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THE DEVELOPMENT OF STREET PATTERNS IN ISRAELI CITIES

Itzhak OMER, Orna ZAFRIR-REUVEN

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Abstract: Street patterns of Israeli cities were investigated by comparing three time periods of urban development: (I) the late 19th century until the establishment of the state of Israel in 1948; (II) 1948 until the 1980s; and (III) the late 1980s until the present. These time periods are related respectively to the pre-modern, modern and late-modern urban planning approach. Representative urban street networks were examined in selected cities by means of morphological analysis of typical street pattern properties: curvature, fragmentation, connectivity, continuity and differentiation. The study results reveal significant differences between the street patterns of the three examined periods in the development of cities in Israel. The results show clearly the gradual trends in the intensification of curvature, fragmentation, complexity and hierarchical organization of street networks as well as the weakening of the network's internal and external connectivity. The implications of these changes on connectivity and spatial integration are discussed with respect to planning approaches.

Key Words: *street pattern, planning approach, urban morphology, Israeli city.*

Introduction

The spatial form of cities in Israel has been studied while focusing mainly on the processes and ideologies involved in the creation and establishment of its urban system (Alterman and Hill 1986, Brutzkus 1964, Efrat 2004, Marom 2014, Rotbard 2015). Those who have dealt with the spatial forms of the built urban environment have concentrated primarily on small-scale studies at the level of building clusters, blocks, streets, neighborhoods and quarters (Aravot and Militanu 2000, Battat - Aviram 2014, Cohen and Amir 2008, Hatuka et al. 2012, Jacobson 2013, Marom 2009, Paldi and Wolsohn 1989) with little attention directed to the city level, especially regarding street patterns.

The creation of Israel's urban space, including the street network, was mainly done in the 20th century. Prior to Israeli independence in 1948, urban space was developed according to the pre-modern planning approach, characterized mainly by a street pattern that is nearly orthogonal, and oriented toward pedestrian movement (Omer et al. 2015). In contrary, the space planned after the independence followed modern and late-modern planning approaches based on the hierarchical classification of streets, with a strong orientation toward vehicle movement (Aravot and Militanu 2000, Rofè and Omer 2012). These two general street pattern types in Israeli cities were investigated with respect to the integration level of the street network (Omer and Zafir-Reuven 2010), walkability level and pedestrian volume distribution (Omer et al. 2015, Lerman and Omer 2013) and land use distribution (Omer and Goldblatt 2015). However, no comprehensive study was conducted on the characterization and classification of street patterns that exist in the Israeli urban space.

The aim of the present study is to identify and characterize the street patterns found in Israeli cities according to the urban planning approaches – pre-modern, modern and late-modern –

that dominated three periods: (I) the late 19th century until the establishment of the state of Israel (1948); (II) 1948 until the 1980s; and (III) the late 1980s until the present. Due to the intensive development of new cities in each of these periods, Israel provides an appropriate setting for the examination of the effects of each urban planning approach on the urban street network.

In the following sections we first discuss the role of the street network as an urban form reflecting and constructing the social and cultural context. We then briefly present the types of cities found in Israel as well as the features of their development and their street patterns. A description of the relevant methods for the characterization and classification of street patterns and the method chosen follow afterwards. Finally, we summarize and discuss our results.

Street Patterns and Urban Form

Traditional and modern urban morphology research has considered the street network as one of the basic elements of urban form (Hillier 1987, Kropf 2009, Marshall 2005, Moudon 1994, Moudon 1998, Oliveira 2013). Some studies have used urban street patterns to characterize the nature of the physical form of cities in a particular country, society or culture (Asami et al. 2001, Bonine 1979, Porta et al. 2012, Read 1999, Strano et al. 2013). Other studies have used street patterns to learn about the evolution of urban form over significant periods connected to the development of metropolitan areas (Southworth and Owens 1993, Wheeler 2008). Due to these studies and many others, it is clear that street network is a primary element of urban form that serves as the skeletal structure of urban space with important effect on the function of cities.

Despite the fact that the street pattern is only one of a city's features, it provides fundamental indications about the phases of a city's development and the forces behind this development (Anderson 1992, Asami et al. 2001, Bonine 1979, Oliveria 2013, Read 1999, Southworth and Owens 1993). For example, studies starting from the 90's show that the most recent patterns, those characterizing the suburbia and urban sprawl, are disconnected and serve to further fragment the urban space (Filion and Hammond 2003, Song and Knaap 2004, Wheeler 2008).

Generally speaking, the differences between street pattern types are related to urban planning approaches (Hebbert 2005, Marshall 2005). Areas which were created following pre-modern concepts are characterized mainly by a street pattern that is nearly orthogonal, and without a clear hierarchical classification of streets. In contrast, areas that were established and developed during the second half of the 20th century, under modern planning concepts, are characterized by a tree-like street pattern associated with the concepts of 'functional hierarchy' of street networks and the 'neighborhood unit' (Rofè and Omer 2014). The concept of 'functional hierarchy' aimed to separate traffic movement from accessible land uses while the concept of 'neighborhood unit' was suggested to design a functional infrastructure for residential communities. Thus, these street networks are vehicle-oriented and aimed to create safe and proximate communities by means of closed street patterns, cul-de-sacs and wide roads leading fairly directly from one neighborhood to another within the city (Filion and Hammond 2003, Marshall 2005, Southworth and Ben-Joseph 1995, Southworth and Ben-Joseph 1996).

The differences between street patterns are also associated with the pedestrian volume distribution and walkability level (Baran et al. 2008, Hajrasouliha and Yin 2014) and with the distribution of non-residential land use (Porta et al. 2012, Scoppa and Peponis 2015). Street patterns have also a great impact on the social dimension of the urban environment (Grannis 2005, Jacobs 1993, Southworth and Ben-Joseph 1996). For example, in the empirical studies conducted in several American cities, Grannis (2005) found that racial similarity among

neighborhoods, like metropolitan macro-level segregation, emerged primarily by means of spatial connections constructed through tertiary street networks rather than simple geographical distance. More specifically, racial similarity emerged between neighborhoods connected through internal pedestrian streets, a trend that was limited by the presence of non-pedestrian streets. Grannis (2005) called this kind of neighborhood a 't-community' so as to indicate the role of pedestrian-oriented tertiary streets in creating social communities and neighborhoods.

The consideration of street networks effect on the perception of the urban built environment is demonstrated by concepts such as 'experiential network' – the pattern formed when the street networks lack continuous boundaries (Stanton 1986), or 'street neighborhood networks' – urban neighborhoods formed of short blocks (Jacobs 1961). Street networks are also integral components of perceived neighborhoods which represent subjectively bounded neighborhoods or territories (Schnell et al. 2005). Lynch (1960) describes the function of street networks in the spatial cognitive representation of urban areas as follows: "The paths, the network of habitual or potential lines of movement through the urban complex, are the most potent means by which the whole can be ordered" (Lynch 1960: 96).

Street patterns are directly relevant to three of the urban environment's physical characteristics – differentiation, complexity and visibility – each of which can potentially affect the human experience and spatial behavior (Cubukcu and Nasar 2005, Montello 2007). Differentiation (distinctiveness) is the degree to which networks have a unique layout; in the case of streets, differentiation implies the ability to distinguish street network 'parts' according to the density, length and form of their streets. Complexity refers to the relations, composition and organization of these street networks. Visibility or visual access is the degree to which the different parts of the street networks (streets or segments of streets) are connected through vistas or visual lines. These morphological features are used in the current research to describe and classify the development of streets patterns in Israeli cities.

