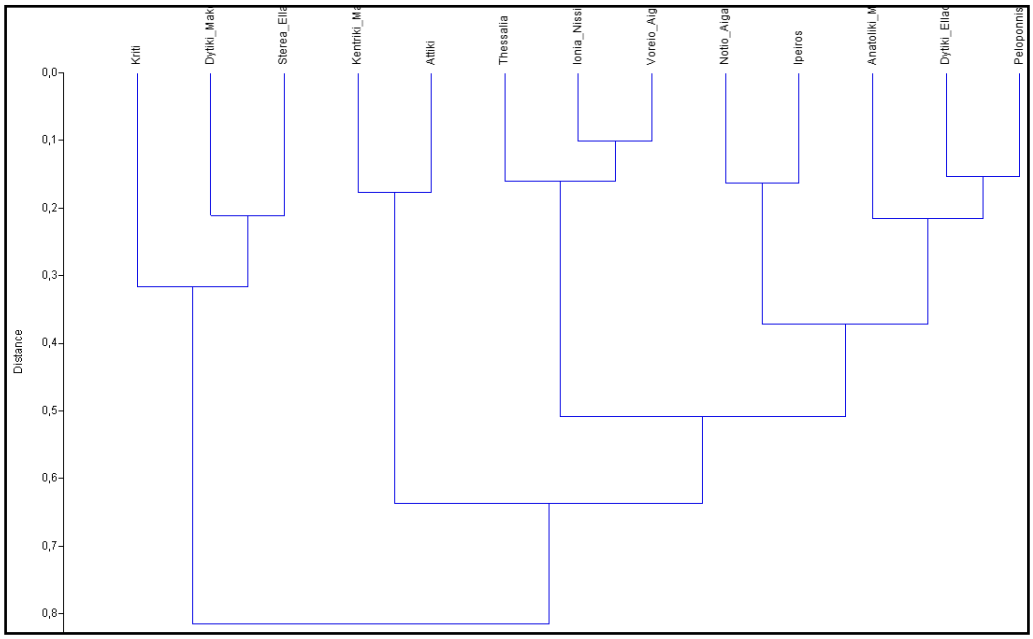

Fig. 4 **– Hierarchical clustering (Euclidean distances, Ward's agglomeration rule) assessing similarity in regional population structures in Greece**
(dendogram : 1988)

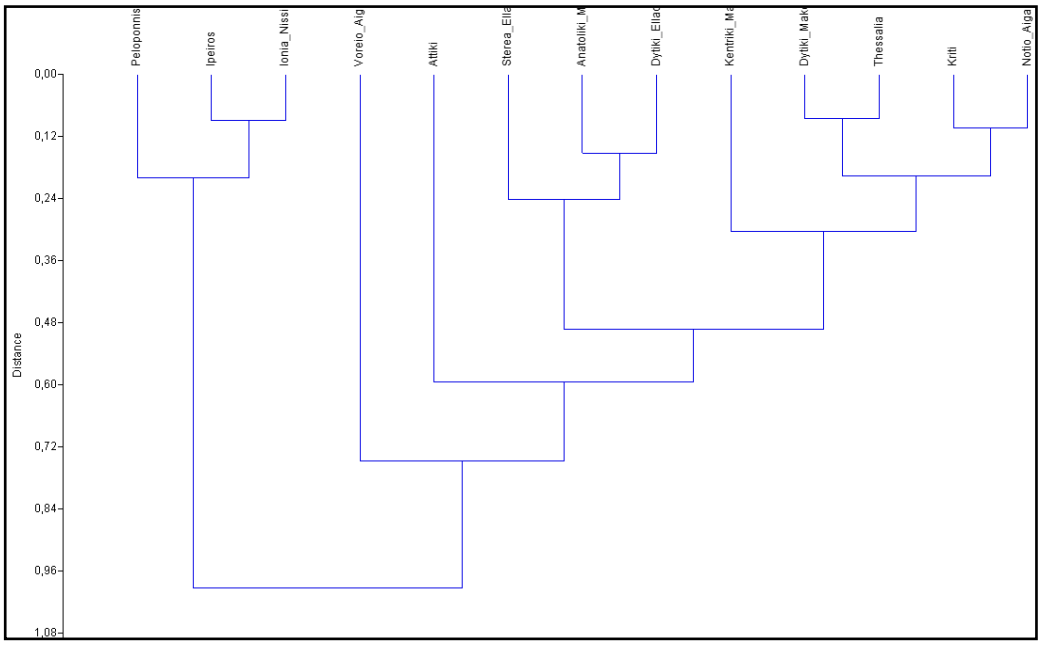

Fig. 4 **– Hierarchical clustering (Euclidean distances, Ward's agglomeration rule) assessing similarity in regional population structures in Greece**
(dendogram : 2016)

countries and from extra-European countries) were positively associated with the working age population class (positive loadings). Finally, Factor 4 (7.9%) illustrated a latent gradient characterized by spatio-temporal changes in male-to-female ratios by age class. Regional trajectories resulting from MFA (Fig. 4) confirm the insights on the evolving demographic structures provided by the previous analysis, highlighting the comparative advantages of urban regions (Attica, central Macedonia) first (1988-1997) and of tourism-specialized regions (Crete and southern Aegean Islands), especially during the crisis (2010-2016).

Discussion

Demographic indicators are suitable tools to identify and characterize spatial and temporal mechanisms behind the intrinsic linkages between population processes and economic dynamics (Watkins 1990, Chelli and Rosti 2002, Sobotka et al. 2011, Costa 2013, Matthews and Parker 2013, Van Nimwegen 2013). A spatio-temporal analysis of demographic patterns allowed a comprehensive characterization of short and long-term socioeconomic dynamics across the urban-rural gradient in Greece. Our results show a complex geography of demographic dynamics reflective of the multiple relationships between population distribution, socio-spatial structure and economic determinants. Urban areas with an economic structure centred on traditional and advanced services were characterized by anticipated (and possibly accelerated) demographic dynamics than rural areas with an economic structure centred on agriculture and traditional industrial sectors (e.g. manufacturing, construction). For example, dynamics leading to population aging were usually more rapid in metropolitan regions (Attica, central Macedonia) than in neighbouring rural regions. A mixed demographic pattern was characteristic of coastal and highly accessible rural regions with an economic base oriented toward tourism, commerce and construction. The impact of economic expansion and recession

on demographic dynamics was different in these three regional typologies, suggesting the role of different territorial, social, institutional and cultural factors.

Table 3

Variable's loadings of a Multiway Factor Analysis run on demographic indicators in Greek regions, selected years (bold indicates loadings >0.5)

Variable	1988				1992				1996				2000			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
%pop	**-0.73**	**0.63**	0.19	-0.01	**-0.72**	**0.63**	0.20	-0.01	**-0.73**	**0.63**	0.20	-0.01	**-0.75**	**0.60**	0.20	-0.01
0-14%	-0.39	**-0.62**	**-0.54**	-0.16	-0.40	**-0.85**	-0.05	-0.14	-0.25	-0.57	-0.40	-0.45	-0.39	**-0.71**	-0.39	-0.40
15-19%	-0.44	-0.06	-0.32	-0.39	-0.45	0.10	**-0.59**	**-0.52**	-0.39	-0.20	-0.36	-0.34	0.16	-0.02	-0.08	0.40
20-24%	**-0.84**	0.19	-0.36	-0.12	**-0.78**	0.07	-0.35	-0.23	**-0.86**	0.22	-0.28	-0.09	**-0.82**	0.11	-0.20	-0.19
25-29%	-0.16	**0.63**	0.02	-0.29	**-0.59**	0.31	-0.16	0.03	**-0.67**	0.18	0.11	**-0.54**	**-0.82**	-0.29	0.20	0.10
30-44%	-0.49	0.41	-0.02	-0.33	**-0.51**	-0.06	0.36	**-0.58**	**-0.66**	-0.04	0.06	**-0.59**	**-0.77**	0.16	0.31	-0.14
45-64%	0.48	0.39	-0.15	-0.29	0.39	0.50	-0.39	-0.37	0.46	**0.64**	-0.18	-0.24	0.17	**0.63**	-0.22	-0.41
65+%	**0.63**	-0.23	0.47	0.49	**0.60**	-0.14	0.39	**0.62**	**0.62**	0.09	0.36	**0.65**	**0.89**	0.08	0.08	0.31
MtoF0014	-0.32	-0.15	0.21	-0.08	0.00	-0.04	0.44	-0.01	**-0.58**	-0.38	-0.17	0.14	-0.12	-0.45	-0.24	0.48
MtoF1519	0.10	-0.03	-0.20	0.35	0.26	0.37	-0.31	-0.30	0.13	0.13	**0.64**	0.34	-0.01	-0.05	-0.15	0.39
MtoF2024	0.00	-0.27	-0.28	0.40	-0.04	**-0.66**	-0.33	-0.11	0.21	-0.51	-0.48	0.49	0.24	-0.45	0.18	**0.60**
MtoF2529	0.16	-0.20	-0.30	-0.15	0.44	0.09	0.02	0.26	0.41	-0.11	0.03	-0.23	0.39	-0.07	0.07	0.06
MtoF3044	0.34	**-0.63**	-0.37	-0.02	0.30	-0.38	-0.13	-0.04	**0.59**	-0.35	**0.51**	0.10	0.45	**-0.61**	-0.03	0.33
MtoF4564	0.41	-0.19	0.26	**-0.54**	0.16	**-0.87**	0.11	-0.29	-0.15	**-0.70**	-0.03	**-0.56**	0.35	**-0.82**	0.13	-0.31
MtoF65+	-0.12	**-0.51**	0.09	0.48	-0.36	**-0.66**	0.11	-0.36	0.40	-0.46	0.20	0.13	0.33	**-0.78**	0.25	0.08
EU%	**-0.53**	0.29	0.22	-0.18	**-0.62**	-0.36	0.35	-0.16	**-0.67**	-0.12	0.38	0.23	**-0.54**	-0.25	0.41	0.15
Migr%	**-0.69**	0.09	0.47	0.16	**-0.72**	0.37	0.46	-0.07	-0.42	0.47	**0.69**	0.01	**-0.74**	0.36	0.37	0.10
Single%	**-0.80**	-0.18	-0.12	-0.09	**-0.86**	-0.21	-0.09	-0.12	-0.79	-0.16	-0.05	-0.32	**-0.77**	-0.29	0.12	0.13
Married%	**0.84**	0.09	0.01	-0.05	**0.82**	-0.04	-0.06	-0.33	0.78	0.08	-0.11	0.02	**0.71**	-0.01	-0.14	-0.35
	2004				2008				2012				2016			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
%pop	**-0.74**	**0.61**	0.21	-0.01	**-0.75**	**0.60**	0.20	-0.01	**-0.75**	**0.60**	0.19	-0.01	**-0.75**	**0.60**	0.19	-0.01
0-14%	-0.24	**-0.85**	-0.24	-0.18	-0.32	**-0.82**	0.00	0.00	-0.29	**-0.79**	-0.05	0.07	-0.49	**-0.68**	-0.07	0.00
15-19%	-0.41	-0.08	**-0.80**	0.04	-0.21	-0.45	**-0.59**	0.13	-0.27	-0.35	**-0.73**	-0.29	0.29	-0.10	**-0.74**	-0.17
20-24%	**-0.78**	0.31	-0.38	0.18	**-0.72**	0.13	-0.46	0.03	-0.38	0.26	**-0.71**	0.15	**-0.56**	-0.13	**-0.69**	-0.20
25-29%	**-0.83**	-0.17	-0.15	0.07	**-0.83**	-0.27	0.01	0.38	**-0.74**	-0.23	0.04	-0.27	**-0.58**	0.08	-0.32	0.24
30-44%	-0.65	-0.24	**0.51**	0.06	**-0.75**	-0.29	0.35	-0.06	**-0.68**	-0.27	0.29	0.31	**-0.67**	-0.27	0.47	0.20
45-64%	0.38	**0.52**	0.39	-0.34	0.39	**0.56**	**0.65**	-0.15	0.35	0.28	**0.74**	-0.32	0.27	0.35	**0.71**	-0.20
65+%	**0.89**	0.27	0.03	0.20	**0.90**	0.32	-0.04	0.05	**0.88**	0.40	-0.05	0.02	**0.85**	0.40	-0.09	-0.02
MtoF0014	0.21	0.40	-0.25	0.18	0.14	**0.65**	-0.44	0.03	0.24	**0.70**	-0.29	0.01	0.32	**0.69**	-0.35	0.10
MtoF1519	-0.47	0.21	-0.46	0.15	-0.06	**0.55**	**-0.58**	0.03	-0.29	0.08	**-0.59**	-0.12	-0.30	-0.01	**-0.60**	0.21
MtoF2024	-0.26	-0.17	**-0.65**	0.15	**-0.51**	**-0.69**	-0.20	0.14	0.08	0.11	-0.34	**0.75**	-0.10	0.25	**-0.57**	0.45
MtoF2529	-0.11	-0.17	-0.13	0.48	-0.36	-0.26	-0.41	0.45	-0.11	-0.24	-0.13	0.43	-0.19	-0.06	-0.39	0.60
MtoF3044	0.18	-0.06	**-0.64**	0.30	0.26	0.21	-0.42	0.29	0.28	0.20	**-0.66**	0.32	0.46	0.09	-0.33	0.13
MtoF4564	**0.53**	**-0.69**	0.11	-0.10	**0.60**	**-0.57**	0.05	-0.03	**0.74**	-0.46	-0.08	-0.09	**0.77**	-0.45	-0.18	-0.03
MtoF65+	0.24	**-0.76**	0.40	-0.26	0.28	**-0.75**	0.44	-0.28	0.33	**-0.75**	0.45	-0.28	0.39	**-0.74**	0.47	-0.22
EU%	**-0.78**	-0.24	0.38	-0.12	-0.46	-0.13	**0.57**	0.28	-0.43	-0.12	**0.55**	0.28	-0.08	-0.31	**0.58**	0.34
Migr%	**-0.56**	**0.55**	0.49	0.19	-0.47	0.38	**0.53**	0.36	**-0.52**	0.09	**0.59**	0.37	-0.38	**-0.57**	**0.60**	-0.01
Single%	**-0.90**	-0.29	-0.12	0.01	**-0.87**	-0.31	-0.02	0.10	**-0.88**	-0.27	-0.07	0.21	**-0.89**	-0.12	-0.20	0.26
Married%	**0.88**	0.21	0.00	-0.20	**0.84**	0.10	0.03	-0.16	**0.84**	0.11	0.03	-0.32	**0.67**	-0.19	0.10	-0.37

More specifically, the empirical results of our study evidenced a strong demographic variability over time and space, demonstrating that during economic expansions, population increased especially in metropolitan regions, in line with new residential migration processes (Arapoglou 2006, Arapoglou and Sayas 2009). As illustrated by hierarchical clustering, evidences for a second demographic transition in Greece were reflective of (more or less rapid) transformations in social life, urban/rural structures (e.g. land prices, local labour markets, population density, industrial concentration), a progressive decline in fertility rate and modifications in the structure of the 'traditional' family (Buzar et al. 2007, Gavalas et al. 2014), with a pivotal role played by suburbanization (Delladetsima 2006, Kroll and Kabisch 2012, Cuadrado-Ciuraneta et al. 2017).

The final outcomes of the Multiway Factor Analysis indicate that short- and medium-term demographic dynamics were largely sensitive to economic conditions in Greece, as observed elsewhere in Europe (Sobotka et al. 2011, Walford and Kurek 2016). In this regards, the 2007 recession has catalyzed a strong interest on issues regarding economic instability and population/family changes (Kreyenfeld et al. 2012, Neels et al. 2013). Despite a recovery in fertility rates related to declining unemployment rates during the pre-crisis period (Remoundou et al. 2016), all the European countries have witnessed a reduced fertility rate since 2008 (Walford and Kurek 2016). For instance, as stated by Goldstein et al. (2013), the positive trend in Greek fertility rate has stopped in 2009, when the Greek economy started to falter. The economic crisis has mainly affected the most vulnerable social classes (Gkartios 2013, Gkartios and Scott 2015). In this sense, negative economic conditions have adversely affected the formation of new households (Sobotka et al. 2011, Goldstein et al. 2013, Walford and Kurek 2016). Birth rates declined in economically-disadvantaged districts, including some urban zones, while increasing in wealthy and more accessible areas of the country. This outcome exacerbated a latent polarization in the economically advanced and deprived areas (Salvati et al. 2016).