Analytical Framework

Selecting Case Studies

Previous studies have identified several types of cities in Israeli, each of which characterizes different periods and stages in Israel's development, and represent diverse political, cultural and social engines as well as planning approaches (Aravot and Militanu 2000, Efrat 1984). These city types are also characterized by typical street patterns (Pharhi and Zafir 2003, Zafir -Reuven 2006, Omer and Zafir-Reuven 2010), as illustrated in Fig. 1 by street networks of selected cities:

Old cities – founded up to 1880, often centuries before the beginning of the Zionist settlement at the end of the 19th century (Fig. 1a). The number of old Jewish cities is relatively small; only five of them still exist as cores of contemporary functioning cities.

Moshavot – agriculture settlements founded after 1880. They represent the beginnings of the Zionist settlement (Fig. 1b).

Semi-agriculture suburbs – established during the 1920s and 1930s, they functioned partially as agriculture settlements (primarily domestic and limited) but also – and currently mainly – as a residential option for industrial workers and professionals (Fig. 1c).

New towns – these towns were established after 1948. They represent the first urban expression of nascent post-independence Israeli sovereignty. These cities are generally divided into two subgroups, according to the period of their establishment: *early new towns*

(Fig. 1d) and *late new towns* (Fig. 1e).



Fig.1 – Examples of city types and their street patterns

The literature also defines a type of city called central or metropolitan city that refers to the three largest cities in Israel. It is worth noting that each central city includes the street patterns presented in Fig. 1.

As mentioned above, the distinction between these city types or urban areas is related to the urban planning approaches or doctrines by which they were established: urban environments established between the end of the 19th century and the establishment of the State (1948)

according to the *pre-modern* planning approach; urban environments established between 1948 until the 1980s according to the *modern* planning approach; and urban environments established from the 1980s until the present according to the *late-modern* planning period (Aravot and Militanu 2000, Farhi and Zafrir 2003, Omer and Zafrir-Reuven 2010, Zafrir-Reuven 2006).

Seven cities were selected to represent the street patterns of the respective planning approaches, having networks constructed in different periods: Hadera, Netanya, Raanana and Rishon Le-Zion (Moshavot), Bat-Yam (Semi-Agricultural Suburbs), Ashdod and Eilat (New Towns) (Fig. 2a). These cities represent well the distinction between city types in Israel (Omer

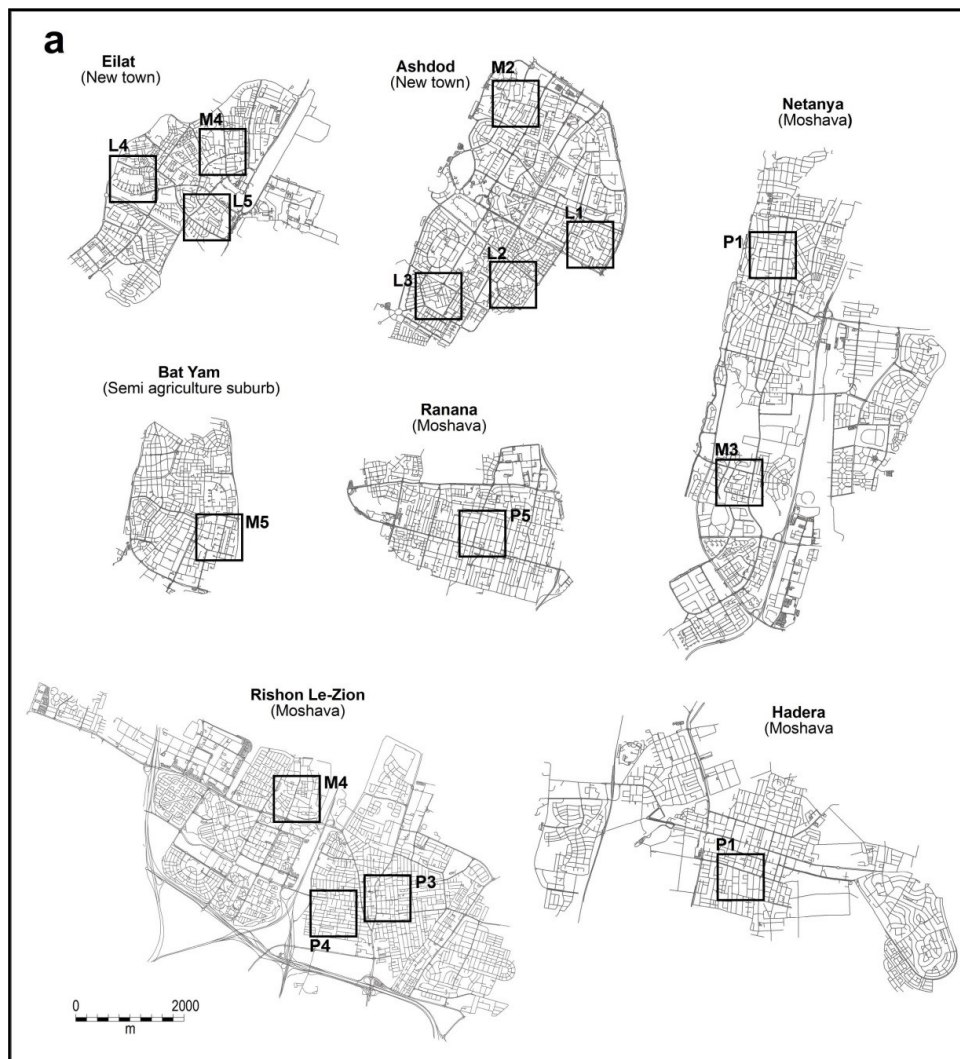


Fig. 2 – (a) Representative street networks from different periods in the selected Israeli cities. $P(n)$ = Sample of the pre-modern street network, $M(n)$ = Sample of the modern street network, $L(n)$ = Sample of the late-modern street network.

and Zafrir-Reuven 2010) as well as different geographical areas in Israel e.g. metropolitan areas and periphery. We used several sources to identify and determine the street patterns for each period: historical maps, aerial photographs as well as GIS layers, with the last serving as the basis for the analysis. Since not all cities have been mapped continuously, we also used local planning documents found in municipal planning departments to determine the exact dates of the establishment of neighborhoods and areas. A sample of 15 representative street networks (square areas of 750 m x 750 m), 5 from each of these three periods were selected (Fig. 2b). These street network 'patches' are selected according to the period of establishment

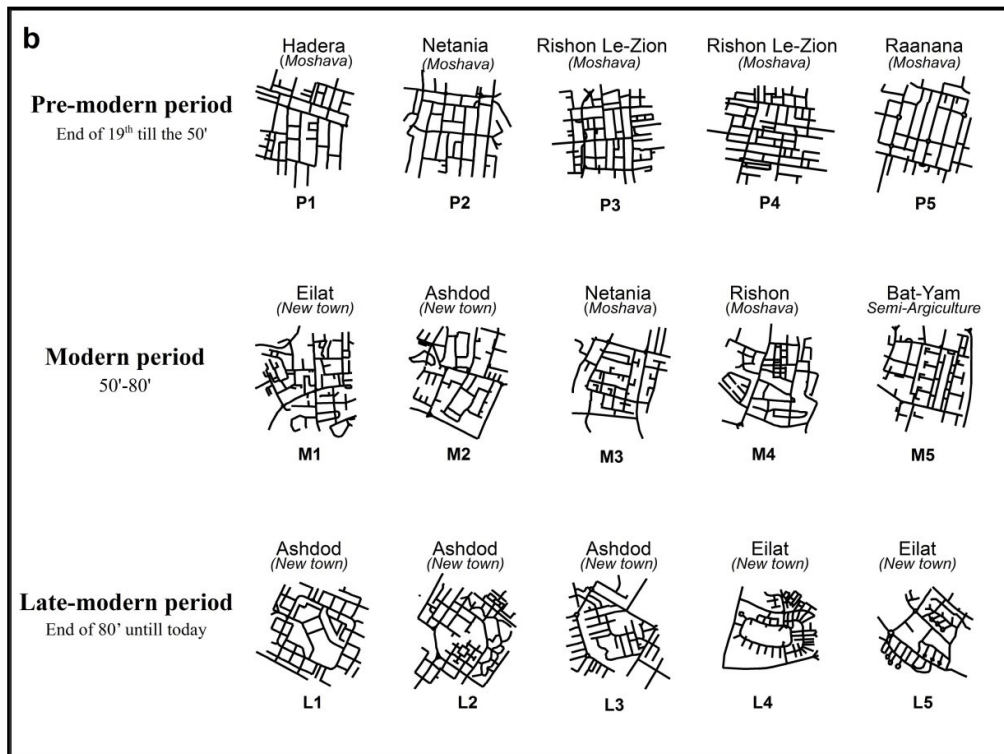


Fig. 2 – (b) Representative street network 'patches' of the examined periods/planning approaches. $P(n)$ = Sample of the pre-modern street network, $M(n)$ = Sample of the modern street network, $L(n)$ = Sample of the late-modern street network.

and their geographical location (e.g. the historical center of the city and new areas in the periphery) and the ability to isolate them from their immediate environment. The analysis aimed to reveal the morphological changes that characterize the development of street patterns in the Israeli urban space.

Analysis Methods

The study of street patterns includes issues of shape, form and composition to understand their basic characteristics and their evolution. Previous studies have classified street networks with descriptive tools and tagged them into prototypical names: Organic pattern, Grid, Orthogonal, Rectangular, Curvilinear, Tree, Capillary and so forth (Kostof 1993, Marshall 2005, Moudon 1992, Southworth and Ben-Joseph 1996, Southworth and Owens 1993). However, the

combination between the quantitative traditional Conzenian approach and the quantitative approach, particularly the space syntax approach (Hillier 1996), enables us to investigate and classify the street networks with more objective criteria (Filion and Hammond 2003, Ozbil et al. 2011, Strano et al. 2013). More specifically, consideration is generally given to the geometric and configurational aspects of street patterns: length of lines, degree of curvature, number of intersections, number and size of blocks, connectivity, integration, fragmentation (Hillier 1996, Marshall 2005, Oliveira 2013, Southworth and Owens 1993). These features are applied with methods using topological, geometrical and metric terms that might also be relevant to human spatial behavior as well as for social and culture dimensions of cities (Hillier 1987, Hillier and Iida 2005, Jiang 2007, Porta et al. 2006).

In order to describe and classify the development of streets patterns in Israeli cities in the current research we analyzed and measured the 15 selected street network 'patches' (Fig. 2a) according to the metric, geometric and topological features suggested in previous researches. More specifically, we concentrated on the following main morphological properties of street networks: curvature, fragmentation and fraction, spatial connection to the city, continuity and differentiation. Five variables were chosen to reflect these following morphological properties. We analyzed them on the basis of the measurements of different parameters in each of the street network 'patches', shown in Table 1.

Table 1

Morphological variables in selected street networks

Samples	City and Period	No. of streets	No. of Axile lines	No. of Cul de sacs	No. of Blocks	No. of all Junctions	No. of T Junctions
P2	Pre-modern- Netania	53	46	5	18	29	23
P3	Pre-modern (sample 1) - Rishon Le-Zion	62	61	7	29	43	33
P4	Pre-modern (sample 2) - Rishon Le-Zion	54	58	3	29	47	37
P5	Pre-modern - Raanana	34	39	5	16	27	21
P1	Pre-modern -Hadera	39	45	7	21	43	37
M3	Modern - Netania	31	45	18	14	26	21
M4	Modern -Rishon Le-Zion	42	61	13	17	44	38
M1	Modern - Eilat	53	97	24	12	45	42
M2	Modern - Ashdod	28	67	26	13	22	15
M5	Modern - Bat Yam	30	62	14	18	36	33
L1	Late-modern (sample 1) - Ashdod	43	56	11	18	22	30
L2	Late-modern (sample 2) - Ashdod	25	59	16	16	46	36
L3	Late-modern (sample 3) - Ashdod	46	69	29	14	22	17
L4	Late-modern (sample 1) - Eilat	61	84	21	18	29	26
L5	Late-modern (sample 3) - Eilat	33	64	10	19	36	31

Curvature was measured by the ratio between the number of streets and the number of axial lines. Axial lines are defined as the longest straight lines of direct visibility and movement that pass through streets and open spaces, thereby creating a continuous network (Hillier 1996). This measure indicates movement options having possible implications on environment perception (Montello 2007). A curved or broken street will exhibit several axial lines while a straight street will exhibit only one. We can therefore expect orthogonal patterns to have low curvature ratio values while curved patterns will have high values.

Fragmentation and fraction are measured by the ratio of cul-de-sac streets within the street network. We expect to find higher ratios of cul-de-sac streets in newer street patterns in light of the modern planning aspects of enclosure, neighborhood unit and hierarchical organization of street networks (Hebbert 2005).

Spatial connection is measured by the number of connecting routes – access lines – that link a given street pattern to the entire city's street network. Again, modern urban street patterns are characterized by high levels of enclosure, particularly at peripheral locations in the city. Therefore, these patterns were expected to exhibit a limited number of access lines or External connectivity (Song and Knaap 2004).

Continuity is measured by the percentage of T junctions out of all junctions. The basic assumption is that T-junctions will be much more dominant in modern and late-modern patterns (Marshall 2005).

Differentiation is measured by the total area of city blocks – an area fully bounded by streets – in each pattern. The assumption is that pre-modern patterns exhibit many city blocks, with the amount decreasing in modern and late-modern patterns, where the existing of dead-end roads, pedestrian trails, curved and hierarchical street networks create large lots with scattered blocks. The ratio between the number of blocks and the number of axial lines in each street pattern was chosen to describe this property.

The calculation and examination of the different measures were conducted with a GIS software (ArcGIS 10) and a Depthmap software (version 10.14). Depthmap (Turner 2004) was used to construct and measure axial lines. We also estimated ANOVAs in order to test the level of statistical significance of the differences between the street patterns.

Results and Discussion

The measurement results of the morphological features of each of the representative street networks and the statistical test are presented in Table 2. As it can be seen, the street pattern groups – pre-modern, modern and late modern – significantly differ according to these morphological features. The value of the curvature measure (the ratio of streets/axial lines) is close to 1 in the pre-modern street pattern, characterized by disordered orthogonal form, but it is much lower in the street patterns of the later periods, where the ratio streets/axial lines is less than 1 (i.e. more axial lines in the newer street patterns), which means relatively greater curvature. Fragmentation and fraction show much lower values in the pre-modern street pattern than in the newer patterns. This indicates that pre-modern patterns are characterized by greater continuity while the modern and late-modern street patterns are characterized by multiple dead-end streets and a high level of fragmentation. Similarly, the newer the pattern, the lower the level of spatial connectivity; patterns from the pre-modern period exhibit an average of 18.4 access lines while patterns from the modern period exhibit only 9.2 access lines. Areas exhibiting high numbers of access lines were indeed constructed in the 1950s. Although now located in the center of their cities (i.e. new towns) they are still poorly connected to the city's surroundings. Patterns from the late-modern period, being the most peripheral, are even less connected (an average of 7 access lines). As expected, differentiation exhibits lower ratios in the pre-modern period relative to the modern and late-modern period. However, the continuity of the street networks was found to vary little between the periods.