The contribution of our research findings to the existing knowledge lies in the identification of a close relationship between demography and economic cycles in Greece, which can be better understood through a spatio-temporal analysis of population dynamics along the urban-rural gradient (Kroll and Kabisch 2012, Serra et al. 2014, Di Feliciantonio and Salvati 2015). Greek demographic changes in recent time periods exposed regional population structures to a significant impact of economic recession. As one of the most affected European countries by the 2007 recession, population dynamics can influence and, in turn, be affected by other social processes, including migration, suburbanization and economic transformations based e.g. on technological advancements and globalization (Rontos et al. 2016). By evidencing transitional conditions typical of Mediterranean countries (Golini et al. 2014), the Greek case provides insights on demographic studies and policy analysis. A comprehensive knowledge of the most recent spatial demographic trends may help designing better development and social policies adapting to economic restrictions, decrease of personal incomes and cuts in public spending (Dijkstra et al. 2015).

In face of a gloomy scenario of shrinking active population and growing territorial disparities, European countries are increasingly required to develop effective policies aiming to foster regional resilience to the on-going economic crisis. A spatial and temporal analysis through population statistics ensures the comparison of areas with different demographic patterns in the same country over a long-time interval (Kabisch and Haase 2011). Using a multivariate approach focused on vital statistics, the present study illustrated recent socioeconomic transformations in a southern European country under recession (Zambon et al. 2017, 2018), indicating how migration, economic crisis and the underlying demographic transition have shaped the current demographic profile of Greek regions. In this regard, demographic indicators allow a joint analysis of spatial, population and settlement structures at regional scale.

Implementation of effective socioeconomic policies is moulded by an incomplete understanding of the interplay between demographic factors, social forces and drivers of local development. Taken together, the results of our study contribute to design scale-dependent policies reducing social inequalities and contrasting demographic and economic polarizations. In this regard, multiple factors at the base of population growth and demographic change in local districts need specific monitoring efforts based on place-specific indicators and geographic information systems supporting decision-making, planning measures and developmental policies. In particular, understanding local-scale fertility and demographic trends, in both direction and intensity, seems to be an essential information base to design and implement policy measures stimulating a post-crisis recovery of local contexts affected by important demographic imbalances or in a condition of economic marginality. Policies addressing local-scale social issues and economic dimensions (e.g. oriented along the urban-rural gradient) are also particularly effective in poverty alleviation and socio-spatial rebalancing.

Conclusions

The present study illustrates an original methodology evidencing socio-demographic transformations associated with economic cycles, population movements and varying fertility and mortality patterns in a representative country of Southern Europe. Understanding the intrinsic relationship between demographic change and economic cycles requires further research comparing the impact of economic cycles, policy decisions and social evolution on local-scale demographic structures across countries and regions. Our study finally emphasizes the need to integrate different issues together (e.g. economic geography, territorial planning, urban-rural problems), offering a multi-disciplinary vision of socioeconomic contexts rapidly evolving over time.

Although qualified information about population dynamics contribute to understanding multi-faceted dimensions of regional demographic patterns under different economic cycles, further research is required to increase the reliability of the proposed operational framework, technical accuracy and standardization, allowing comparability among empirical studies and applicability in other research contexts or territorial conditions. Formulation of new indicators evaluating the impact of short-term recessionary shocks on the population dynamics at various spatial scales appears as a relevant issue for future methodological research in the field of official statistics and regional demography. Moreover, approaches based on exploratory data analyses may present some weaknesses when applied to complex socioeconomic phenomena. Although multi-dimensional techniques help identifying apparent (and latent) factors reflective of the inherent complexity of socioeconomic local systems, limitations to this approach depend on the fact that ordination and similarity analysis as well as correlation patterns do not necessarily imply causative processes.

In this regard, time series frameworks (based on both deterministic and stochastic approaches) can provide additional evidences that reveal changes in long-term structures of demographic indicators. More specifically, regionalized time series approaches may identify and characterize spatial patterns in the population dynamics specifically influenced by endogenous and/or exogenous forces. Spatial econometric procedures can also identify significant relationships between demographic patterns and socioeconomic factors characterizing the background regional context rapidly transforming under economic cycles. Qualitative techniques such as Delphi methods, focus groups, in-depth interviews to stakeholders and key experts may refine knowledge on complex demographic systems derived from the use of strictly quantitative approaches. A qualitative approach based on one or more case studies is especially suited to shed more light on short-term demographic dynamics (e.g. driven by a persistent economic stagnation), complementing a basic knowledge of long-term dynamics derived from a quantitative analysis of statistical indicators covering large areas, from administrative regions

up to the whole of countries. The reliability of approaches integrating quantitative and qualitative procedures can be finally verified comparing the results obtained at different spatial scales, from regional (e.g. prefectures) to local (e.g. municipal) levels.

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REGIONAL DISPARITIES RELATED TO SOCIO-ECONOMIC DETERMINANTS OF AGRICULTURE IN THE ROMANIAN PLAIN

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Abstract: The structure and pattern of agriculture in Romania has been facing significant changes over the past decades in relation to the contextual social, political and economic transformations. The current study is seeking to assess the determinants of agriculture in the main agricultural region of Romania (Romanian Plain) based on selected socio-economic factors. The authors selected nine socio-economic indicators (agricultural surface, labour renewal index, economic dependency index, economically active population, employment in agriculture, vitality index, share of young labour, share of female population and roads and railway density) which were aggregated into an index of socio-economic determinants of agriculture. Overall, the final index values revealed spatial differences which enabled a certain separation between the eastern, central and western parts of the Romanian Plain: socio-economic favourability for agriculture in the central and, to some extent, in the eastern parts and a significantly reduced favourability in the western area. The current research could become an important step for in-depth assessments of environmental and socio-economic determinants of agriculture, developing strategies and supporting policies at different spatial scales.

Key Words: *index of socio-economic determinants, agricultural development, regional disparities, Romanian Plain.*

Introduction

Agriculture plays a central role for food security and sustainable development (Smith et al. 2014) being one of the foremost land uses in Europe (Rounsevell et al. 2003). According to CORINE Land Cover, cropland (including both arable land and permanent crops) covered, on average, some 24.8% of the total area of the EU-27 in 2012. Romania has a significant share of agricultural land (over 60%), among the highest in the EU. As they are positioned at the interface between ecosystems and society (Olesen and Bindi 2002), the agricultural systems are subject to continuous evolution and change as a result of a range of global and local driving forces. To that, agricultural, environmental and rural development policies designed to contribute to the sustainability of agricultural systems (Van Ittersum et al. 2008) are added. The management of agricultural land has profound impacts on the quality of the environment through nutrient dynamics, water resources and biological diversity (Rounsevell et al. 2003).

Over the past decades, European landscapes have experienced rapid changes in agricultural land use in relation to the progress in technology and management driven by socio-economic and political forces (e.g. Common Agricultural Policy – CAP, enlargement of the European Union, technological change) and biophysical factors (e.g. climate change) (Rounsevell et al. 2003, Verburg et al. 2004). Agricultural land is the foremost resource to be engulfed by urban development which is the main land consumer (Barnes et al. 2001). The consequences of this land use transition involve social changes (e.g. life quality and lifestyle, segregation), environmental impacts (e.g. surface sealing, emissions, ecosystems fragmentation), and economic changes (e.g. distribution of production, land prices) (Patacchini and Zenou 2009).

These changes are affecting the structure of agricultural production and spatial patterns of agricultural land use are expected to persist due to the changes in global trade, technology, demography and policies (Busch 2006). Thus, under the increasing demand for food and fibre, the change of consumption patterns and the use of agricultural resources (Gerbens-Leenes and Nonhebel 2005), the scientific interest in agriculture-related issues is becoming increasingly important and the addressed topics more diversified. Many studies have been concentrating on understanding (Smith and Bustamante 2014) and modelling (Lambin et al. 2000, Rounsevell et al. 2003, Rounsevell et al. 2005, Audsley et al. 2006, Temme and Verburg 2011, Meiyappan et al. 2014, Van Vliet et al. 2015) agriculture land use/cover changes, estimating crop productivity (Ewert et al. 2005), land management, drivers and consequences of agricultural land abandonment (Rey Benayas et al. 2007, Baumann et al. 2011, Renwick et al. 2013), the policies' impacts on agriculture (Mattison and Norris 2005, Van Meijl et al. 2006, Banse et al. 2011), the role of socio-economic factors and land degradation (Boardman et al. 2003). In addition, a large body of work has been devoted to understanding the impacts of climate change on agriculture and farmer's perceptions and preparedness (Olesen and Bindi 2002, Smit and Skinner 2002, Morton 2007, Bindi and Olesen 2011, Olesen et al. 2011, Bălteanu et al. 2013, Sima et al. 2015, Bennetzen et al. 2016, Niles et al. 2016).

Land use decisions, which include agriculture, mainly depend on the environmental conditions, but they represent also the effects of the socio-economic and policy forces (Fraser and Stringer 2009). Moreover, in order to improve the understanding of the causes and effects of land-use change and to support sustainable landscape development, recent studies integrated socio-economic and bio-physical factors (Mottet et al. 2006). Therewith, the importance of assessing determinants in agriculture was already argued in the scientific literature. The socio-economic changes which followed the collapse of the communist system have had a deep impact on the labour markets in Central and Eastern European countries (Tocco et al. 2014) which have also affected the Romanian labour market, including the employment in agriculture (Ciutacu and Chivu 2007, Mateoc-Sîrb et al. 2014, Mocanu 2015). Also, aging of the rural population (Serban 2012, Chirițescu et al. 2015), migration of young people (Ianoș 1998, Szocs et al. 2015), the role of rural infrastructure (Binswanger et al. 1993, Pinstrup-Andersen and Shimokawa 2007, Shimokawa 2007), transport and services (Lako 1990) have been listed among the foremost indicators in determining agricultural development.

Agriculture is a major economic branch in Romania. Within the EU-27, 70% of the agricultural labour input is concentrated in six countries: Poland, Romania, Italy, Spain, France and Germany; Poland and Romania alone represent 37% of the total. Under the social and economic transformations subsequent to the fall of communism (1989), agriculture in Romania has undergone significant spatial and structural changes. The transition (1990-2003) and post-transition (2003-2007) periods have marked a changeover in the economy from the old centralised system to the free market system. In agriculture, the transition from state and collective property to private ownership through de-collectivisation and privatisation had a particular impact on crop growing and land fund (Popovici et al. 2016). Moreover, through the reconstruction and consolidation of the right of property over the land under certain „Land Laws" (e.g. Law 18/1991), the land was subject to excess fragmentation (big farms gave way to small, peasant-type family farms), degradation of the productive quality of agricultural terrains (Bălteanu and Popovici 2010, Popovici et al. 2013, Popovici et al. 2016) and land abandonment (many arable lands and permanent crops) giving place to the conversion to other land use categories (e.g. residential, commercial, warehouses) under urban development processes (Grigorescu et al. 2015). Hence, under these complex changing conditions of the post-communist period, identifying, selecting and integrating socio-economic indicators is an important step in understanding the role of the socio-economic factors of agricultural development in the most important agricultural region in Romania, the Romanian Plain.

Methodology

Study area

The Romanian Plain, also known as the Lower Danube Plain, is located in the southern and south-eastern part of Romania, stretching between the Danube in the south and the Getic Piedmont, the Curvature Subcarpathians and the Moldavian Plateau in the north. It covers 52 600 sq. km, being the largest plain area and the main agricultural region of Romania (Bălteanu 2016). This relief unit is characterized by a significant agricultural potential which is influenced, in particular, by the specific natural conditions: high percentage of arable land (80-90% of total agricultural surface), the existence of large areas covered with high fertility soils (e.g. chernisols, brown and reddish-brown argilluvic), and relative homogeneity of morpho-hydrographic and climate conditions (Fig. 1).

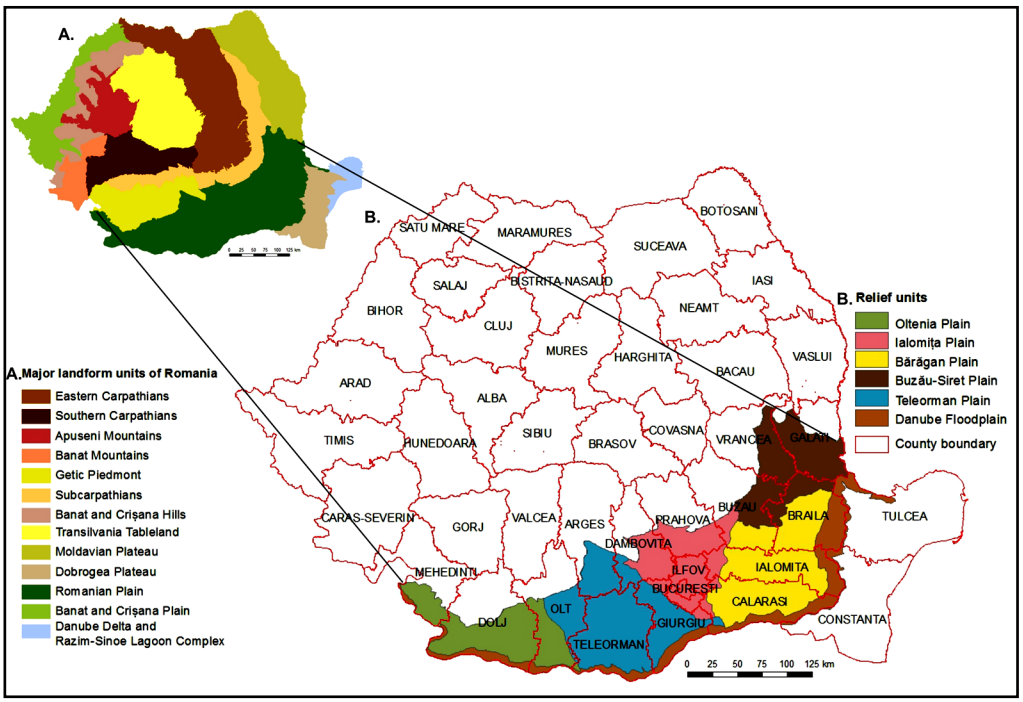

Fig. 1 **– Location and main relief units of the study area**

In 2013, the agriculture of the Romanian Plain had a significant contribution to the total crop production of Romania (64% of the total sunflower production, 58% of the total wheat production and 46% of the total maize production). The plant production was strongly influenced by the socio-economic and political conditions of the post-communist period. This influence mainly depended on the farming practices (e.g. the absence of functional irrigation systems, fewer natural and chemical fertilizers, poor mechanization), inadequate farm structure, agricultural policies, and besides, the intensification of climate change-induced extreme phenomena (drought, desertification, hail-storms and floods), annually affecting ever larger cultivated terrains.