Thus, a significant difference was found between the patterns of the three examined periods, especially between the pre-modern one and the later periods. The above findings suggest that the street patterns in the older pre-modern period are relatively more orthogonal with less hierarchy and well-connected to the city core. As time passes, the patterns become more

fragmented, less continuous and more poorly connected. A detailed examination of the differences between the newer patterns (i.e. the modern and the late-modern ones) shows a

Table 2

Morphological features of selected street networks in Israeli cities by period of establishment

		Curvature S/A	Fragmen- tation C/S	Spatial Connec- tion	Differen- tiation A/B	Conti- nuity
Periods of city planning	Period	Ratio be- tween streets and Axial lines	Ratio be- tween cul-de- sac and streets	No. of access lines be- tween the sampled pattern and the city core	Ratio of no. of blocks to no. of axial lines	T Junc- tions out of all Junc- tions
Pre-modern - Netania	Late 19 th century until 1950s	1.15	0.09	18	2.56	0.79
Pre-modern (sample 1) - Rishon Le-Zion	"	1.02	0.11	21	2.10	0.76
Pre-modern (sample 2) - Rishon Le-Zion	"	0.93	0.06	20	2.00	0.78
Pre-modern – Raanana	"	0.87	0.15	17	2.44	0.77
Pre-modern – Hadera	"	0.87	0.18	16	2.14	0.86
Average		0.97	0.12	18.4	2.25	0.79
Modern - Netania	50's-80's	0.69	0.58	10	3.21	0.8
Modern - Rishon Le-Zion	"	0.69	0.31	7	3.59	0.86
Modern - Eilat	"	0.55	0.45	12	8.08	0.93
Modern - Ashdod	"	0.52	0.74	10	5.15	0.9
Modern - Bat Yam	"	0.48	0.47	7	3.44	0.91
Average		0.59	0.51	9.2	4.7	0.86
Late-modern (sample 1) - Ashdod	80's till today	0.77	0.26	6	3.11	0.83
Late-modern (sample 2) - Ashdod	"	0.30	0.64	6	5.13	0.78
Late-modern (sample 3) - Ashdod	"	0.78	0.63	7	4.21	0.77



Table 2

**Morphological features of selected street networks in Israeli cities
by period of establishment**

		Curva- ture S/A	Frag- men- tation C/S	Spatial Connec- tion	Differen- tiation A/B	Conti- nuity
Periods of city planning	Period	Ratio be- tween streets and Axial lines	Ratio be- tween cul-de- sac and streets	No. of access lines be- tween the sampled pattern and the city core	Ratio of no. of blocks to no. of axial lines	T Junc- tions out of all Junc- tions
Late-modern (sample 1) - Eilat	"	0.73	0.34	7	4.67	0.89
Late-modern (sample 3) - Eilat	"	0.33	0.38	9	3.37	0.86
Average		0.58	0.45	7	4.1	0.82
F		8.818	11.447	58.248	4.928	4.557
Sig.		.004	.002	<0.0001	.027	.046

S = Streets; A = Axial lines; C = Cul-de-sac; B = blocks; T = T Junctions
The bottom two lines show the results of the one-way ANOVA (df = 14)

consistent tendency over time – the intensification of the curvature and fragmentation as well as the weakening of internal and external connectivity of given street networks. Thus, the newer street patterns are more fragmented, with fewer city blocks and less connected to the city core. The one-way ANOVA comparing the street patterns of the three periods indicated a statistically significant difference between these groups ($p < 0.05$), by all the investigated morphological features.

The morphological analysis of street networks over time provides us with the following process as illustrated in Fig. 3: before the beginning of the major Zionist settlement (that is, the end of the 19th century), an organic old pattern was indeed to be found. Grids began to appear at the start of the 20th century created in part during the Ottoman period and in part during the British Mandate. However, the appearance of the two patterns was limited and local. In addition to these early street patterns, three additional types of patterns can be identified. Each of them represents a significant period of urban development embodying a planning approach and unique characteristics. These prototypical street patterns are as follows:

The pre-modern disordered orthogonal pattern – employed from the end of the 19th century until the 1950s.

The modern fragmented trees pattern – employed from the beginning of the 1950s until the 1980s.

The late-modern pictorial pattern – employed from the 1980s until the present.

Each of the three main patterns is associated with a different explanation for its distribution: the disordered orthogonal pattern was in use during a few decades, from the late 19th century till

the 1940s – by the first Zionist settlers. These settlers managed to establish about 30 agriculture settlements (moshavot), a considerable number of which became cities in which the core is characterized by this street pattern. The fragmented trees pattern was the major pattern adopted by government planners when building more than 30 new towns throughout the country after the establishment of the state in 1948. This pattern was also used to develop a vast number of new neighborhoods in existing cities, in many of them with an extensive implementation of the ‘city garden’ model, and with a city center which is separated from the residential areas. The pictorial pattern is a popular creation of the private sector, which constructed new neighborhoods wherever possible once the major period of public construction ended in the late 1980s. This explains why this pattern is found in such a large scale and in all types of cities.

The examination of the evolution of street patterns established according to distinct planning approaches – pre-modern, modern and late-modern – reveals several morphological aspects that characterize the changes that have occurred in the Israeli urban environment. The

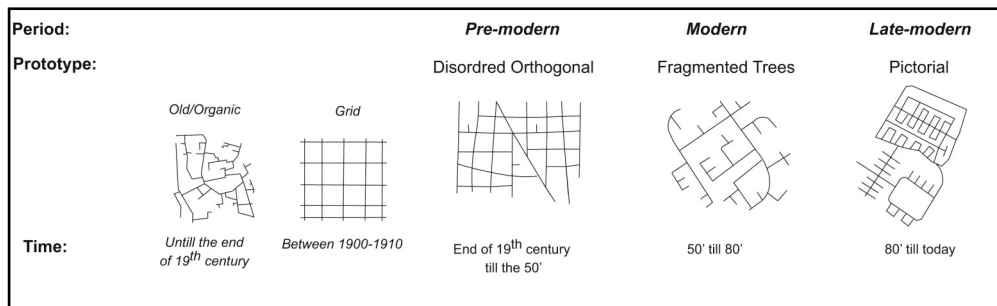


Fig. 3 – Prototypes of main street patterns found in Israeli cities, by period and planning approach

disordered orthogonal pattern, which is related to pre-modern planning, is actually a grid pattern with some distortions in the length of its lines (i.e. dead-end streets) and their direction (i.e. diagonal streets), elements that indicate the presence of initial spatial organization in the street network. The fragmented trees pattern associated with modern planning is essentially a combination of curved lines and many dead-end streets as well as many T-junctions. Thus, this pattern is characterized by the domination of spatial organization and hierarchical structure. In addition, spatial fragmentation occurs at a more-local level. The pictorial pattern that developed from the 1980s and related to late-modern planning can be viewed as the intensification of spatial fragmentation and spatial organization at higher spatial level relative to the patterns that developed during the previous three decades. This pattern reveals the much greater presence of dead-end streets as well as areas distinguishable at the global level of the pattern, which contributes to a greater spatial fragmentation. Thus, relative to the initial basic organic and grid patterns of the early pre-modern urban environments, street patterns became much more organized yet spatially fragmented over time. This finding fits those of previous research (Zafir-Reuven 2006, Omer and Zafir-Reuven 2010) that elaborated the strong relationship between city ages, period of establishment and observed street pattern.