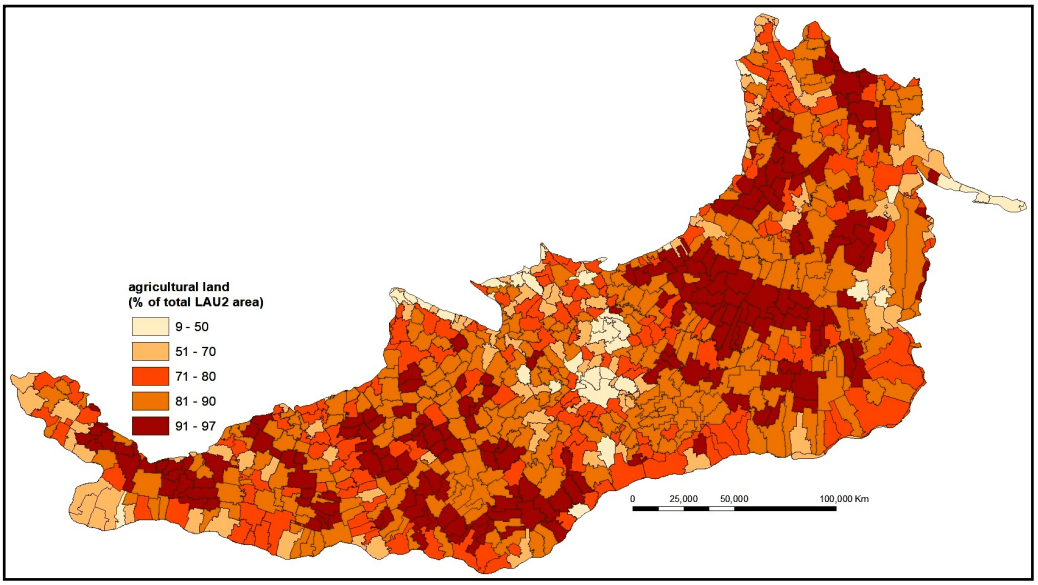

Fig. 2 **– The share of agricultural land**

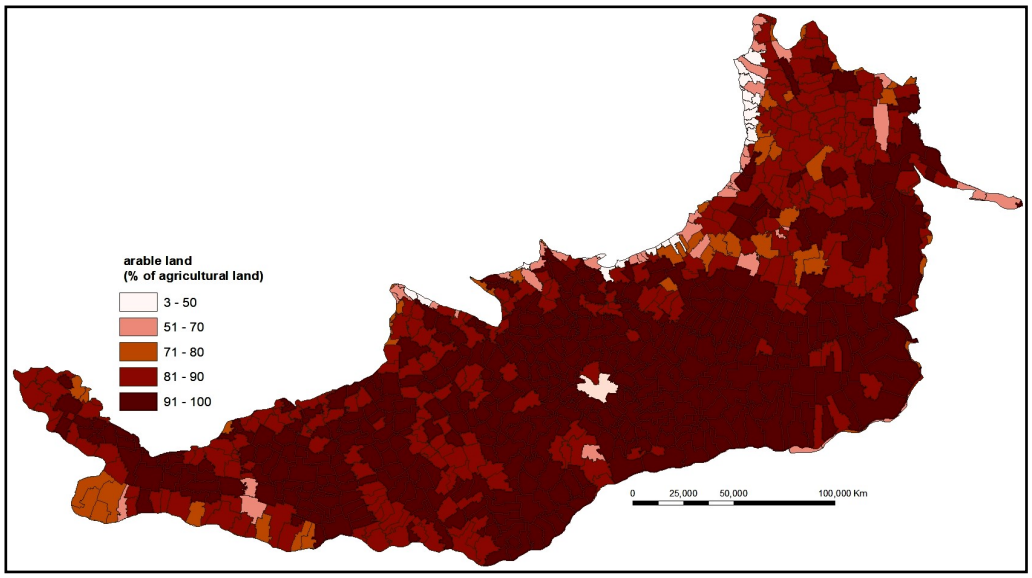

Fig. 3 **– The share of arable land**

In over 60% of the LAU2 overlapping the study area, the share of agricultural land often exceeds 80-90% of the total surface, mainly concentrated in the eastern (e.g. Bărăgan Plain), central (e.g. Teleorman Plain) and north-western (north of Oltenia Plain) (Fig. 2) parts.

Arable land is the main agricultural land use category, having a share of over 90% of total

agricultural land in almost 50% of localities and between 80-90% in 30% of total number of localities (Fig. 3).

Socio-economic assessment of agriculture development

The current study relies on the statistical data provided by the Population and Housing Censuses 2011 (National Institute of Statistics 2011), as well as on the TEMPO-Online time series (National Institute of Statistics 2015) available at LAU 2 (the lowest level of administrative-territorial units in Romania).

In order to assess the socio-economic determinants for the development of agriculture in the Romanian Plain, the authors selected 9 statistical indicators based on several research papers, reports and studies. The Green Paper. Regional Development Policies in Romania (1997) realised a hierarchy of counties using the global index of development based on 17 indicators (e.g. the roads density, the railways density, the vitality index). The UNEPA report (Preda 2003), focused on issues regarding the socio-economic development and population in order to understand the importance of contextualizing thematically and territorially the indicators. The highest share of some indicators (e.g. employment in agriculture) was highlighted by Mateoc-Sîrb et al. (2014) mainly as a result of workforce redundancies from the other sectors of the urban economies then the needs of agriculture, and by Ciutacu and Chivu (2007) in relation to the small traditional households, small farms and subsistence agriculture.

In the study on land grabbing in Romania, Szocs et al. (2015) used indicators such as the share of aged population and the migration of young people to explain the underdevelopment of rural areas. Moreover, understanding the relationships between rural infrastructure and agricultural development is essential in supporting growth and poverty reduction, especially in predominantly agricultural areas or low-income countries (Pinstrup-Andersen and Shimokawa 2007). Thus, several studies have emphasized the role of rural infrastructure in increasing farmers access to input and output markets (Binswanger et al. 1993), in stimulating the rural economy and the revitalization of small towns (Antle 1984), in increasing the consumer's demand in rural areas, and in facilitating the integration of less-favoured rural areas into the national and international economies (Fan et al. 2002, Mundlak et al. 2002, Fan and Zhang 2008). Also, the transport infrastructure and services are crucial for agriculture, being important for all actors along the agricultural value chain. In opposition, the lack of quality infrastructure and efficient transport can be an obstacle for small-scale producers in obtaining the necessary inputs and marketing their crops (Lako 1990). Moreover, Michalek and Zarnekow (2012) constructed a multi-dimensional (composite) index to measure the overall level of rural development and quality of life in the individual rural regions of Poland and Slovakia based on socio-economic, environmental, infrastructural and administrative indicators/variables.

Thus, the 9 statistical indicators (supported by 18 statistical variables) at LAU2 level selected for the current study were: agricultural surface (AGR_LAND), labour renewal index (LAB_RENEW), economically active population (EC_AC_POP), employment in agriculture (EMPLOY_AGR), economic dependency rate (DEPENDEC), the vitality index (PEARL), young labour (YOUNG_LAB), the female population (FEMALE) and roads and railways density (TRANSP). All these indicators were aggregated into an **index of socio-economic determinants of agriculture** (SOC_EC_DET_AGR).

The main factor which influenced the selection process was the availability of the statistical variables used for the computation of the indicators. Also, the local territorial level taken into consideration to assess the influence of each socio-economic determinant on agriculture diminishes the possibilities of selection because some of the indicators, despite their usefulness for the proposed objective, are available only for the upper territorial level.

Given that the variables of the statistical indicators were calculated using different measurement units, the current analysis required normalisation procedures. The normalised value of the statistical indicator ''X'' for the ''i'' LAU is $X_{si} = (X_i-X_{min})/(X_{max}-X_{min})$, where X_i is the absolute value of the statistical indicator ''X'' for the LAU ''i'', X_{max} is the maximum value of X indicator and X_{min} is the minimum value of the X_i indicator. The index of socio-economic determinants of agriculture was computed as Hull Score of the normalised values of the selected indicators. The Hull Score is calculated as the sum of the direct („+") or reverse relation („-") of each statistical indicator in relation to the development process (Ianoş 2000):

SOC_EC_ DET_AGR = 50+14*(AGR_LAND + LAB_RENEW + EMPLOY_AGR + EC_AC_POP + PERAL + YOUNG_LAB + TRANSP – DEPENDEC – FEMALE) / 9

Each indicator, equally weighted in the final index, was individually assessed and displayed in GIS format in order to understand the influence of each socio-economic determinant on agriculture. As a result, the computation of the final index helped identifying the areas most favourable or unfavourable to agricultural development in the Romanian Plain.

Results and Discussion

The socio-economic determinants have significantly influenced agriculture over the last decades. Besides agricultural land use (agricultural land) which represents the support land resource for the development of agriculture, the demographic and socio-economic variables (e.g. young labour force, employment in agriculture, economic dependency rate, road and railway density) were also considered essential through their influence on agriculture.

The **agricultural land** represents the foremost land use resource for agriculture, especially since 1829 when, following the treaty of Adrianopole that liberalized trade with cereals and wood, the Romanian Plain become one of the most important agricultural regions in Europe. However, during the past decades, the major spatial and functional transformations of the post-communist period have turned the region into one of the most vulnerable to extreme weather phenomena (e.g. dryness and drought, heavy rainfall) leading to the severe degradation of agricultural land with direct impact on the crop production, human health, and rural welfare (Dumitrașcu et al. 2018). In addition, this land use category has been subject to significant transformations under the impact of urban development (urbanization, suburbanization) or industrialization (Grigorescu and Kucsicsa 2017), but also under the extensification/ intensification of farming. A higher demand for food and further increases in the productivity of crops are likely to have significant impacts on the agricultural land use (Ewert et al. 2005). Thus, yields increases are regularly obtained through agricultural land intensification, one of the most significant forms of land-use/cover changes (Lambin et al. 2000).

The Romanian Plain has important land resources (0.6 hectares of agricultural land and 0.5 hectares of arable land per capita). The national average is 0.68 ha of agricultural land per capita and 0.43 ha of arable land per capita. At the LAU2 level these values vary significantly, from 1-5 ha per capita (most commonly) to 10 hectares per capita, but the most frequent values fall between 1 and 5 hectares per capita. The exception is the Frecăţei commune (Brăila County), where agricultural, respective arable land per capita reach 25 ha due to the drainage and embankment of "Balta Brăilei" (an extended floodplain area between the two arms of the Danube River in the eastern part of the Romanian Plain) and its conversion into farmland – "Insula Mare a Brăilei" (Fig. 4).

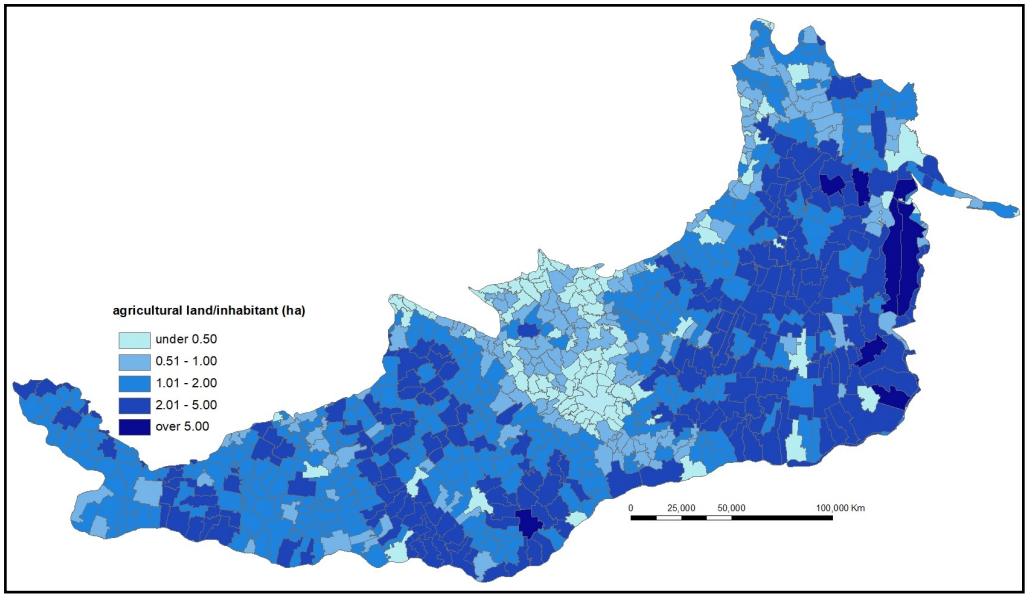

Fig. 4 **– The share of agricultural land per capita**

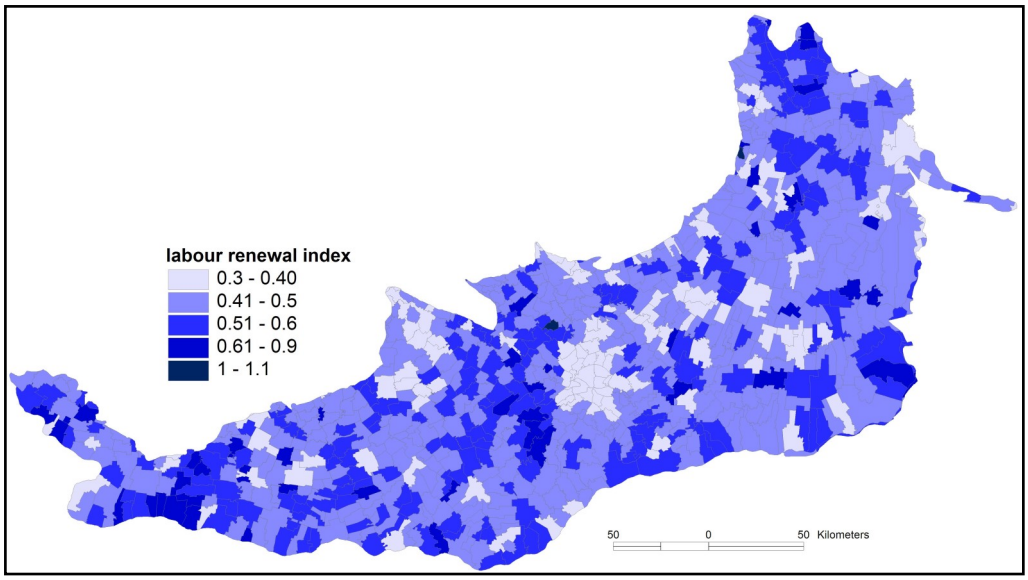

Fig. 5 **– The labour renewal index**

The **labour renewal index**, or the labour substitution index (Nancu et al. 2015) closely linked to the age structure of the labour force, is calculated as the ratio between the population aged 15-29 and 30-44. The evolution of the index is almost similar to that of the 15-29 age group, being correlated with the birth rate of the last three decades. Generally, when the index is below unity, the continuation of creative and productive workforce and, implicitly, the

development of the economy and society are not secured (Mihăescu 2001). Generally, the highest values of the labour renewal index are registered in the rural areas (e.g. Slobozia Bradului, Vrancea County, and Cojasca, Dâmboviţa County with over 1.0). Also, a concentration of LAU2 with very high values (0.6-0.8) is found in the south-eastern (e.g. Catane, Cerăt, Lipovu, Urzicuța in Dolj County), central (e.g. Buzescu, Plopii-Slăvitești, Lisa in Teleorman County) and north-eastern (e.g. Tâmboiești, Ploșcuteni in Vrancea County and Tichilești in Brăila County) parts of the Romanian Plain. These areas overlap the most important agricultural areas (e.g. Oltenia Plain, Bărăgan Plain) also providing most of the workforce for agriculture (Fig. 5).

Ilfov County (under 0.3 in Corbeanca, Berceni, Voluntari, Otopeni, Bragadiru) and the city of Bucharest (0.4) register the lowest values of the renewal index mainly in relation to the economic profile of Bucharest which holds 83% of the service sector of all active enterprises and the relocation of some companies following the deindustrialization of the capital-city (Bălteanu et al. 2016). The reduced values explain the limited productive potential of the region for agriculture. However, the surrounding areas of Ploieşti and Piteşti are able to supplement the workforce needed through the positive migratory balance (Bunea 2011, 2012).

Lower values (0.3-0.4) are also recorded in the LAU2 located in the surroundings of the important cities (e.g. Galaţi, Piteşti, Ploieşti, Craiova) mainly in relation to the migration of young workforce to the polarising cities. Overall, the largest extent of LAU2 with values below unity suggests the low capacity of the study-area to maintain its demographic and productive force, mainly because of population ageing and of in- and out-migration (both involving young and adult workforce) (Fig. 5).

The **economic dependency rate** expresses an employee's upkeep of another person who does not discharge a remunerative activity. This indicator is calculated as number of non-occupied persons (inactive and unemployed)/100 occupied persons. Generally, the economic dependency rate varies between 50% and 550.3%, the territorial differences being deeper than in the urban area. Almost half of total LAU2 totally or partially overlapping the study-area record economic dependency rate values below the national average of 136% (in 2011). As a result, within these communities, the employed population (as factor of production) have the capacity to create incomes, goods and services both for themselves and for the unemployed, thereby sustaining directly, or indirectly (through redistribution), the entire population of each LAU2. The lowest values of economic dependency rate (50-136.1%) are recorded by the small towns (e.g. Popeşti-Leordeni, Pantelimon, Bragadiru in Ilfov County) and the rural settlements (e.g. Chiajna in Ilfov County) located in the suburbs of Bucharest. Besides, in the central and eastern parts of the Romanian Plain, two extended areas with low economic dependency rate values are found: Teleorman Plain (e.g. Ciuperceni, Necșești, Uda-Clocociov in Teleorman County; Popești, Rociu in Argeș County; Valea Mare, Slobozia Moară, Vișina, Lungulețu in Dâmbovița County) and north-west of Bărăgan Plain and Buzău-Siret Plain (e.g. Nana, Tămadău Mare, Căscioarele in Călărași County; Râmnicelu, Victoria in Brăila County; Movileni, Corod in Galați County) (Fig. 6).

The highest dependency rates (over 298.5%) are recorded in two distinctive areas: Oltenia Plain, mostly in the Dolj County (e.g. Cerat, Catane, Ghidici, Măceșu de Jos) and south-east of Bărăgan Plain, i.e. Balta Ialomiţei, covering the LAU2 included and overlapping Constanța (e.g. Gârliciu, Oltina, Crucea, Ciobanu) and Călărași (e.g. Modelu, Dragalina) counties. Here, the figures are related to the population aging and the high unemployment rates.

Among the urban areas, the economic dependency rate is rather small to medium, varying between 101.2% and 272.6%. The highest values being characteristic to the small towns located in Olt, Ialomiţa, Călăraşi, Giurgiu counties (e.g. Drăgăneşti-Olt, Corabia, Potcoava, Budeşti, Bolintin Vale) and the lowest to those located in Ilfov county (Fig. 6).

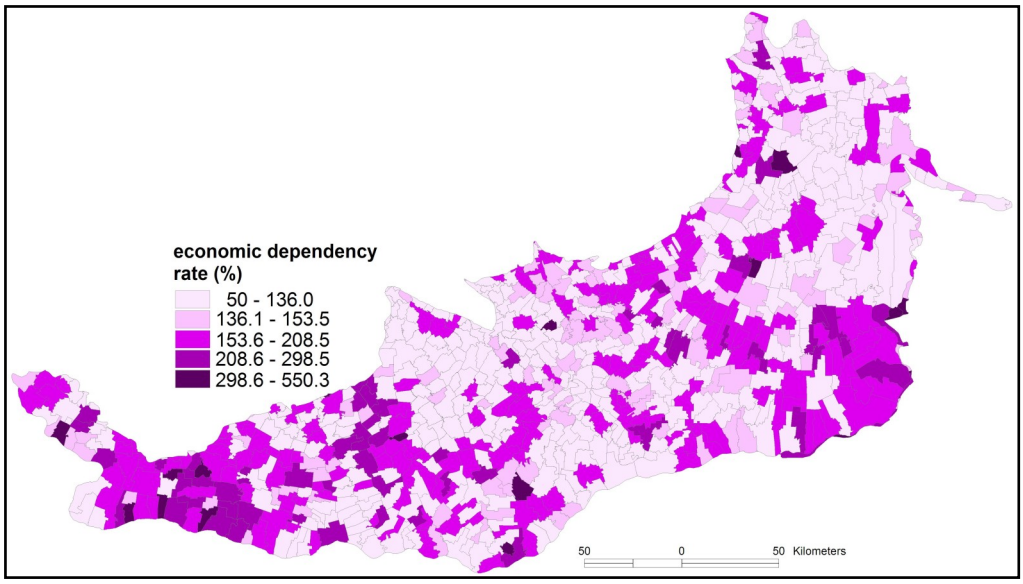

Fig. 6 **– The economic dependency rate**

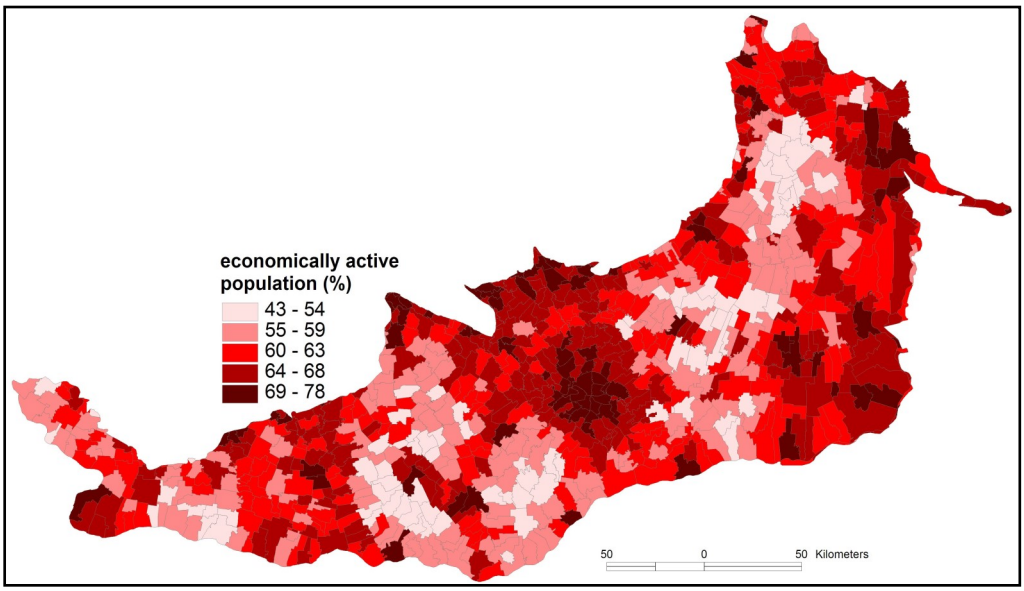

Fig. 7 **– The economically active population**

The **economically active population** was calculated as the ratio between the active (aged 15-64 years) and the total population (Mihăescu 2001), thus the dynamics of this indicator is related to the dynamics of the total population. On the other hand, it has been demonstrated that population ageing (population above 64 years old) has a strong influence on the observed outflow of agricultural labour force (Tocco et al. 2014). In 2015, the economically active

population in the Romanian Plain accounted for 4.9 million people, nearly 72% in the urban areas (close to the national rate of 70.3%), and 62% in the rural areas.

Although the most numerous workforce (over 69%) is concentrated in the Capital City, in the county-seats (e.g. Slatina, Slobozia, Focșani, Brăila, Alexandria, Târgoviște, Pitești, Craiova), in the small towns (e.g. Popeşti Leordeni, Pantelimon and Bragadiru, Bascov) and in some rural settlements located in the surroundings of Ploiești (e.g. Bucov, Florești), Târgoviște (e.g. Ulmi, Văcărești, Dragomirești), Pitești (e.g. Bascov, Bradu) or Galați cities, the highest concentration of economically active population is in Ilfov county (surrounding the city of Bucharest). Generally, the high values of the workforce rate of the total population are correlated with the high and positive values of the natural balance and vitality index (e.g. the rural settlements from the proximity of Galaţi City) or with the positive level of the migratory balance (e.g. in the surroundings of Bucharest, Pitești, Ploiești) (Fig. 7).

Large areas of the Romanian Plain recorded low and very low values of the economically active population (under 60%) in relation to the population shrinkage, mainly triggered by a negative natural balance and population migration.

The **employment in agriculture** is one of the main indicators supporting the development of agriculture which has been dramatically declined due to the massive transformations occurred in the agricultural sector both as effects of the Common Agricultural Policy on intensive agriculture and a sustained migration to the urban areas in search for well-paid jobs (Ciutacu et al. 2015). Moreover, agriculture has become dominated by self-employment and low revenues largely generated from subsistence farming (Popescu 2016). In some cases, the inter-sectoral movements of labour included the movement of employment from agriculture to the industrial or services sector on the one hand, and to unemployment or out of the labour force on the other hand (Tocco et al. 2014). However, in many rural areas agriculture absorbed the unemployed people from industry who couldn't be taken over by the service sector (Popescu 2016). This phenomenon can be associated with retirement and unemployment, agriculture becoming a sink for the less-skilled and unemployed population, providing especially a source of income for the elderly (Tocco et al. 2014).

In the study area, 1.07 million people are employed in agriculture (26.8% of the total employed population), which is significantly higher than the Europe average of 5.2%. The highest values (over 80%) are registered in the rural settlements located in south-western and eastern parts of the Romanian Plain where the most important agricultural areas of Romania are located. Thus, in the south-west (Oltenia Plain) the largest number of LAU2 with high employment in agriculture are grouped, mainly in Olt (e.g. Izbiceni, Cilieni, Giuvărăști), Dolj (e.g. Desa, Motăței, Ghidici), and Mehedinți (e.g. Dârvari, Corlățel, Vlădaia) counties. In the east (Bărăgan and Buzău-Siret Plains), another grouping of high employment in agriculture includes several of the rural settlements in Brăila (e.g. Victoria, Vișani, Frecăței, Râmnicelu) and Buzău (e.g. Glodeanu Sărat, Vâlcelele) counties (Fig. 8).

The lowest values (under 20%) are characteristic for the very large, large, medium-sized and small cities and towns (e.g. Bucharest, Craiova, Galați, Brăila, Ploiești, Buzău, Slobozia, Hârșova) and for some urban and rural LAU2 located in the surroundings of Bucharest, Galaţi, Brăila and Constanţa cities, being more attractive for industrial or tertiary activities.

An important aspect of the employment in agriculture is the self-employment. In 2009, the self employment in the total employment in Romania was considerably higher than the EU-27 average. However, nearly 79% of this value was accounted by the small farmers (on 3.3 ha average size of the individual farm) that still practiced subsistence, or semi-subsistence farming, with little communication with the market (European Commission 2010).

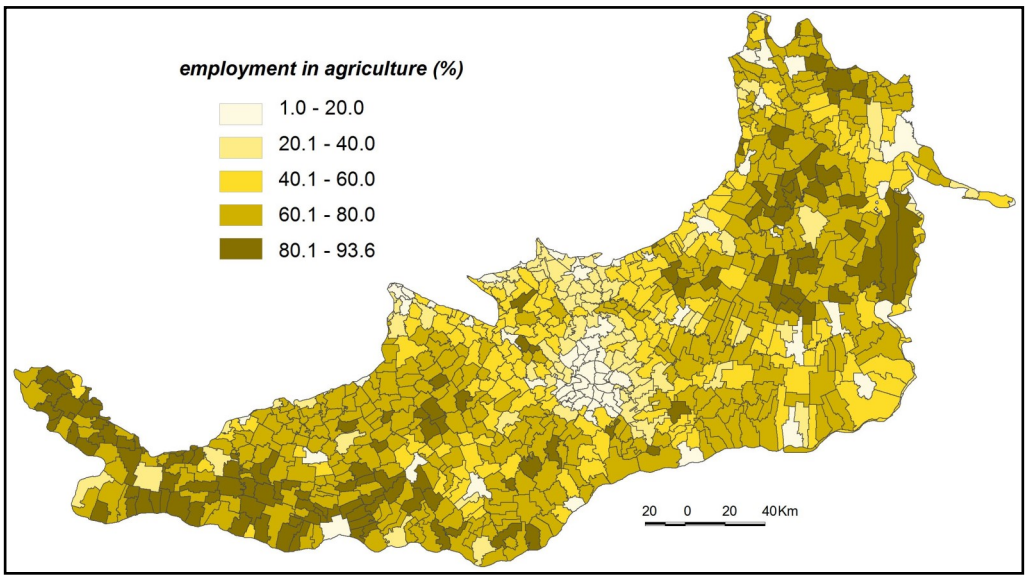

Fig. 8 **– The employment in agriculture**

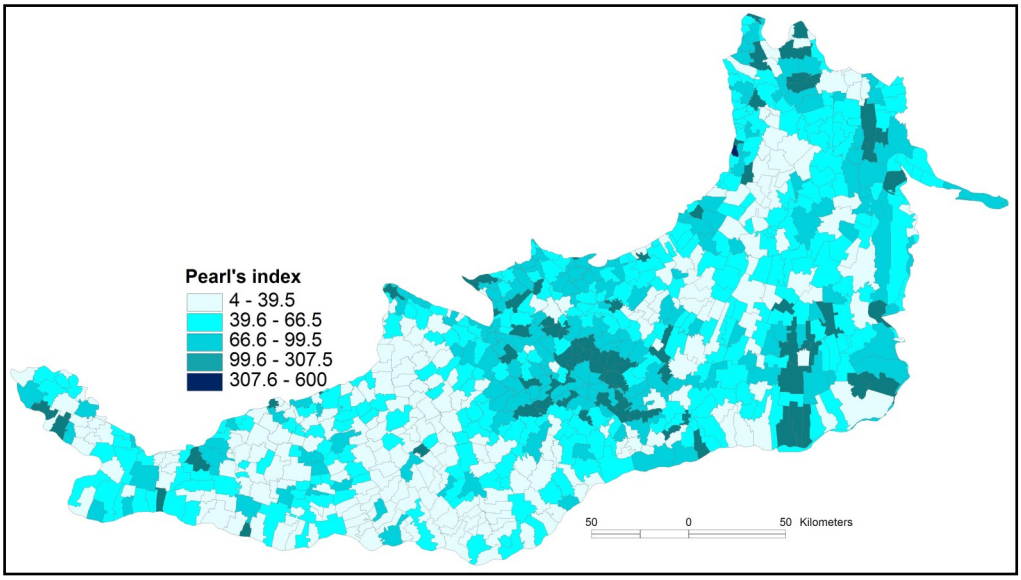

Fig. 9 **– The Pearl's (vitality) index**

The **Pearl's index (vitality index)** is the ratio between the number of live newborns and of deceased people over a certain period of time. Depending on the number of newborns (higher, lower, or equal to the deceased), the vitality index is lower, higher or equal to 100. With index values near 100, or equal to 100, the population tends to become stationary, while when the index is above 100, there are more newborns than deaths and the population tends to increase

(Vert 1995). Hence, it is an indicator of the self-renewal capacity of a population.

The vitality index in the Romanian Plain registers an average value of 72.6%, under the national average (78.05%). However, there are significant differences between the maximum (600% in Slobozia Bradului, Vrancea County) and the minimum (4% in Isvoarele, Giurgiu County) values. In almost 90% of total LAU2, the vitality index values are below 100%, which can be related to the population shrinkage and the negative migration balance. In the settlements surrounding the city of Bucharest and in other rural and urban localities from the north-eastern and south-eastern parts of the Romanian Plain, the high values of the vitality index are coupled with the positive migration balance (Fig. 9).

The differences between the urban and rural areas are also important. Between 2011 and 2015, the total urban population of the Romanian Plain increased with 775 014 inhabitants due to the positive migration and/or positive natural balances recorded by the different cities and towns. Thus, the urban areas register significantly higher values (90.3% of total LAU2) than the rural areas (65.7% of total LAU2). However, the extreme values in the urban areas are recorded by the small towns, 307% in Țăndărei (Ialomița County) and 40% in Dăbuleni (Dolj County). Among the rural settlements, only 8% recorded vitality index values above 100% in some LAU2 located in the surroundings of Bucharest (e.g. Ciorogârla, Cornetu, Afumați, 1 Decembrie in Ilfov County) or in the south-eastern (e.g. Drăgoești, Ograda, Mărculești in Ialomița County and Tămădău Mare, Spanțov in Călărași County) and northern (e.g. Slobozia Bradului, Tâmboiești in Vrancea County; Smârdan, Ghidiceni, Vânători in Galați County) parts of the Romanian Plain (Fig. 9).

In the Romanian Plain, the **young labour force**, computed as the share of young population (aged 15-24) of the total active population (aged 15-64), is 17% on an average, slightly below the national value (18%). However, there are significant differences between the rural and urban areas. Higher shares are registered in the large and very large cities (e.g. Bucharest, Craiova, Galați, Ploiești), while lower values are recorded in the small towns scattered throughout the study-area (e.g. Făurei, Căzănești, Vânju Mare, Piatra-Olt, Răcari, Amara). Generally, in the rural areas, only 39% of the young labour force is concentrated, mainly related to the low birth rates and out-migration which triggers population aging. However, in the rural areas, the highest values are found in the surroundings of Bucharest, Craiova, Galați, Pitești cities, while the lowest are registered in some small settlements with a reduced total population and labour force e.g. Cetalachioi (Tulcea County), Ciorcârlia, (Ialomița County), Răsmirești (Teleorman County) (Fig. 10).

The spatial differences can be explained in relation to the socio-economic profile of the settlements, as well as to the structure and trend of population. Higher shares (over 22.9%) are concentrated in the central part of the Romanian Plain especially in Teleorman (e.g. Purani, Poeni, Lunca, Mereni) and Dâmbovița (e.g. Cojasca, Mănești, Hulubești, Potlogi) counties. Also, extended areas with significant shares of young labour force are found in the eastern parts of the Romanian Plain in Călărași (e.g. Sărulești, Roșeți, Gălbinași, Curcani), Ialomița (e.g. Borănești, Bordușani, Ograda) and Brăila (e.g. Tichilești, Berteștii de Jos, Grădiștea) counties. In the small towns of Țăndărei, Fundulea, Boldești-Scăieni, Budești and some rural settlements (e.g. Slobozia Bradului in Vrancea County and Cojasca in Dâmbovița County), the high shares of young labour force are related to the high shares of Roma population.