Regarding the geographic aspects of the street patterns described above, the first pre-modern disordered orthogonal pattern is located in core areas, mainly in moshavot and semi-agriculture settlements (their location can be seen clearly in Fig. 2a, in the cities Raanana, Hadera, Netania and Rishon Le-Zion). The modern fragmented tree pattern began mainly in the peripheral New Towns (see locations in Eilat and Ashdod, in Fig. 2a) but it was slowly added in new areas of older cities (see locations in Netania, Bat-Yam and Rishon Le-Zion, Fig. 2a). By

the 1960s, this pattern had become the dominant pattern in new marginal urban areas throughout Israel (i.e. margins of older cities). Thus, despite its massive presence, the pre-modern disordered orthogonal patterns still characterized the core of the cities, while the modern fragmented trees characterized their periphery. Only during the 1980s, the modern fragmented trees pattern became dominant. The late-modern planning approach introduced the pictorial pattern that provided some geometric order to the urban space. At first, it was significant mainly in the periphery but it currently serves as a prominent street pattern in the new neighborhoods throughout the Israeli urban space.

Conclusions

In this paper we investigated street patterns of Israeli cities by comparing three time periods of urban development, each of which is related to a different urban planning approach – the pre-modern, the modern and the late-modern. For this purpose, we used several morphological measures to describe the main street pattern properties: curvature, fragmentation, spatial connection, continuity and differentiation. The results indicate that clear distinctions can be found between the street patterns established according to the three examined planning approaches, each being strongly related to significant periods in the development of cities in Israel. The results show clearly constant and gradual trends in the intensification of the curvature, fragmentation and complexity level of the spatial organization of street networks as well as the weakening of the network's internal and external connectivity.

These trends in the urban street network are quite similar to what was observed in many other countries. What is unique about the Israeli case is the rapid intensive urban settlement, which combines different urban planning ideas associated with diverse socio-cultural forces. Such diversity exists at the local scale of the neighborhoods and relatively small urban areas.

The fact that the street patterns of the Israeli urban space clearly differ from one another to become more fractured, fragmented and disconnected over time has significant implications on the urban form but also on the spatial integration and functioning of cities. The study findings concerning the development of street patterns, and the impact of planning approaches on connectivity and spatial integration in this respect, may assist to deal with the present urban planning problems of sustainability and smart growth. For example, the difficulties in creating a walkable environment and integrated social and functional urban areas are associated with the modern and late-modern urban environment due to their low levels of spatial integration. However, further research on those implications can contribute to our understanding of how urban planning approaches acquired expression in the social and functional aspects of urban areas through the morphological features of street networks.

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DO POST-SOCIALIST URBAN AREAS MAINTAIN THEIR SUSTAINABLE COMPACT FORM? ROMANIAN URBAN AREAS AS CASE STUDY

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Abstract: The compact city is regarded as an important concept in promoting sustainable development, especially within the European Union. The socialist urban planning system maintained a high compactness of the urban areas through almost exclusive predominance of the public sector in housing provision, and ideological nature of the planning strategies. After the 1990's, the administrative decentralization allowed local authorities to adopt particular urban development strategies. However, development was directly influenced by the importance of the urban administrative centre. The aim of the paper is to determine if post-socialist urban areas maintained their compact urban form or they encountered different evolution trajectories. We determined the type of changes by calculating urban form indicators at two time moments: 1990 and 2006. Furthermore, the two-way repeated-measurement ANOVA was used to identify significant changes, and to assess the effect of the development level of the urban area on the variance of form indicators. The results show that Romanian post-socialist urban areas either shifted from the compact form, "inherited" after the collapse of socialism, to more dispersed patterns, either expanded in a compact manner. Moreover, as development level got higher, urban areas were more likely to be affected by suburbanization and periurbanization. In order to respond to these challenges, new instruments such as setting of metropolitan areas or spatial framework plans could be used. Furthermore, planning should be adapted to local circumstances and to the different development trajectories of big and mid-sized urban areas.

Key Words: *compactness, development level of urban areas, functional areas, horizontal planning.*

Sustainability of urban areas as reflected by the urban form

The concept of urban development has become increasingly significant as a target for creating a better future for the world – both economically, socially and environmentally (Munier 2011, Zhou et al. 2015). Within this situation, sustainable urban development plays an important role in achieving global sustainability targets. Thus, to “make cities and human settlements inclusive, safe, resilient and sustainable” is the specific urban goal proposed in 2014 by the Open Working Group on Sustainable Development Goals for United Nations’ Millennium Development Goals.

At the European Union level, the idea of moving from urban sprawl to a ‘compact city’ has been proposed as one way to achieve improved urban sustainability (European Commission 1990, 2014). The concept became central in the sustainable development debate and it consequently translated into policy and practice (Burton 2002). Strategies on revitalisation and regeneration of inner-urban areas, built-up densification or reuse of brownfields were used in land use planning policy in many countries to stimulate compactness.

Scientific research brought evidence in support of compact development (Jabareen 2006, Jenks and Burgess 2000). The claimed advantages of a compact city are well documented and they consist of increased efficiency of transport infrastructure (Gusdorf and Hallegatte 2007), lower costs for maintenance and higher performance of public utilities (Farmani and Butler 2014), much smaller areas of land used to extend the built-up environment and less landscape fragmentation (Chen et al. 2008), the ability to encourage social interaction due to high-density of built-up areas (Elkin et al. 1991), and less need to travel by car, thus reduced noise and fuel emissions.

However, the downsides of compactness should be acknowledged, especially by planners and practitioners (Burton 2002). A higher density of built-up areas is sometimes achieved through the conversion of open and green areas. Moreover, as cities become denser, they lose the ability to mitigate the urban heat island process (Cheval and Dumitrescu 2009). Such issues should be recognized and documented, as they are important in how planning decisions are taken.

Most former socialist cities are regarded as having a high degree of compactness (Hirt 2013, Sýkora and Ourednek 2007). The socialist urban planning system maintained the urban compactness through the almost exclusive predominance of the public sector in housing provision, the inhabitants' reliance on public transport that prevailed during that time and the ideological nature of planning strategies that promoted dense urbanization to foster collective identity (Halleux et al. 2012). Moreover, the patterns of urban expansion were governed by master plans devised and approved in a top-down approach.

In Romania, after the 1990's, decision-making and administrative decentralization allowed the county and local authorities to adopt particular urban development strategies (Stanilov 2007). Through projects of urban renewal, infill development or urban expansion, the authorities tried to meet the new expectations of the local communities. These projects were, however, directly influenced by the importance of the urban administrative centre and the authorities' ability to attract private investments and to support the public ones.

Scoffham and Marat-Mendes (2013) highlighted that the sustainability of an urban area lies mostly in its ability to adapt to society's needs. Local authorities should identify the means to maintain a balance between the pressures imposed by the demographic, social and technological changes (Chen et al. 2008), and to achieve the rational use of the resources necessary to support the development of built-up areas (Echenique et al. 2012).

Sustainable urban development can also be achieved through a balanced spatial structure promoted by well-coordinated spatial development policies (European Commission 1999). Thus, the role of spatial strategies is to encourage and to guide the spatial distribution of development (e.g., constructed areas and the related infrastructure), taking into account the need to preserve the environmental assets. To achieve this, a close cooperation between the authorities responsible with spatial planning at vertical and horizontal levels is needed (Ianoş et al. 2012).

The term **urban form** is used to express the spatial configuration of the fixed elements within the urban area (Anderson et al. 1996). The scale at which urban form analysis is performed can vary from building, street, block, neighbourhood and city (Dempsey et al. 2010), to the area located in the influence zone of the city (Arribas-Bel et al. 2011).

Different approaches have been proposed to systematically analyse and classify the urban form. While some authors refer to the physical structure of the city (i.e. morphological structure as expressed by shape and disposition of the urban patches) or land use/land cover structure (Galster et al. 2001), others include also aspects related to socio-demographic and economic

activities (Huang et al. 2007). Even so, a difference should be made between the urban form itself, as a static measure for a given moment in time, and urban growth which represents a dynamic process which alters the urban form (Schwarz 2010).