The **share of female population** (% female of total population). The continuous de-industrialisation processes and the expansion of the service sector in Europe have generated changes related to the labour demand, thus women have become more present and active in the labour market (Palomba and Kotowska 2003). In Romania, the feminisation trend is more evident in the urban settlements (52.6%), following both the national (Urucu and Nancu 1992,

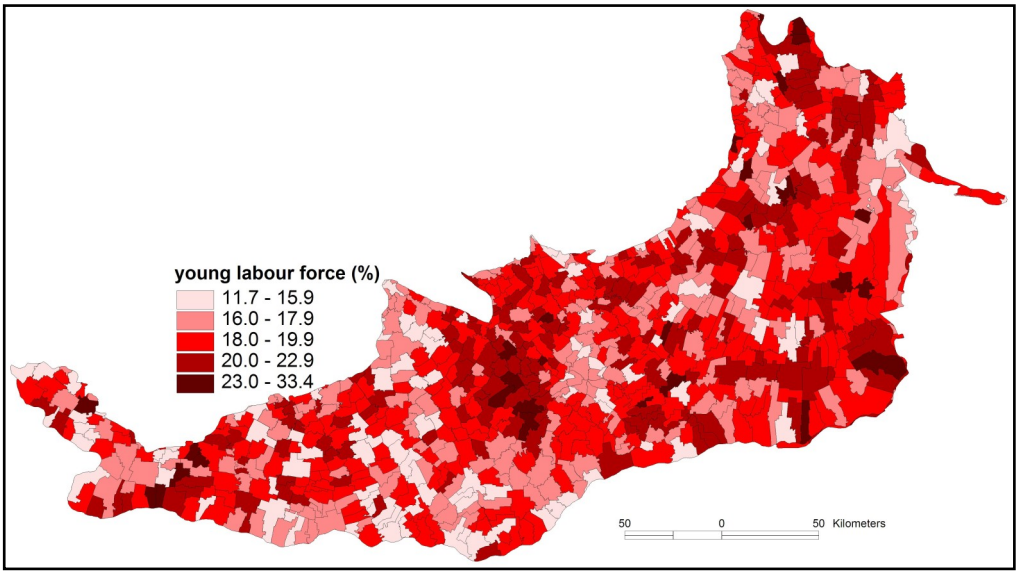

Fig. 10 **– The young labour force**

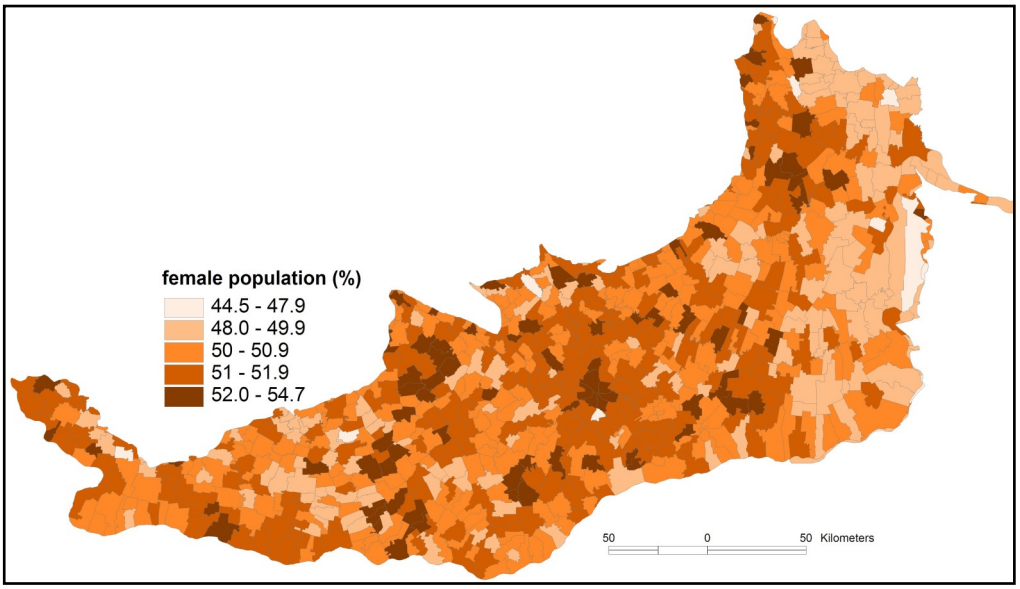

Fig. 11 **– The share of female population**

Nancu and Persu 2004) and the international (Tacoli and Mabala 2010, Tacoli 2012, Chant 2013) tendency. In the Romanian Plain, the share of female population is nearly 52%, slightly above the national value (51%). The rural areas register 50.6% female of the total rural population. The feminisation of Bucharest City is reflected by the highest share of female

population (54.7%). The lowest values are grouped in two main areas located in the eastern (e.g. Tichilești, Frecăței, Însurăței in Brăila County, Scânteiești, Movileni, Smârdan in Galați County) and central-western (e.g. Unirea, Apele Vii in Dolj County, Izvoarele, Redea in Olt County) parts of the Romanian Plain, where the values are well below 48% (Fig. 11).

The **road and railway density.** Generally, in the Romanian Plain the roads and railways density is of 1.48 km/km^2. In the urban areas, this value is almost double (2.66 km/km^2), while in the rural areas it is considerably lower (1.01 km/km^2). Almost 76% of the total settlements located in the rural areas have road and railway density values below the average. However, the transport infrastructure, especially the railway network, follows the main river valleys which cross the plain and the road and railway density is higher in the central part of the study-area and along the contact between the Romanian Plain and the Subcarpathian hilly area (Fig. 12).

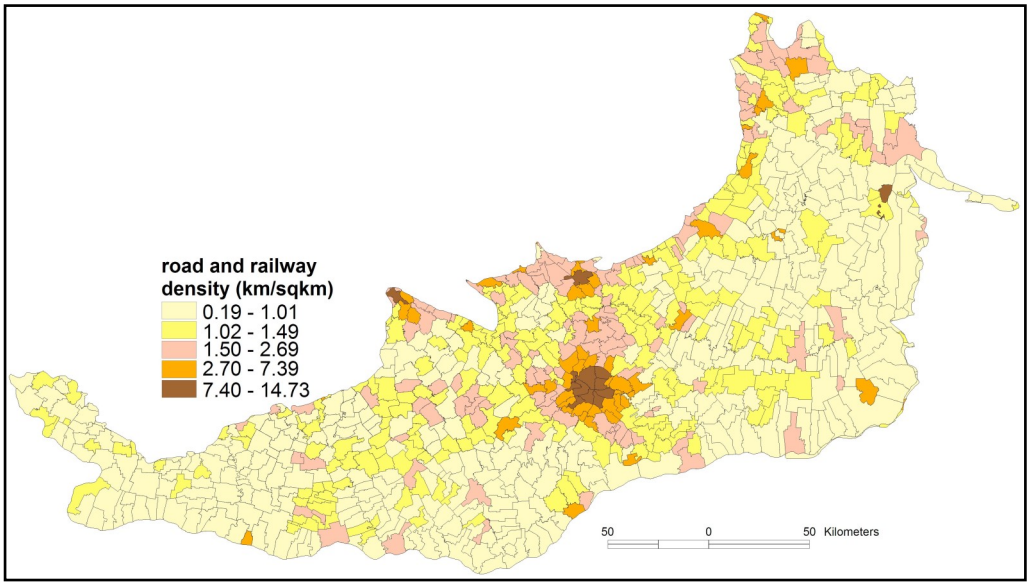

Fig. 12 – **The road and railways density**

Even if the roads density is higher than the railways density (0.33 km/km^2 vs. 0.12 km/km^2), in the eastern and central parts of the Romanian Plain, the railways infrastructure complements the transport network. In the western part of the study-area (Oltenia Plain) the road density is low, not being balanced by the railway network. Nevertheless, in this area, the Danube River might have an important role since the transport of agricultural goods on barges along the river is a more appropriate option to the road or rail, thus the links between these types of infrastructure with the waterways are very important. Out of the 28 ports located along the Danube and the waterway channels, 18 have both road and railway connections, thus enabling effective intermodal transportation of the agricultural goods, especially since the volume of agriculture goods on the Danube River prevails with nearly 34% (Intermodal Transport Strategy for 2020-2011).

Following the assemblage and interaction of the selected nine indicators, the **index of socio-economic determinants (SOC_EC_ DET_AGR)** has resulted. Based on its computation and spatial distribution, areas more or less favourable for the development of agriculture have been delineated. The strong agricultural legacy of the region, the long standing economic and social

underdevelopment and high level of rurality (Popescu 2016) had determined several development restrictions, especially in some areas with poor infrastructure and limited labour resources. The results of the index of socio-economic determinants spatially delineate areas with very high (>52), high (51-51.9), medium (50-50.9) and low (<49.9) potential development of agriculture (Fig. 13).

The highest values of the socio-economic determinants index are registered by Bucharest and by some large and medium-sized towns (e.g. Craiova, Focșani, Adjud, Târgoviște, Slatina), mainly triggered by the high values of some indicators (e.g. labour renewal index, economically active population or roads and railways density) thus highlighting the socio-economic likelihood of the human resource to sustain agriculture. The territorial clustering of the highest index values located in and around large cities is linked with the role they play as important consumers of agriculture products. Also, these values stream from a specific historical and cultural background (e.g. the Bulgarian immigrants from the south of Danube whose main occupation was vegetable growing and their establishment in different localities of the Romanian Plain), which was perpetuated and in some cases now integrated with the new socio -economic conditions in the studied area (Matca, Galați County). Herewith, the highest values are also recorded in some rural and urban settlements located in Ilfov (e.g. Jilava, 1 Decembrie, Voluntari, Chiajna, Măgurele, Chitila), Brăila (e.g. Tichilești, Ianca), Dâmbovița (e.g. Cojasca, Niculești, Vișina), Galați (e.g. Smârdan, Schela), Giurgiu (Grădinari, Cosoba, Bolintin-Vale), Ialomița (e.g. Țăndărei, Fetești), and Călărași (e.g. Ștefan cel Mare, Fundulea, Gălbinași) counties. High and medium values are the most widespread throughout the entire Romanian Plain, with extended areas in the Dâmbovița, Argeș, Galați, Buzău, Ialomița and Călărași counties. There, some of the indicators with positive influence on the final index (e.g. agricultural land, young labour, economically active population) registered high values and, concurrently, the indicators with reverse influence on the final index (e.g. economic dependency rate, female population) had values close or below the national average. The index of socio-economic determinants of agriculture registered the lowest values in an extended area located in the western (e.g. Oltenia Plain, western part of Teleorman Plain) and central-eastern (e.g. Bărăgan and Brăila Plains) parts of the Romanian Plain. There, most of the socio-economic indicators with negative impact on the final index had the lowest values (e.g. economically active population, road and railways density, economic dependency rate).

Overall, the analysis of the index values revealed spatial differences which enabled a certain separation between the eastern, central and western parts of the Romanian Plain. Thus, the western part of the study area is characterised by a mosaic-like distribution of the LAU2 falling into all four degrees of socio-economic determinants, with a prevalence of low and medium values. Although known for its predominant rural-agricultural profile, its main socio-economic characteristics (e.g. underperforming subsistence farming, population aging, poor qualification of the labour force) turned this region into a less favourable one for agricultural development as revealed by the generally low values of the final index. This low values point to rather unsustainable farming practices especially in Dolj, Olt and Teleorman counties (Fig. 13).

The central part of the Romanian Plain distinguished itself by a predominance of the high and very high degrees of socio-economic determinants, with a visible concentration in the northern half. This region has the highest socio-economic potential, especially due to the high values of some determinants (e.g. economically active population, young labour and roads and railways density) or the low values of indicators with negative impact on agriculture (e.g. economic dependency rate).

Within the eastern part of the Romanian Plain, some intra-regional spatial differences can be noticed. Here, in the marginal areas, high and very high values of the socio-economic determinants are predominant, while in the central areas, medium and low values prevail. In

this area, it lays “Insula Mare a Brăilei”, the biggest compact agricultural exploitation in Romania, and one of the largest in Europe.

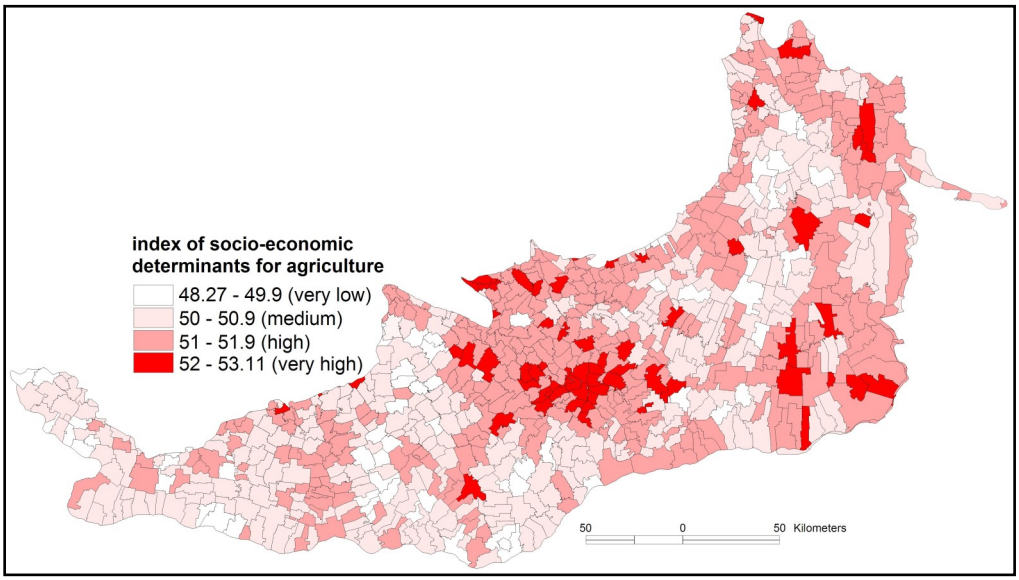

Fig.13 – **The index of socio-economic determinants for agriculture in the Romanian Plain**

Conclusions

The Romanian Plain is generally characterised by its high agricultural potential, given the natural environmental conditions and the extended agricultural surface. However, over the last decades, the region has been affected by several demographic processes with impact on the human resources in agriculture (e.g. population aging, out-migration, unemployment) which have been mirrored by some of the indicators selected for the final index: labour renewable index, economically active population, employment in agriculture, vitality index or share of young labour. Moreover, under the structural and functional changes of the post-communist period, the declining industry determined inter-sectoral employment shifts which enabled the absorption of labour by agriculture, especially in rural areas.

The assessment of determinants for agriculture using a complex index based on nine indicators enabled the authors to identify the areas more or less favourable to agriculture based on quantitative and qualitative approaches of human resources and socio-economic development. Thus, depending on the local particularities, the importance and distribution of the nine indicators, as well as the index of socio-economic determinants, significant spatial disparities have been highlighted. Roughly, three major areas have been identified: (1) the western area with a heterogeneous distribution of the index values (low, medium and high), with a predominantly low socio-economic potential for agricultural development; (2) the central area, more compact in terms of the distribution of the index values (mainly high and very high), thus pointing to more favourable conditions for agriculture based on the socio-economic determinants; (3) and the eastern part, which is characterised by two distinctive areas with different development potential for agriculture based on the spatial distribution of the index values: a central area with generally low development potential and a marginal area at the

contact with the other major relief units (the Subcarpathians to the north-west, the Moldavian Plateau to the north and the Dobrogea Plateau to the east) with a generally high development potential.

Overall, the study revealed that regardless of the regional or local disparities agriculture still provides an important source of minimum income for many households, especially in the rural areas.

The current assessment relies on large datasets used to define the socio-economic determinants of agriculture. However, the selection of data was carried out depending on data availability at smaller spatial scale (LAU2). As a result, the largest share of indicators was population-based referring to age, gender or employment, while the specific social and economic aspects were generally targeted indirectly (e.g. economic dependency rate, economically active population), as they were extracted from the available demographic data.

The lack of statistical data at smaller spatial scales (LAU 2) for large geographical regions (Romanian Plain) on income in agriculture, land fragmentation, productivity, national and foreign investments called for the extraction and compilation of indicators from the available statistics. Moreover, an important step for the improvement of such a study would be to integrate agricultural and environmental policies to support the rural population and the farmers' adaptation to the environmental (e.g. climate change-related issues, land degradation) and socio-economic (e.g. unemployment, population aging) challenges. As a result, the current research might become an important stage in carrying out future complex assessments on the environmental and socio-economic determinants in agriculture, developing strategies and supporting policies in agriculture at different spatial scales.

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DOES MIGRATION AFFECT WAGES IN RUSSIAN CITIES? EMPIRICAL MICRODATA ANALYSIS

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Abstract: The article explores the impact of migration on wages in Russian cities. The research was carried out on the basis of the data collected by the authors in September–October 2017 in the administrative centres of the subjects of the Ural Federal District, Russia. The aim of the study was to find out whether migrant workers are complements or substitutes to local workers in the local labour markets of the Russian cities. Econometric models were estimated using OLS and GLS methodology. The OLS results showed that migration does not affect wages in the cities. The GLS estimations were also statistically insignificant for the local employees with higher education, but for those with primary and secondary education, migration demonstrates a positive and statistically significant impact on an individual's wages. It gives us reason to suggest that migrant workers are complementary to the local workers with primary and secondary education.

Key Words: *local labour markets, employment, wages, migration.*

Introduction

Currently, the development of cities and agglomerations is widely discussed in the world academic literature (Glaeser and Maré 2001, Moretti 2011, Winters 2011, Combes et al. 2012, Zubarevich 2012, Glaeser 2014, Zubarevich 2017). The interconnection between urbanisation processes and labour market outputs is one of the most topical issues of the discussion mentioned above. The research carried out on empirical data from different countries showed that the main reasons for migration from rural to urban areas were the higher wages and opportunities for employment in cities (Todaro 1980, Winters 2011, Fertner 2013, Glaeser 2014, Hao and Tang 2018). In the former USSR, the most intensive migration from rural to urban areas occurred in the 1970s to 1980s and it was associated with the rapid industrialisation which began in the late 1960s (Holton 1984, Murray and Szelenyi 1984, Kennedy and Smith 1989, Pivovarov 2001, Nefedova et al. 2015). The recent urbanisation in the Russian Federation is connected with the changes in the distribution of the population between the different types of cities. Thus, in 2017 compared to 2012, the urban population of the Russian Federation has grown by 4%, while the urban population living in the smallest cities (up to 3 000 inhabitants) has decreased by 10%, and the population living in cities with a population of a million people has increased by 12%, according to Rosstat data. The named indicators indirectly show migration processes across modern Russian cities, and we can assume that local labour markets are affected by migration. However, the impact of migration on the local labour markets of the Russian cities has not yet been sufficiently investigated.

The study of the impact of migration on local labour markets is at the intersection of two research goals: the analysis of the diversity of local labour markets within the country and the study of the internal migration as a connecting mechanism between local labour markets. The majority of empirical studies made by the other authors who studied the characteristics of local labour markets in Russia were carried out on the regional aggregated data provided by the Federal State Statistics Service (Rosstat). The results of the research show that the labour markets of the subjects of the Russian Federation are rather heterogeneous in terms of their

inputs (structure and development of local economy, local enforcement of the labour market institutes) as well as outputs (unemployment rate, structure of employment, wages, etc.) (Bignebat 2003, Berger et al. 2008, Gimpelson et al. 2010, Commander et al. 2011, Giltman 2016). According to the theory of migration, the differences in the economic development of the territories within the country lead to different employment opportunities and earnings that motivate the population to migrate for economic reasons to those regions with a greater number of employment opportunities and a higher wage (Oliver 1964, Grigg 1977). In addition to the economic reasons, in gravitation models, migration can be affected by the distance between objects and their sizes. As a rule, the larger and closer territories strongly affect migration (Zipf 1949, Miller 2004). Thus, theories of migration predict that territories with a high density of population and/or those with the higher opportunities for employment and earnings attract migration. The empirical research, carried out on the Russian data, demonstrates that the main reasons for interregional migration are the differences in the labour demand and wages in different regions, meaning that internal migration is closely connected with opportunities and conditions of employment in a particular region (Andrienko and Guriev 2004, Bignebat 2006, Guriev and Vakulenko 2015, Sardadvar and Vakulenko 2016). Migration, in turn, affects the local labour market equilibriums. The Model of Local Labour Markets (Rosen 1979, Roback 1982, Moretti 2011) assumes that, within the country, labour is perfectly mobile, and the local labour supply (including migrant workers) responds to the changes in the employment conditions and the local labour demand. Thus, internal migration leads to a new equilibrium in the local labour market, including a new level of wages.

The theoretical explanation for the impact of migration on individual wages in the local labour market is rooted on the idea that migrants always differ in their qualification characteristics from the local workers (Combes et al. 2015). Differences between migrant and local workers lead to migrant workers being able to act as complementary to local workers. In the case of complementarity between local and migrant workers, productivity of labour and, as a consequence, individual wages grow. However, if the differences between local and migrant workers are not so significant, then the migrant workers act as substitutes for the local workers, claiming the same jobs and decreasing the wages in a particular local labour market (Combes et al. 2015, Lewis and Peri 2015). A common explanation for the positive impact of migration on wages in local labour markets is that migration contributes to the accumulation of human capital in cities and it gives higher returns to the human capital (Glaeser and Maré 2001). The results of the empirical studies in different countries confirm this statement (Acemoglu 1997, Rotemberg and Saloner 2000, Glaeser and Maré 2001, McCormick and Wahba 2005, Champion and Coombes 2007, Combes et al. 2012).

If we assume migration as an externality to the local labour market, the most explored issue in this case is the impact of external migration on individual wages in the local labour market in the recipient territory (Card 1990, Borjas et al. 1997, Borjas 2003, 2017). In the majority of the research, it was discovered that migrant workers negatively affect the wages of unskilled local workers (Borjas et al. 1997, Borjas 2003, Borjas 2017). Based on the Russian data, Lazareva (2015) estimated the impact of the migration of ethnic Russians on the Russian labour market, finding a negative impact of migration on the employment of local workers and the economic activity of the local population, while the impact on the wages of local workers was insignificant.

Only few studies have been done on the impact of internal migration on wages in local labour markets. Using the example of China, Combes et al. (2015) show that estimating the impact of internal migration on local labour markets is more important for large countries, especially for those that represent emerging markets, where the share of external migration is relatively small compared to the share of internal migration. Despite Russia's size, the intensity of internal migration there, unlike in the above-mentioned China, is quite low (Andrienko and Guriev 2004, Bignebat 2006, Sardadvar and Vakulenko 2016, Vakulenko 2016). At first glance, this feature suggests that the impact of migration on local labour markets is small. At the same time,

Andrienko and Guriev (2004) note that most of the studies of internal migration in Russia are carried out on regional data, while the subjects of the Russian Federation occupy vast territories, and the analysis of the population movement only between the regions does not take into account the migration within them. The reason for the small number of studies of labour migration in Russia at municipality level is the lack of municipal statistics, which, in demographic and sociological studies of labour migration, is compensated for by conducting surveys of the population (Zayonchkovskaya 2001, Roshchina 2003, Ivanova 2008, Zayonchkovskaya et al. 2015, Mkrtchyan and Florinskaya 2016). The results of the aforementioned studies show that the intensity of labour migration in Russia at municipality level is quite high, but its impact on local labour market outcomes in the recipient cities of labour migrants demonstrated in the economic studies on the Russian data has not been estimated yet.

In our study, we tried to fill this gap by estimating the impact of migration on individual wages which are one of the most important characteristics of local labour markets. The paper will examine if the migrant workers are complementary to or substitute for the local workers in the labour markets of Russian cities. According to our hypothesis, migration has a significant impact on the individual wages of local workers in the Russian cities.

Methodology

The study was carried out on the basis of hand-collected data, gathered by the research team in the administrative centres of the subjects of the Ural Federal District (UrFD) in September–October 2017. Econometric models were estimated first by the ordinary least squares method (OLS) according to the methodology described by Combes et al. (2015) and Lewis and Peri (2015). We later corrected the results using the generalised least squares methodology (GLS) as suggested by Moulton (1986, 1990) for estimating models which include individual and group parameters in one equation.

Study-Case Area

Our case study includes the administrative centres of the subjects of the Ural Federal District (UrFD). UrFD consists of six administrative-territorial units (subjects) of the Russian Federation: Kurgan Oblast' with its administrative centre in the city of Kurgan, Sverdlovsk Oblast' (with administrative centre in Ekaterinburg), Tyumen Oblast' (Tyumen), Chelyabinsk Oblast' (Chelyabinsk), and two autonomous okrugs: Khanty-Mansiysk Autonomous Okrug (Khanty-Mansiysk) and Yamal-Nenets Autonomous Okrug (Salekhard) (Fig. 1). The two autonomous okrugs are also officially a part of the Tyumen Oblast', even though they have their own regional governments and they are almost economically and administratively independent from Tyumen Oblast'. The list of cities included in our case study is short due to the lack of microdata at municipal level, which we had to collect by ourselves.

At the same time, the case of UrFD is informative for analysing the impact of migration on local labour markets because all cities are situated at relatively the same distance from the centre of Russia (1 800 to 2 800 km from Moscow), and the eastern part of the country (Fig. 1) plays an important role in people's individual decisions about migration. The cities are different in terms of the size of their population (Table 1), migration activity, and economic development. The uneven economic development of UrFD cities is mostly based on the regional disparities in resources and economic development (Fig. 2). As far as the data for the autonomous okrugs is available only since 2011, in Fig. 2 they are included in the Tyumen region, fact which explains the spectacular increase in the economic development of the region. Khanty-Mansiysk Autonomous Okrug and Yamal-Nenets Autonomous Okrug are the two leading oil and gas producing regions in Russia that are closely connected with the Tyumen Oblast', which has been a recipient of the large budget investments since the mid-2000s thanks to tax revenue

Fig. 1 **– Ural Federal District**

transfers from the autonomous okrugs. At the same time, the south of UrFD is a rural-depressive region (Zubarevich 2013). UrFD can be recognised as a blueprint for the uneven economic development of the whole Russian Federation in terms of structure and level of economic development. Moreover, the administrative centres of UrFD are different from each other by their urban characteristics. Ekaterinburg is one of the largest cities in Russia and it is the centre of UrFD with high economic activity and many cultural amenities normally inherent to large cities. The economic basis of the local economy of Ekaterinburg is manufacturing industry. Khanty-Mansiysk and Salekhard are smaller towns, but at the same time, they are the capitals of the two richest regions of Russia with highly developed extractive industries. The high wages and the local labour demand make them extremely attractive for migrants from other Russian cities and rural areas as well as for migrants from the former Soviet Republics (Heleniak 1999, Zayonchkovskaya 1999, Gerber 2006, Guriev and Vakulenko 2015, Nalimov and Rudenko 2015, Giltmanm 2016). The migration activity explains the extreme population growth in Khanty-Mansiysk and Salekhard during the last decades, and that is also true for Tyumen, which is economically and financially closely connected with Khanty-Mansiysk and Yamal-Nenets autonomous okrugs (Table 1). Kurgan is the capital of a rural region whose economy is dependent on subsidies from the Federal Government. Chelyabinsk is a large city with a big share of manufacturing in its economy, but it is less economically developed compared to Ekaterinburg. In spite of the differences in the size of population and territory, the administrative centres are always attractive as a first stopping place for the migrants from the rural areas and small towns (Hao and Tang 2018). Hence we believe that the chosen cities are

informative for studying the impact of migration on wages at local level.

Table 1

The population dynamics in the administrative centres of the UrFD subjects in 2000-2016 (people)

	2000	2005	2010	2016	Changes in 2016 compared to 2000 (%)
Ekaterinburg	1 345 100	1 339 600	1 352 800	1 488 400	10.65
Kurgan	364 700	330 000	332 800	322 000	-11.70
Salekhard	34 100	39 400	43 100	48 500	42.25
Tyumen	500 200	542 500	607 800	744 600	48.85
Khanty-Mansiysk	39 700	59 600	80 500	98 700	148.59
Chelyabinsk	1 083 200	1 093 000	1 131 100	1 198 900	10.68

Source: calculated by the authors using the data provided by Rosstat

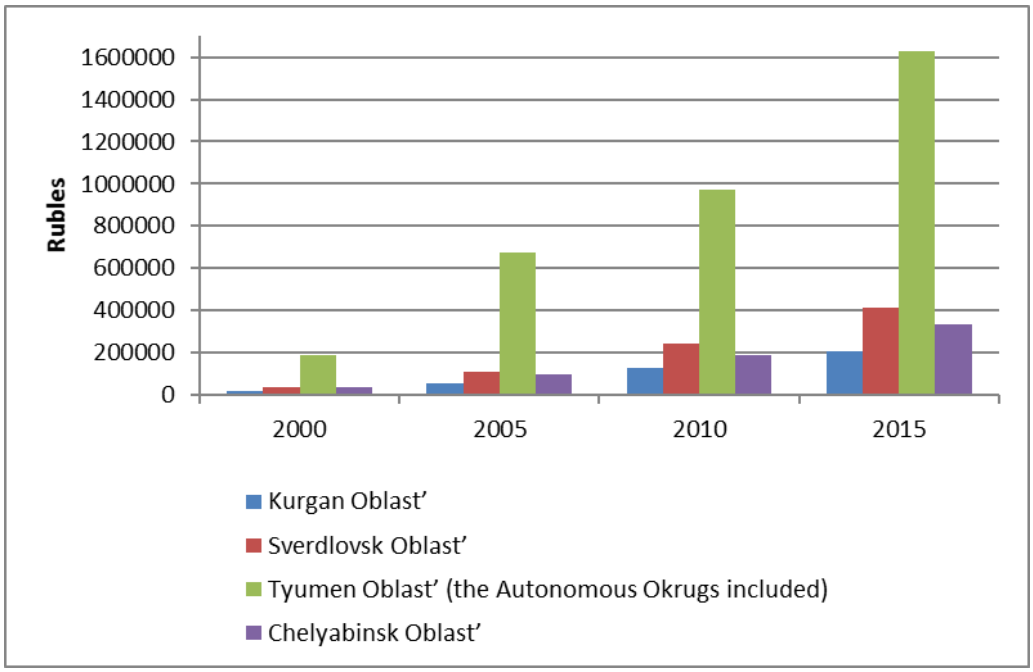

Fig. 2 **– Gross regional product per capita (rubles)**
Source: Rosstat

Data Description

To obtain the research goals and due to the absence of available microdata at municipal level, we collected it through surveys in all the six cities. We used a questionnaire as the main tool in our survey research. The survey was based on the random sampling stratified by the gender

and age of the respondents found in the aggregated municipal Rosstat data. The target population included employed individuals aged 20–64 years, because this age group is more economically active, as shown in the regional Rosstat data. During the survey of the population screening, only employed respondents were interviewed. The status of employment was identified by the respondents themselves. The sample included 2 520 individuals distributed evenly, with 420 people in each city.

The field research phase was implemented in September–October 2017. The collection of the data was carried out by the method of a structured face-to-face interview and it was collected in crowded places such as malls, cinemas, large supermarkets, etc. To ensure the randomness of the selection of respondents during a street poll, the social heterogeneity of settlement in the city and the location of large enterprises were taken into account. Descriptive statistics on salary in the administrative centres of UrFD, formed on the basis of the collected data, are presented in Table 2.

Table 2

Descriptive Statistics on Salary

City	Net salary received by a respondent in a month preceding the survey (rubles)							
	Real (full) sample				Restricted sample			
	min	max	medi-an	mean	min	max	median	mean
Ekaterinburg	5 000	150 000	35 000	39 717	5 000	150 000	35 000	39 717
Kurgan	1 000	100 000	20 000	20 820	6 000	40 000	20 000	20 398
Salekhard	12 000	300 000	40 000	42 980	20 000	90 000	35 000	40 769
Tyumen	7 000	289 000	25 000	31 092	7 000	195 000	25 000	28 969
Khanty-Mansiysk	3 000	200 000	40 000	41 221	10 000	100 000	40 000	37 481
Chelyabinsk	5 000	200 000	22 000	25 297	5 000	200 000	24 000	25 429

Source: calculated by the authors using the collected data

Table 2 shows that the highest salary was received by the respondents from Salekhard and Khanty-Mansiysk, and the lowest by those from Kurgan and Chelyabinsk. Additionally, there is a part of Table 2 with data based on a restricted sample. The data restriction was necessary because in our case the quantity of the respondents from each city was equal, while the size of the population in these cities is very different (Table 1). To restrict the sample, we used the "Random sub-sampling" function in the Gretl econometric package (the Gretl2017c version). The restricted sample included 1 015 observations. The number of answers in Ekaterinburg was entirely taken as it was the biggest city in our case. All the other cities were included in the restricted sample proportional to their share in the target population.