Urban form and its evolution over time are the result of a variety of factors. Natural features, such as topography or the presence of water bodies and natural risk areas, economic and demographic development, cultural background, are all elements that induce form differences (Anderson et al. 1996). Moreover, land-use policies (i.e. zoning, master plans, built-up containment limits) and planning approaches have been proven to have a strong impact over the dynamic of the urban form (Camagni et al. 2002, Zhao 2010).

Urban form dynamics highlights the relationship between the city (i.e. urban core) and its functional area (Grimm et al. 2008). The analysis which looks beyond the administrative borders of the urban core allows the identification of more efficient methods for the planning of urban areas (Aguilera et al. 2011, Schwarz 2010).

In the urban form analysis, the choice of indicators is essential. Indicators should be able to reflect the processes specific to urban expansion (Jaeger et al. 2010), such as sprawl or suburbanization, to allow researchers and practitioners to relate them to urban development strategies, and the necessity of adapting planning policies (Galster et al. 2001). Huang et al. (2007) identify four dimensions which should be covered by urban form indicators: (a) *centrality*, (b) *complexity*, (c) *compactness*, referring to the structure, shape and fragmentation of built-up patches, and (d) *porosity*, referring to the share and distribution of green areas.

The Territorial Agenda 2020 established by the EU (European Commission 2011), recommends a horizontal approach, focused on cities and their functional areas, in order to increase the sustainability of the planning process. In this case, the role played by planning becomes that of guiding urban development toward a desired form, without limiting the society's needs (Waldheim 2006). Throughout the rest of the paper, we will use the term **urban area** to refer to the **city core** and its **functional area**.

Post-socialist urban areas are characterized by significant administrative transformations, namely a higher importance of local and supra-local governance and the integration of public participation into the planning process (Petrișor 2010), and experience processes which were not present during the socialist times, such as urban sprawl (Suditu et al. 2010) or urban shrinkage. In the context of these transformations and urban sustainability being promoted both at European and global level through the concept of urban compactness, it becomes important to identify how post-socialist urban areas could contribute to achieving this target. Thus, the aim of the paper is to determine if post-socialist urban areas maintain their compact urban form or they encounter different evolution trajectories. Considering urban form as the result of the physical structure and the size of the urban fabric, and focusing on urban areas in Romania, the study addresses the following questions:

- a) What are the spatial and temporal form changes experienced by post-socialist urban areas?
- b) Is urban form dynamics connected to the development level of urban areas?

Methodology for assessing the spatial and temporal dynamics of urban form

Setting the study areas

A number of 29 urban areas in Romania (Fig. 1) were chosen for the urban form assessment. The urban areas were selected based on their location within the counties with the most severe

expansion of the built-up space, as identified by the studies of Suditu et al. (2010) and Petrișor et al. (2010).

The first step of the analysis was to delineate the administrative boundaries of each urban core and its functional area (Fig. 2). Following the Urban Audit methodology (Bretagnolle et al. 2011) we considered **urban areas** as having two spatial dimensions:

- a) the core city, which encompasses the administrative boundary of the city, and
- b) the Larger Urban Zone (LUZ), which is an approximation of the functional urban area centred around the core.

According to the National Institute of Statistics (NIS 2013), in Romania, the designation of functional areas consisted of the aggregation of "suburban communes", namely the neighbouring rural administrative units which are urbanized, industrialized or have a high economic development level. The rural administrative units are independently governed, they have lower budgets as compared to the adjacent cities, and less opportunities to access funding for the public infrastructure development. However, they are highly vulnerable to urban sprawl, and in some cases the intensity of built-up development is higher than in the city core (Suditu et al. 2010). For urban areas on which NIS did not provide specific information, the functional areas were determined based on the law promulgated in 1968 (National Assembly 1968), which provides a detailed list of the suburban communes in Romania. The borders of the urban areas were revised in order to meet the present administrative limits (e.g. some of the suburban communes have become districts of the city core).

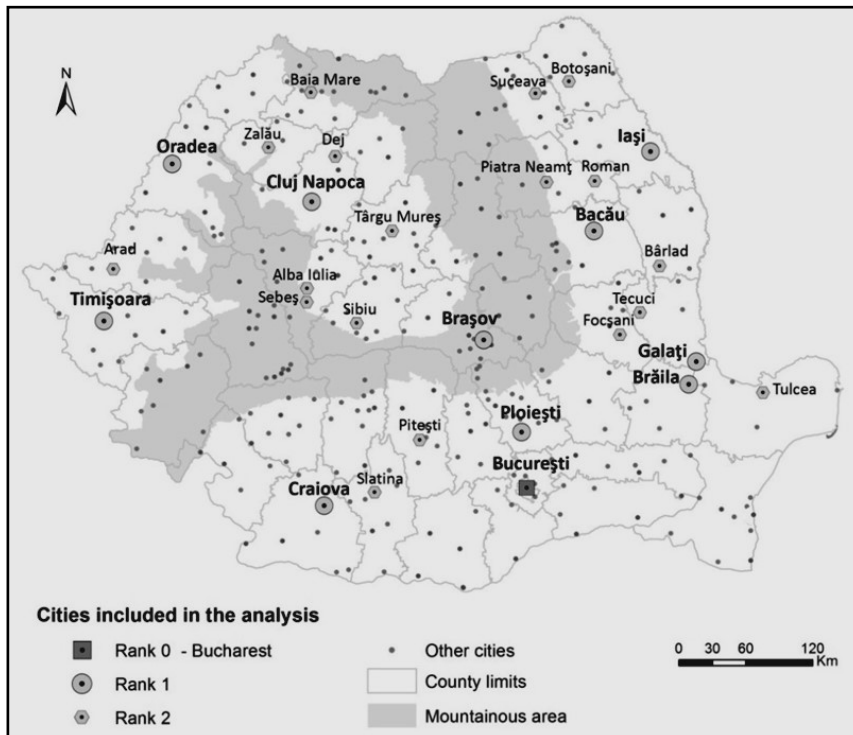


Fig. 1 – Distribution of urban areas in Romania and selected case studies

Calculation of urban form indicators

The indicators employed to characterize the urban form cover the criteria set by Huang et al. (2007): centrality - *centrality index*, compactness - *compactness index* and *compactness index of the largest patch*, and porosity - *porosity index* (Galster et al. 2001, Schwarz 2010). "The largest patch" refers to continuous built-up areas within the city core administrative borders, without taking into account the neighbourhoods spatially detached from it.