It should also be emphasised that, according to the empirical research of Borjas et al. (1997), Borjas (2003, 2017) and Combes et al. (2015), migration has a different impact on the wages of local employees with different levels of education. Therefore, in the empirical part of the work, we estimated regressions for the respondents with higher (tertiary) education and without it (for those with primary and secondary education). The frequency distribution of the main factors that can affect an individual's wages and that can be included in the regression as variables is presented in Table 3.

Table 3

Frequency Distribution of the Main Variables (%)

Variable	Sample for all levels of education		Respondents with			
			Higher education		Primary and secondary education	
	full	restricted	full	restricted	full	restricted
Gender: *male*	46	43	41	38	50.3	49
female	54	57	59	62	49.7	51
Work experience: *<10 years*	28	27	29	27	28	27
10-30 years	54	52	56	54	52	50
>30 years	18	21	15	19	20	23
Position in a company: *blue collar worker*	34	33	16	18	52	48
white collar worker	50	50	62	60	37	39
middle managers	11	12	15	15	8	10
executive managers	5	5	7	7	3	3
Properties of company: *private*	55	63.7	44	57.6	65.2	70
public	38.5	30.7	48	36.1	29	25
mixed	6	5	6.4	5.7	5.5	4.4
foreign	0.5	0.6	0.6	0.6	0.3	0.6
Company size: *small (<100 people)*	50	47	45	43	55	51
medium (101-500 people)	30	31	32	33	28	29
big (>500 people)	20	22	23	24	17	20
Type of activity *education*	11	11	14	14	8	9
governance	9	5	13	7	5	3
industry and construction	16	19	13	15	18	23
trade and restaurants	23	26	17	23	29	30
other	41	39	43	41	40	35
Distribution of the respondents by city *Ekaterinburg*	17	38	20	44	14	32
Kurgan	18	8	15	7	20	10
Salekhard	17	1	17	2	17	1
Tyumen	18	19	13	16	22	22
Khanty-Mansiysk	16	3	21	3	11	2
Chelyabinsk	16	31	14	28	16	33

Source: calculated by the authors using the collected data

As we can see from Table 3, the greatest discrepancy between the full and restricted data lies in the company properties. In the restricted sample, more individuals were employed in the private sector and less in the public sector. From our point of view, this difference better describes the distribution of the target employed population between private and public sectors

because the number of employees in governance and some other sectors of the public economy is usually very close to the number of those employees in big cities, while the share of employees in the public sector in the number of all employees in the city in small towns is much higher than the same indicator in big cities. It is also reflected in the difference found between the full and restricted samples of frequency distribution of employees in governance, especially for those with higher education. In general, the population with higher education takes a share of 49.8% in the full sample and 49.6% in the restricted sample. The mean salary (per month) was of 33 440 rubles in the full sample and 31 620 rubles in the restricted sample. Graduated respondents had the mean salary of 38 366 rubles (35 338 rubles in the restricted sample). Individuals with primary and secondary education earned on average 28 561 rubles (27 836 rubles in the restricted sample). As we see, there is not a great deal of difference between the figures for the full and restricted samples for all of the main parameters, enabling us to carry out our econometric estimations on the restricted data rather accurately. The following description is made on the basis of restricted sample; however, the full sample indicators can be found in Table 3. The table demonstrates that among the respondents with higher education, there are more women than men (62% compared to 38%) and those with 10 to 30 years of work experience (54% versus 27% of respondents whose experience is less than 10 years and 19% of respondents, whose experience, on the contrary, is more than 30 years).

The respondents with higher education are more likely to occupy positions of specialists (white-collar workers) (62% versus 39%), middle managers (15% versus 10%), and executive managers (7% versus 3%). At the same time, the majority of respondents without higher education (48%) attributed themselves to the blue-collar workers' category. Among the employees with higher education, the proportion of those employed in the public sector was significantly higher compared to the employees with primary and secondary education (36% versus 25%). The majority (70%) of the respondents who do not have a higher education work in the private sector. Respondents with higher education are more likely to find jobs at big companies (24% versus 20%) and medium-sized enterprises (33% versus 29%), but they are somewhat less likely than those who do not have higher education in small companies (43% versus 51%). As for the type of economic activity, respondents with higher education are more likely to be employed in education (14% versus 9%) and public administration (7% versus 3%) than respondents without higher education. Graduated respondents are less often employed in industry and construction (15% versus 23%), as well as in trade and restaurants (23% versus 30%), compared to non-graduate respondents.

Migration and wages assessment

To estimate the impact of migration on individual wages, we applied the methodology described in Combes et al. (2015) and Lewis and Peri (2015), which allows using cross-section data. The equation for estimating the impact of migration to individual wages is (1). It is important to note that, in this case, we are talking about migration in the city for the period but not about the net migration.

$$logW_i = \alpha X_i + \lambda MigSh_c + \varepsilon_i, \quad (1)$$

where *i* is a local worker, and log*Wi* is a logarithm of the individual wages of the worker *i*. Individual wages were calculated on the basis of the net salary received by a respondent in the month preceding the survey (in rubles), divided by the number of working days and hours. *Xi* is the individual characteristics of worker *i* such as gender, years of schooling, work experience, etc.; $MigSh_c$ is the share of migrants in the total number of people employed in the city *c* (L_c^T), which can be calculated as $MigSh_c = L_c^M/L_c^T$, where L_c^M represents employed migrants in the

city *c*; and e_t represents the normally distributed errors.

This approach has limitations because using the cross-section data we estimate the static situation, and the possible reaction of local workers to the employed migrants is not taken into account. The reaction can be different and it may include changing the job or place of residence (Card 2005, Ottaviano and Peri 2012, Peri 2012, Combes et al. 2015, Lewis and Peri 2015). The described methodology, however, can be used for estimating the impact of migration on wages in local labour markets, but taking into consideration that the effects of migration could only be partly estimated (Combes et al. 2015, Lewis and Peri 2015). In addition, we are trying to solve the problem of the static nature of the model including in it a *(t-3)* period of migration, which is equal to 2014. We assume that in a period *(t)*, all the changes in the local labour markets affected by migration in a *(t-3)* period of time have already occurred. At the same time, a *(t-3)* period of time helps us to facilitate the problem of endogeneity, which does present itself in the described model due to the back impact of wages on migration. Long lags are one of the possible tools for solving the problem of endogeneity, and here we apply the longest lag available found in the municipal Rosstat data.

Following the described methodology, we began our estimations with the Mincer type equation (Tables 4 and 5, column I). Afterwards, we added the gender characteristics of a worker *i* (*Male*, column II), his position in a company as a dummy for the middle and executive managers (*Leaders*, column III), the size of the company where he is employed (*Small*, column IV), its property (*Private*, column V), and sector of economy as a dummy for *Trade and Restaurants*, *Extractive and Manufacture*, *Education* (column VI). As Tables 4 and 5 show, models I–VI, estimated by the ordinary least squares (OLS) were robust, and they also successfully met all the statistical tests (RESET, heterogeneity, normality, and multicollinearity of errors). As the share of migrants in the total number of people employed in the cities is not exactly available, we used a very close proxy*,* the share of migrants in the 20–64 age group within the total population in the same age, which is also the age of our respondents. $MigSh_c^{t-3}$ Ekaterinburg, 0.028 for Kurgan, 0.061 for Salekhard, 0.061 for Tyumen, 0.062 for Khanty-Mansiysk, and 0.029 for Chelyabinsk, including external and internal migrants. The share of external migrants in the total number of migrants was equal to 9% in Ekaterinburg, 13% in Kurgan, 10% in Salekhard, 31% in Tyumen, 18% in Khanty-Mansiysk, and 15% in Chelyabinsk.

We excluded the questionnaires with emergent values in order to approximate the sample values to the normal distribution, as well as the questionnaires containing gaps in the answers to the key questions (containing variables included in the regression), and the questionnaires of the circular migrants. After OLS estimations, we clustered the errors of the regressions by cities, following Moulton (1986, 1990). It helped us to identify the correlation errors within groups, which usually present themselves in cross-sectional data with a grouped structure. In our case, the grouped structure is made necessary by the fact that individuals live in particular cities. In the end, we estimated generalised least squares (GLS) models (Tables 4 and 5, column VII), which allowed us to avoid the downward bias that could occur to the OLS coefficients.

Results

The results of our OLS estimations show that migration does not affect wages in cities (Table 4, Table 5). Even if the signs of the MigSh variable are positive for the employees with higher education and for those without it, the t-statistics indicate that the coefficients are statistically insignificant. However, when moving to the GLS estimations, we see another result. For the respondents with higher education, neither the value of the MigSh coefficient nor the values of most of the other variables changed significantly. Moreover, the MigSh is still insignificant after the variation between cities was taken into account (in GLS estimations). On the contrary, for the employees with primary and secondary education, the MigSh variable becomes statistically

Table 4

Estimations for the respondents with higher education

	OLS						GLS
	I	II	III	IV	V	VI	VII
const	4.55*** (0.58)	4.56*** (0.58)	5.12*** (0.57)	5.35*** (0.57)	5.26*** (0.57)	5.18*** (0.57)	5.43*** (0.53)
EXP	0.03*** (0.008)	0.03*** (0.009)	0.02** (0.009)	0.02** (0.009)	0.02** (0.009)	0.02** (0.009)	0.02*** (0.008)
EXP^2	-0.0006*** (0.0002)	-0.0006*** (0.0002)	-0.0005** (0.0002)	-0.0005** (0.0002)	-0.004** (0.0002)	-0.004** (0.0002)	-0.005*** (0.0002)
Years of schooling	0.02 (0.04)	0.01 (0.04)	-0.02 (0.04)	-0.03 (0.04)	-0.03 (0.04)	-0.02 (0.04)	0.13*** (0.02)
MigSh	2.37 (1.97)	2.50 (1.94)	1.08 (1.94)	1.39 (1.94)	1.72 (1.96)	1.82 (1.95)	2.85 (1.86)
Male		0.16*** (0.06)	0.12** (0.05)	0.12** (0.05)	0.11** (0.05)	0.09 (0.06)	0.08 (0.05)
Leaders			0.35*** (0.07)	0.34*** (0.07)	0.34*** (0.07)	0.34*** (0.07)	0.24*** (0.07)
Small				-0.11** (0.05)	-0.14** (0.06)	-0.12** (0.06)	-0.05 (0.06)
Private					0.08 (0.06)	0.08 (0.06)	0.08 (0.06)
Trade & Restaurants						-0.09 (0.08)	-0.17** (0.07)
Extractive & Manufacture						-0.02 (0.08)	0.13 (0.08)
Education (Ind.)						-0.11 (0.08)	-0.15* (0.08)
Adj. R^2	0.02	0.04	0.09	0.10	0.10	0.10	0.23
N	424	424	424	424	424	424	424

significant. Hence, if the share of migrants in the 20–64 age group in the total population in the same age group in a city *a* is 0.01 higher than the same indicator in a city *b*, and wages in city *a* are 10% higher than in city *b*. It means that when the group or the fixed effects of cities are taken into account, the impact of migration on the wages of the less educated workers becomes significant, positive, and rather high. The explanation for the differences between the GLS results of the employees with and without higher education could be the fact that the wages of the more educated workers in the different cities included in our case study are more firmly set at the same level, while the wages for the less skilled workers differ significantly between cities. Also, the differences could be affected by the choices of jobs made by the migrants. Actually, comparing other significant variables for the employees with and without higher education, we see that the position of the leaders in the organisation make the largest positive impact on the wages of the most educated workers. On the contrary, employment in

the extractive industries and manufacturing highly affect the wages of employees without higher education. Gender variable (Male) also makes positive impact on the wages of less educated workers. In general, it can be assumed that in the cities with the higher level of migration, male workers without higher education employed in the extractive industries and manufacturing earn the highest wages. For the employees with higher education migration, city and gender are insignificant for wages. Our results give us a reason to suggest that migrant workers are complementary for the local workers with secondary and primary education. For example, migrant workers share the same workplaces as the less educated local workers. In fact, as we see from Table 3, the positions within companies for the employees with and without higher education are quite different. This result can mean that migration stimulates competition in local labour markets, encouraging workers with primary and higher education to increase their competitiveness in order to occupy higher paid jobs. A possible explanation could also be that migration helps to achieve a more effective combination of workers with different characteristics in one local labour market, leading to a growth in overall labour productivity and, consequently, to an increase in the wages of local workers.

Table 5

Estimations for the respondents with primary and secondary education

	OLS						**GLS**
	I	II	III	IV	V	VI	VII
const	4.38*** (0.24)	4.23*** (0.24)	4.28*** (0.23)	4.34*** (0.24)	4.39*** (0.24)	4.41*** (0.24)	4.48*** (0.34)
EXP	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.003 (0.01)	0.004 (0.01)
EXP^2	-0.0002 (0.0002)	-0.0002 (0.0002)	-0.0002 (0.0002)	-0.0001 (0.0002)	-0.0002 (0.0002)	-0.0001 (0.0002)	-0.0001 (0.0002)
Years of schooling	0.034** (0.017)	0.038** (0.017)	0.032* (0.017)	0.031* (0.017)	0.030* (0.017)	0.030* (0.016)	0.15*** (0.01)
MigSh	1.29 (1.77)	1.59 (1.75)	1.77 (1.72)	2.40 (1.72)	2.28 (1.72)	2.48 (1.73)	10.08*** (1.85)
Male		0.18*** (0.05)	0.17*** (0.05)	0.15*** (0.05)	0.15*** (0.05)	0.11** (0.05)	0.21*** (0.06)
Leaders			0.33*** (0.08)	0.34*** (0.08)	0.35*** (0.08)	0.39*** (0.08)	0.12 (0.08)
Small				-0.11** (0.05)	-0.09* (0.06)	-0.05 (0.06)	-0.01 (0.06)
Private					-0.06 (0.06)	-0.07 (0.07)	0.07 (0.07)
Trade & Restaurants						-0.09 (0.07)	-0.03 (0.07)
Extractive & Manufacture						0.27*** (0.08)	0.37*** (0.08)
Education (Ind.)						-0.10 (0.12)	0.06 (0.10)
Adj. R^2	0.002	0.03	0.06	0.07	0.07	0.10	0.39
N	436	436	436	436	436	436	436

Discussion

The share of migrants in the total number of people employed in the cities in our case study can be divided into two groups: (1) Ekaterinburg, Kurgan, and Chelyabinsk, where the share of migrants in the total number of people employed is about 3%; and (2) Salekhard, Tyumen, and Khanty-Mansiysk, where the share of migrants in the total number of people employed is about 6%. The northern case and the case of Tyumen, which is economically connected with the northern territories, are unique for Russia in terms of migration activity, labour demand, and salary size (Heleniak 1999, Zayonchkovskaya 1999, Gerber 2006, Guriev and Vakulenko 2015, Nalimov and Rudenko 2015, Giltman 2016). Consequently, the estimated results can reflect this peculiarity and they tell us that in the cities with an internal labour supply, insufficiency, and intensive labour demand, migration highly affects wages for the local employees with primary and secondary education. The significance of the male variable and the variable of employment in extractive and manufacturing industries also proves this suggestion. At the same time, migration is insignificant for the employees with a higher level of education, and this situation could mean that the majority of migrant workers do not claim the best workplaces, and, most probably, migrants are less competitive than the locally graduated employees. Moreover, migration positively affects the wages of workers with primary and secondary education, meaning that migrant workers may agree to perform less attractive jobs.