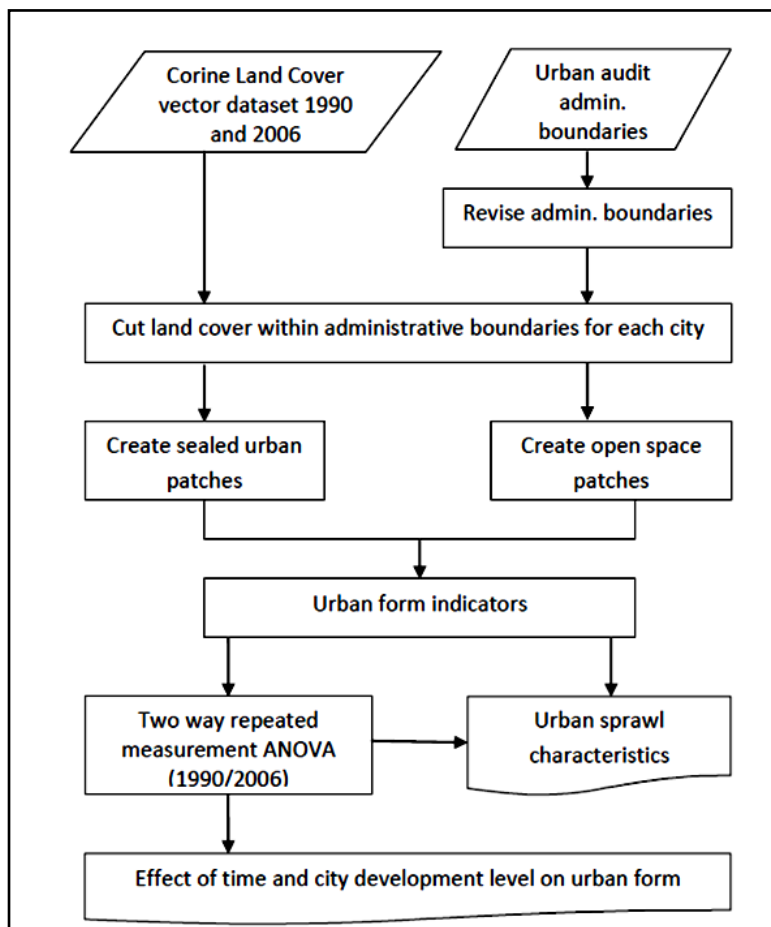


Fig. 2 – Workflow of data processing and analysis

Corine Land Cover datasets for 1990 (EEA 2013a) and 2006 (EEA 2013b) were used to derive the land cover data necessary for urban form indicators computation. The calculation of the first three indicators was based on eight land cover classes corresponding to built-up areas (Table 1). These classes were grouped into one category named *sealed urban patches* (Schwarz 2010). *Porosity index* takes into consideration the CLC classes corresponding to *green and open spaces* (Milego 2007). A detailed description of the formulas and interpretation of the four indicators is provided in Table 2.

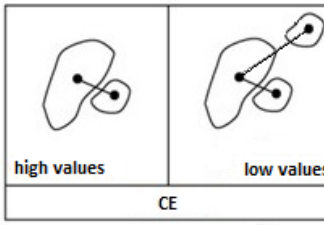
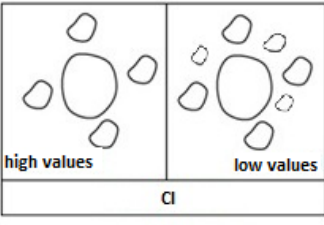
Table 1

Corine Land Cover classes used to set of open space and sealed urban patches

CLC code	Sealed urban classes	CLC code	Green and open space classes
111	Continuous urban fabric	141	Green urban areas
112	Discontinuous urban fabric	311	Broad-leaved forest
121	Industrial or commercial units	312	Coniferous forest
122	Road and rail networks and associated land	313	Mixed forest
123	Port areas	322	Moors and heath land
124	Airports	324	Transitional woodland-shrub
132	Dump sites		
133	Construction sites		

Table 2

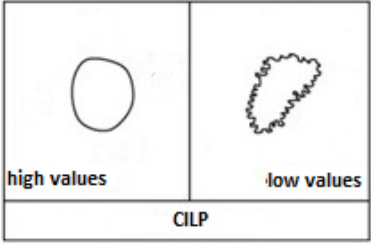
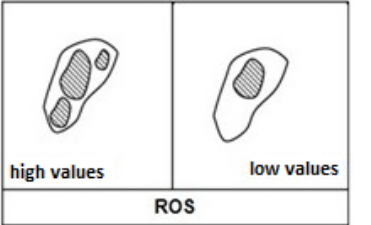
Urban form indicators - formulas and interpretation

Indicator	Measurement	Interpretation
Centrality index (centrality)	$Centrality = \frac{\sum_{i=1}^{N-1} D_i / N - 1}{R} = \frac{\sum_{i=1}^{N-1} D_i / N - 1}{\sqrt{s/\pi}}$ <p>D_i is the distance of centroid of patch i to centroid of the largest patch, N is the total number of patches, R is the radius of a circle with area of s, and s is the summarization area of all patches</p>	<p>Centrality measures the average distance of the dispersed parts to the city centre, defined as the centroid of the largest patch.</p> 
Compactness index (CI)	$CI = \frac{\sum P_i / p_i}{N^2} = \frac{\sum 2\pi \sqrt{s_i / \pi} / p_i}{N^2}$ <p>s_i and p_i are the area and perimeter of patch i, P_i is the perimeter of a circle with an area of s_i, N is the total number of patches</p>	<p>CI measures the individual patch shape and the fragmentation of the overall urban landscape; the more regular the patch shape and the smaller the patch number, the bigger the CI value.</p> 

See the next page

Table 2

Urban form indicators - formulas and interpretation

Indicator	Measurement	Interpretation
Compactness index of the largest patch (CILP)	$CILP = \frac{2\pi\sqrt{s/\pi}}{p}$ <p>, s and p are the area and perimeter of the largest patch</p>	<p>CILP measures the overall shape of the urban centre and is higher for a more regular patch.</p> 
Porosity (ROS)	$ROS = s'/s \times 100$ <p>, s' is the summarization area of all open space patches, s is summarization of the urban area</p>	<p>ROS measures the ratio of open space compared to the total urban area.</p> 

The graphical representation for urban form indicators is an interpretation after Huang et al. (2007)

Analysis of urban form dynamics

We categorized the urban areas according to the **development level (DL)**, based on the settlement ranking in the National Spatial Plan of Romania - Section Settlements Network (Romanian Government 2001). The DL reflects the level of modernization and it is an expression of the present and near future importance of a settlement within the urban network, from an economic, administrative, political, social, economic and cultural perspective (Petrișor 2010). The DL was set as follows:

City of Rank } 0 → DL 1
 City of Rank } 1
 City of Rank 2 → DL 2

In order to determine the significance of urban form changes over time, as well as the effect of the DL of the urban area on the variance of form indicators we performed a two-way repeated-

measurement ANOVA. The analysis allows observations on the effect of factors on a dependent variable (i.e. each urban form indicator). The repeated measurement design tests the following null hypotheses: a) factor 1 (e.g. time) has no effect on the urban form indicator mean; b) factor 2 (e.g. DL) has no effect on the urban form indicator mean; c) there is no interaction between factor 1 and factor 2 (Gotelli and Ellison 2013). Levene's test and Box's test were consulted for checking homogeneity of variance respectively the equality of covariance matrices assumptions (Field 2009).

Results

The results showed that the *Centrality* index (CE) recorded a dominant decreasing trend between 1990 and 2006 (Fig. 3, Table 3). The ANOVA analysis identified this change as being statistically significant (Table 4), but with no significant differences induced by the development level of the urban area. The decrease in Centrality expresses an increase of distance between the city centre and the new built-up areas as a result of both linear development along the transport routes, and occurrence of new built-up areas far from the urban centre. Higher decreases were recorded by Cluj Napoca, Oradea, Bacău (DL 1 urban areas), and by Suceava and Brăila (DL 2).

Compactness (CI) values have best highlighted the urban form variance induced by different development levels (Fig. 3). Overall, urban areas with a DL 1 recorded significantly lower values of compactness, regardless of considered time step (Table 4). The values suggest a higher fragmentation of built-up patches.

The trend of CI values for urban areas of DL 1 shows a dominant increase (i.e. decrease of patch fragmentation), most significant changes being recorded in Timișoara (Fig. 4). The trend is mainly due to the expansion of the city core, as built areas located in the near proximity (i.e. in the functional area) have been incorporated to it. For half of the DL 2 urban areas, the CI values have remained constant between the two time steps (Table 3), while for the other half the values predominantly decreased. Significant changes were recorded in Sibiu (decrease of CI values) and Bârlad (increase of CI values).