In the discussion section, it is necessary to note some limitations of the study results. First, the statistics on migration in Russia do not take into account the huge flows of informal migration (Andrienko and Guriev 2004). Second, for northern cities, there is an intensive circular migration (Saxinger 2016) which can affect the individual wages in the local labour markets, but the complexity of measuring the circular migration does not allow for this factor to be fully taken into account. The latter, however, is typical for other countries (Skeldon 2012). Assuming that migration could be measured including the informal flows and circular migrants, its impact on the numbers estimated by the methodology used in this work will be numerically smaller. Consequently, the research presented here does not solve the problem of estimating the impact of migration on local labour markets in the Russian cities completely but it rather determines its direction. In particular, our results show that migration is insignificant for the employees with higher education and it positively affects the wages of workers with primary and secondary education. It means that the employers in cities with labour supply insufficiency can offer higher wages and attract migrant workers. Migrant workers, in turn, make their impact on the common productivity in the city and together with the local workers create the synergistic effect that leads to the new raise of wages. From our point of view, the results of the paper can be applied not only for the Ural Federal District but also for other cities of the Russian Federation. In that case, it is important to take into account that migrants are supposed to be employed. Also, as we applied the GLS estimations that allow catching the city -specific effects, the size of the impact of migration on wages can vary between cities. Nevertheless, we can suggest, according to our results, that migrant workers with primary and secondary education are complementary for the local workers with the same level of education, and in the case when migrants are employed, their presence in the city make a positive impact on the wages of local workers.

Quite importantly, the applied approach for estimating the impact of migration on individual wages in the local labour markets and the obtained results assumed that employees are free in their decisions about the migration between cities, and thus this approach cannot be used to predict the possible impact of directive centralised initiatives, institutional or economic initiatives, or external shocks that could increase migration in the local labour markets. At the same time, the results of the research indicate the positive impact of migration on local labour markets and they can be used in social policy to alleviate the negative attitudes towards migrants among the local population.

Conclusions

The changes in the distribution of the population between the different types of cities that occurred in the recent decades in Russia indirectly indicate the presence of internal migration between cities. The studies carried out on regional data show that internal migration in Russia is affected by the differences in the functioning of local labour markets, in particular referring to the labour demand and the level of regional wages. Sociological and demographic studies conducted on the basis of the surveys suggest that internal labour migration between Russian cities is quite intensive. In the present paper, for the first time using primary Russian data, which was collected by researchers on the basis of surveys in the administrative centres of the subjects of the Ural Federal District, we studied the impact of migration on individual wages in the labour markets of Russian cities. The estimations of the models demonstrated that migration had positive and statistically significant effects on individual wages for workers with primary and secondary education in the local labour markets of the administrative centres of the UrFD subjects. It can be concluded that labour migrants and local workers with primary and secondary education are complementary in the labour markets of the studied cities.

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BOOK REVIEWS

THE SPACE OF BOREDOM: HOMELESSNESS IN THE SLOWING GLOBAL ORDER

BRUCE O'NEILL, Duke University Press, Durham and London, 2017,
280 pp., ISBN: 9780822363286

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Cities in Europe face continuous territorial challenges among which homelessness particularises as the manifestation of extreme poverty in direct connection with the characteristics of the urban space. Bucharest, large city redeveloped under communism and in constant post-socialist transformation, constitutes the urban space of focus for the ethnographic study of homelessness in Romania under the pretext of detailing boredom as significant product of structural factors such as the new economic and social paradigm imposed by globalisation.

Including a description of the social-economic background and the emerging factors for homelessness in Romania, the book starts with explaining the research approach and methodology. The study analyses boredom among the homeless people in Bucharest by investigating the practices of their daily lives in relation to the challenges of the capital city as specific urban space confronting with the territorial effects of the global economic crisis while striving to achieve the final development stages in the transition from socialism to capitalism and through European Union integration. Additionally, the societal impact of global consumerism plays one of the leading roles in the generalization of boredom among the homeless people in Romania due to strong social exclusion. The fieldwork realised for the examination and particularisation of boredom within an Eastern Europe territory constitutes also a valuable assessment of homelessness in Bucharest. Participant observation, documentary photography and interviews with both homeless people of different categories (rough sleepers, shelter users, youth, elderly etc.) and people working in the homeless sector bring significant details on homelessness as phenomenon and process in Romania.

Homelessness in Romania and its specific features are explained as a construct of the social, political and economic background of Romania starting with the 20th century, being emphasized by the communist and post-communist pace and again shaken by the disturbances of the global economic crisis. Highlighting the statement of a homeless man who feels deeply bored, boredom is theoretically and directly contextualized and differentiated from depression as the frustration of being excluded from the consumerist practices of the current society of living. Following the internalization of boredom by the homeless people with different daily narratives as imposed by the distinct urban spaces they use – squatter camps, shelters, the railway station, the analysis explores the particular manifestation of rooflessness and houselessness within Bucharest, as the most developed city in Romania and, in the same time, the hotspot of urban disparities and extreme social and housing exclusion.

The first chapter of the book follows boredom as a result of living rough in a squatter camp

while highlighting the contrast between the current unstable life of two homeless men and their desirable former communist routine of working and obtaining food from the poorly equipped grocery stores. Ethnic stigma also works as agent of societal disruption finally leading to experimenting continuous boredom in the case of a sheltered young Roma – the highlight on living at the margins of the city both socially and spatially brings new insights on homelessness and the weak efficiency of the current alleviation policies.

The following chapter develops the objective and subjective framework of homeless shelters in Bucharest, functioning as an urban infrastructure of spatial and social displacement, withal producing undisrupted boredom. Supplementary explaining the ordinary paradigm of street homelessness through the relation between the homeless people and the urban space, informal working, the lack of jobs and discrimination represent the main triggers of boredom while being excluded from the global competitive society.

Chapter three explains the dynamics of homelessness among the elderly and the construction of boredom inside their sheltered lives dominated by deprivations. The parallel between the communist and the transition transformation of the pensioning system evidences the poor resilience of the highly vulnerable social system of Romania together with the radical change in the status of the elderly in Romania – at first, the pensioners represented a necessary support for the extended family, and now ageing equals poverty and social exclusion, at general level.

The fourth chapter of the book continues to build in detail the relation between the former communist capitalist city and homelessness, resulting in the social death of long-term homeless people and their accompanying boredom as displacement from the dreamt consumerism of the global economy. The fall into homelessness often leads to a permanent or long-term state of homelessness in the conditions of a globalised city that maintains life at the margins for the poor and vulnerable population by employing in the same time an underdeveloped social prevention and management system.

Another thread of the interaction between the homeless people and the urban space is represented by the continuous search of ensuring antidotes to boredom. Passing from the use of common distractions such as drinking (both coffee and alcohol) and smoking to the need for sexual satisfaction, chapter five builds the picture of the underground sex market involving the homeless men. Living on the streets and the rough use of the urban space determine the homeless people to find alternative practices with the aim to reproduce the features of a normal social life in the generalised fight with boredom of the urban population.

The final chapters of the book are dedicated to unveiling the hidden setting of the contact between the homeless people and different commercial urban spaces. The homeless people in Bucharest experience the same social pressure for consumerism as the general population. The manifestation of the global economy within the urban space of Bucharest tends to strongly support the highly referred boredom among the homeless people – boredom which in the particular case of homelessness is associated with the lack of formal productivity and daily living.

The book is written and organized in an attractive style that can make it to be read even as a novel. The chapters' titles are short and suggestive, the photographs are numerous and complementing the text by depicting both people and places, and the references and additional comments of the text are gathered at the end of the book allowing a fluent reading and maintaining the atmosphere of the book. All these make the book interesting for readers interested in non-fiction. At some point, scholars and specialists concerned to keep up with the additional information offered by the references and the author's comments may find it difficult to combine the two while reading the book and constantly consulting the final pages of the book. Also, from the same perspective of research interests, it may appear the need for the photographs to be integrated through comments and specific references to them in

the text.

The study of boredom in the framework of homelessness in Bucharest represents an insightful investigation of extreme housing exclusion in a post-socialist context dominated by a current global dynamics. Bringing valuable scientific contribution for pluridisciplinary interests and approaches, the book stands also as useful tool for policymakers involved in the integrated alleviation of homelessness and the general development process of the city.

THE ROUTLEDGE HANDBOOK TO REGIONAL DEVELOPMENT IN CENTRAL AND EASTERN EUROPE

GÁBOR LUX and GYULA HORVÁTH (eds.),
Routledge, London and New York, 2018, XVI, 326 pp., ISBN: 9781472485717

Reviewed by IGOR SÎRODOEV,
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The reviewed book represents a reference work summarizing the main characteristics of regional development issues in Central and East European countries, members of the European Union. It is a synthesis of the structural characteristics, differences and common features of regional development with a focus on the socio-economic processes.

The book is edited by Dr. Gábor Lux of Institute for Regional Studies (Hungarian Academy of Sciences), who continued the work of late Professor Gyula Horváth, former Director-General of the Centre for Regional Studies HAS. The volume represents a collection of outcomes of a research project on the driving forces of spatial restructuring and paths of regional development within Central and East European (CEE) countries. There are other publications, both books and papers, resulted from the same project, among which it is worth noting the book of G. Horvath (2015) on the historical perspectives of regional development in the broadly defined CEE region.

Being based on the outcomes of a research project given to the Institute for Regional Studies, the book gathers mainly the authors affiliated with the Institute. Some particular topics are elaborated by foreign scholars and teams representing Finnish, Czech, and Polish universities.

The idea of this book appeared from two premises: (i) the necessity to show that the CEE group of countries is just as heterogeneous as the EU15, and any regional development policy 'one size fits all' would actually not fit any of the regions it is designed for; (ii) the need of both a comprehensive research on the post-crisis period in CEE and a synthetic view on regional development issues considering the CEE region as a whole. Thus, in the editor's opinion, one of the negative patterns of regional development research in CEE is related to the prevalence of individual case studies fitted into the western (mainly, Anglo-Saxon) theories: the RD issues were considered from the viewpoint of western theories, even if the research was realized by scholars with affiliations in the CEE countries. The reviewed book intends to provide an alternative view on the issue, a look from inside that is meant to 'repair' the flaws of the previous fragmented, excessively western-oriented, comparison-lacking studies. The aim of the book is to present the regional development issues and challenges in CEE countries (i) highlighting the aspects which are common and different for the CEE countries, (ii) taking into account the up-to-date trends in the regional development thinking, (iii) focusing on the empirically sound aspects, and (iv) embedding them in the national and regional historical contexts.

The book is divided in three parts, each of which includes chapters on a specific issue. The first part, introduces the reader to the consequences of post-socialist economic transformations, considering the 2008 economic crisis as a pivot event, which significantly complicated the transition patterns and trajectories. The second part is focused on spatial structures (urban networks and regional disparities), as well as on regional governance in the narrow CEE countries and the neighboring regions. The third part, the most heterogeneous, gathers analyses of the most important topics for the regional development process in the region: labor market, regional actors and processes, transportation, spatial planning, and resilience.

Among the topics covered by the book, we should also mention the overview of structural shifts, resulted not just from the post-socialist transition process, but from the global processes as well (Chapter 2). The transformations of specific economic and industrial sectors in the context of path dependency are discussed in Chapter 3. Chapter 4 is concerned with the business and financial sectors, which are located in only few metropolitan areas. In chapter 5, the author focuses on the transition processes in rural areas, in which agriculture plays significant role. The entrepreneurial activity is examined in chapter 6 and the role of qualitative factors, localization characteristics and endogenous development is highlighted. The reproduction of uneven development due to differences in culture and creativity is the focus of chapter 7. The second part of the book starts with analyzing the changes in the urban networks of CEE countries (Chapter 8). The current trends and the future perspective of regional governance represent the topics discussed in the next chapter (9). In chapter 10, the authors emphasize the contradictions between the purpose and the outcome of EU regional policies. Chapter 11 focuses on the fluctuating issue of cross border cooperation, which experienced a sharp rise in the past, but recently started to decline. Some characteristics of ethno-regional movements within CEE countries, as well as in some neighboring regions, are examined in the next chapter (12).

The last part of the book opens the discussion with probably the most sensible topic in EU regional development: migrations and labor market (Chapter 13). The rising role of universities and their contribution to the innovation performance of the regions constitute the subject of the Chapter 14. The next chapter (15) is concerned with the trendy topic of regional resilience in the (so significant) context of post-socialist transition. Transport issues and the promotion of the motorway-oriented transport system represent the subject of Chapter 16. In chapter 17, the contribution of spatial planning on environmentally-concerned policymaking is discussed. As a logical continuation of this topic, in the next chapter, the authors examine the representativeness of spatial research in CEE countries.

The book concludes (Chapter 19) with a series of questions addressed to the European regional policy, asked from the 'theoretically-informed' regional perspective. It calls for community of interests between the EU core and its Mediterranean, Central and East European peripheries as well as for making the EU development strategies more 'spatially aware'. The editor recognizes though that historical legacies still influence the present day economic and social processes in post-socialist countries. And from the perspective of the debate on the varieties of capitalism (Peck and Theodore 2007), the book seems to embrace the idea that the 'dependent market economy' (Nölke and Vliegenthart 2009) would represent the most precise reflection of capitalism in CEE countries.

Among the most effective parts of the book, I would like to mention its synthetic character: the authors managed to provide a comprehensive view on regional development issues in the CEE region. Such a study closes a significant gap in the scientific knowledge of this region. Of particular interest, in my opinion, is the cross-cutting issue, which can be identified across all the chapters of the book, namely, evidencing the role of capital cities and metropolitan regions, which seem to be more integrated into the broader European urban system than within their own hinterland: "The missing tier of large cities is a

development challenge emphasizing the importance of polycentric development scenarios and the role of territorial cohesion" (pp. 311).

Among the least effective parts of the book, I would like to mention the instability of the geographic scope of the analysis. The analyzed CEE region included the different countries presented below, as the editor mentions (pp. 5) "in order of emphasis": (1) Visegrad Group (Czech Republic, Slovakia, Poland, Hungary); (2) Romania and Bulgaria; (3) former Yugoslav republics excepting Bosnia and Herzegovina. As a result, the geographic scope is not the same across the chapters: under the umbrella notion of "CEE countries", some authors include Bosnia and Herzegovina, others consider Latvia and Estonia; just Visegrad countries are present in all the analyses.

The book is, also, subject to flaws inherent to any synthesis, namely, the presence of small mistakes/gaps scattered across the chapters (e.g. the Suceava-Pașcani border crossing on the Figure 16.1, pp. 264, or presenting too narrow views on the ethno-regional perspective of regional development in CEE countries, just to name a few). If examined in detail, they raise questions about how well the authors are informed about the variety of opinions presented in the regional development debates in each of the country under consideration. Although these flaws do not undermine the overall soundness and quality of the findings, including, among the authors, scholars from each of the examined country (partly, solved for the Czech Republic and Poland), would have increased the impact and the importance of the results.

In order to discover the detailed findings presented in the book, I would invite the potential reader to get through the chapters of the book. It is worth of being included in the library of each institution and research center, whose research activity concerns regional development issues. Thanks to its lofty goals and scope (both theoretical and geographical) the book will be of reference for any researcher in the field (geographer, territorial planner, economist, sociologist etc.) for the next 10 or 15 years.

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NÖLKE A., VLIEGENTHART A. (2009), *Enlarging the varieties of capitalism: The emergence of dependent market economies in East Central Europe*, World politics 61 (4), 670-702.

PECK J., THEODORE N. (2007), *Variegated capitalism*, Progress in Human Geography 31 (6), 731-772.

Aims and scopes

Analysis of the urban and regional condition needs to be interdisciplinary. In reality, urban researchers usually tend to belong to a discipline reflecting their training whether as sociologists, geographers, planners or any number of subjects concerned with the study of space and place. Our training very often endorses an appreciation of how other disciplines explore the city. For the journal the acknowledgement of the many disciplines that concerned with understanding cities and regions will be indicated by the different disciplinary back-grounds reflected in the papers published. Articles will be published by geographers, sociologists, planners, economists, political scientists, to mention just few of the disciplines involved in urban and regional study.

The Journal of Urban and Regional Analysis plans to be a key outlet publishing topical articles dealing with cities and regions. In later issues we plan to include sections devoted to notes and comments as well as a policy section outlining and discussing state and non-state initiatives aimed at improving cities and regions, together with the problems confronted by their implementation.

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1. The Journal of Urban and Regional Analysis seeks to redefine and revigorate the links between geography, sociology, planning, economy, political science. It aims to publish original academic research, critical studies and discussions of the highest scholar standard in the field of urban and regional development. Submitted papers will be evaluated on the basis of their creativity, academic quality and contributions to advancing understanding of the complex problems related to urban and regional development.

2. Submitted manuscripts must be original, unpublished contributions. They must not be submitted or accepted by any other publications. All articles submitted to the Journal will be available online, free of charge.

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MARSHAL R. (1995), *The global job crisis,* Foreign Policy, 100, 50-68.

*** (1938-1941), *General Romanian Population and Settlements Census on December the 29th 1930*, I-X, ICS, Bucharest.

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