Table 3

Number of urban areas in respect to the trend of the indicators

Development level	CE			CI			CILP			ROS		
	↓	↑	-	↓	↑	-	↓	↑	-	↓	↑	-
DL 1	10	1	0	2	5	4	11	0	0	2	5	4
DL 2	17	1	0	6	3	9	17	0	1	4	6	8
Total	27	2	0	8	8	13	28	0	1	6	11	12

The symbols show: ↓ decrease of the index; ↑ increase of the index; - constant values.

The box plots (Fig. 3) and the ANOVA results (Table 4) on *CILP* values revealed significant differences between city cores, both due to development level and dynamics over time. Overall, the city cores of DL 1 type shown a higher fragmentation of the periphery, but over time the fragmentation tended to widen for both categories. Significant decreases were recorded in Galați (DL 1 urban area), Sebeș and Botoșani (DL 2 urban areas).

Porosity values (ROS) registered a slight increase for urban areas of DL 1 type and a decrease for those of DL 2 type (Table 3), but changes were not statistically significant (Table 4).

However, urban areas of DL 2 have higher porosity values, suggesting an increased proportion of green and open spaces as compared to those of DL 1 type.

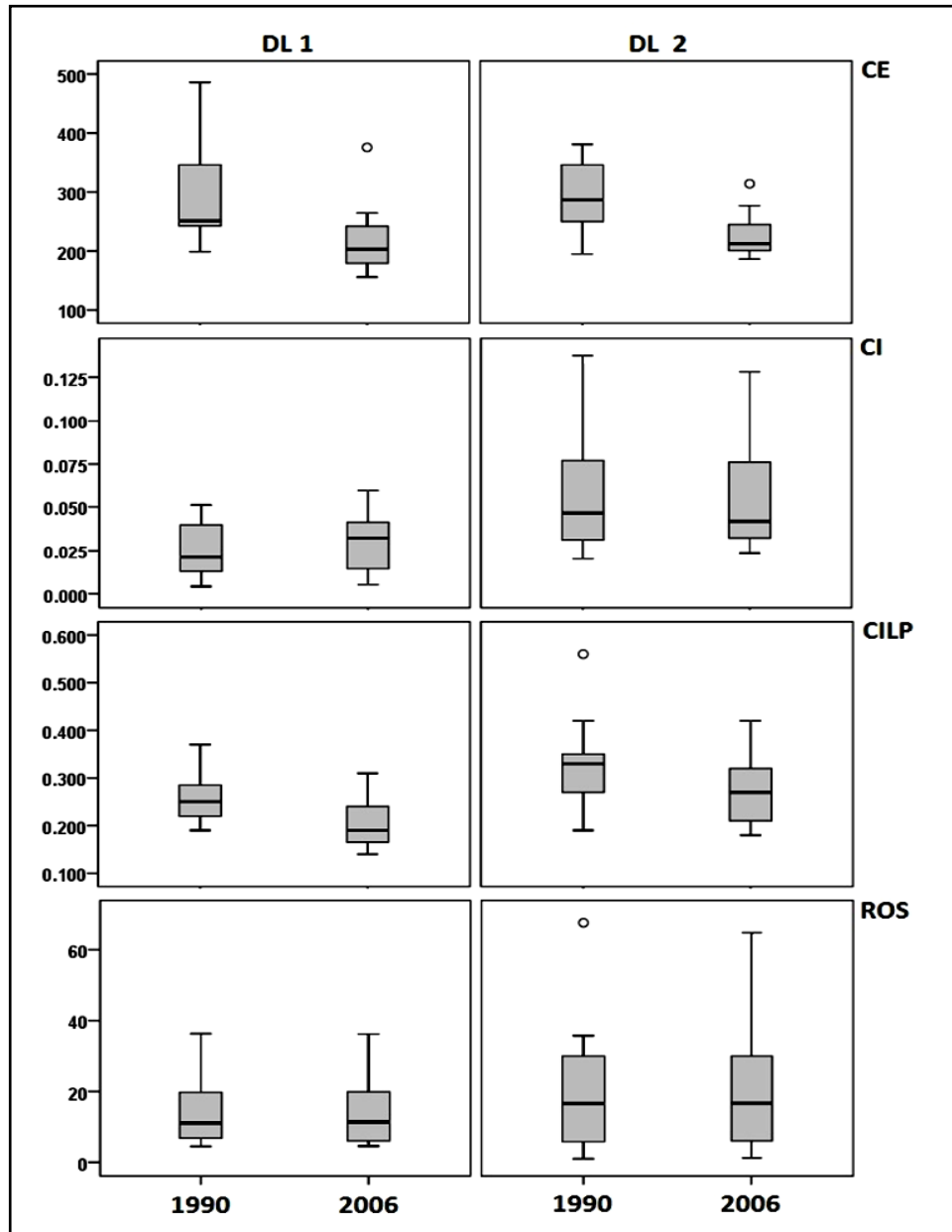


Fig. 3 – Dynamics of urban form indicators between 1990 and 2006, for urban areas with different development levels

Table 4

Results of two-way repeated-measurement ANOVA analysis

Urban form indicator		Factor	F	df	p
Centrality	within subject effects	time	46.833	1	.000*
		time* DL	1.793	1	.191
	between subjects effects	DL	.917	1	.346
CI	within subject effects	time	.456	1	.505
		time* DL	2.443	1	.129
	between subjects effects	DL	7.665	1	.010*
CILP	within subject effects	time	49.807	1	.000*
		time* DL	.316	1	.579
	between subjects effects	DL	6.462	1	.017*
ROS	within subject effects	time	.095	1	.760
		time* DL	1.905	1	.178
	between subjects effects	DL	1.130	1	.297

*statistically significant values

Discussion on urban form changes in post-socialist Romania

Post-socialist cities are a special case in the analysis of urban form dynamics. The transition from a centralized, top-down planning system to the one based on market economy led to important changes to the planning system (Benedek 2013), having a direct effect on the spatial structure of urban areas. By using Romanian urban areas as case study, our study aimed to highlight the urban form changes that cities and their functional areas faced, sixteen years after the fall of the socialist regime. The results showed a shift from the "inherited" compact city to a type of expansion dependent on the administrative and economic power of the city core.

The selected indicators allowed us to highlight specific processes related to the transformations of city cores and their functional areas (Jaeger et al. 2010). In the following paragraphs, we will discuss the processes connected to the urban form changes and we will further emphasize the need to restructure spatial planning at local and supra local level in order to respond to development challenges.

Periurbanization accentuated in Romanian urban areas, as shown by the decrease of CE and CI values. This process highlights the pressure faced by functional areas (Schwarz 2010) as they become attractive due to lower taxes and land prices. One should bear in mind that functional areas with strong dynamics are mixed environments with a high degree of urbanization, but they are also rural in character. Many of the administrative units which are components of the functional areas do not have the financial capabilities to support the expansion of public utilities for the newly and rapidly developed built-up areas (Iojă et al. 2011, Iojă et al. 2014).

In line with the findings of Suditu et al. (2010), **urban sprawl** affects the vast majority of urban areas in Romania. The CE values show an increase of the distance between the city centre and the new built-up patches for all the analysed urban areas. However, the results showed that sprawl is more pronounced in urban areas of DL 1 type (Rank 0 and 1). The identified trend is similar to that observed by Stanilov (2007), who notes that in post-socialist countries the polarization of economic activities in large cities leads to them being more dynamic. The fact that these cities are the major centres of services, education, capital, know-how, and serve as "gates" to international markets, gives them an increasing role in the reorganization of

economic activities and real estate market at national level (Stead and Nadin 2008).

The evolution of CI values for DL 1 type urban areas revealed an **increase of compactness**. However, the result should be interpreted in the context of new built-up development in continuation of the existing one. Most frequently, development involves the expansion of built-up land in the functional areas. Nevertheless, spatial continuity is separated by the administrative arrangements (see Fig. 4, north of Timișoara).

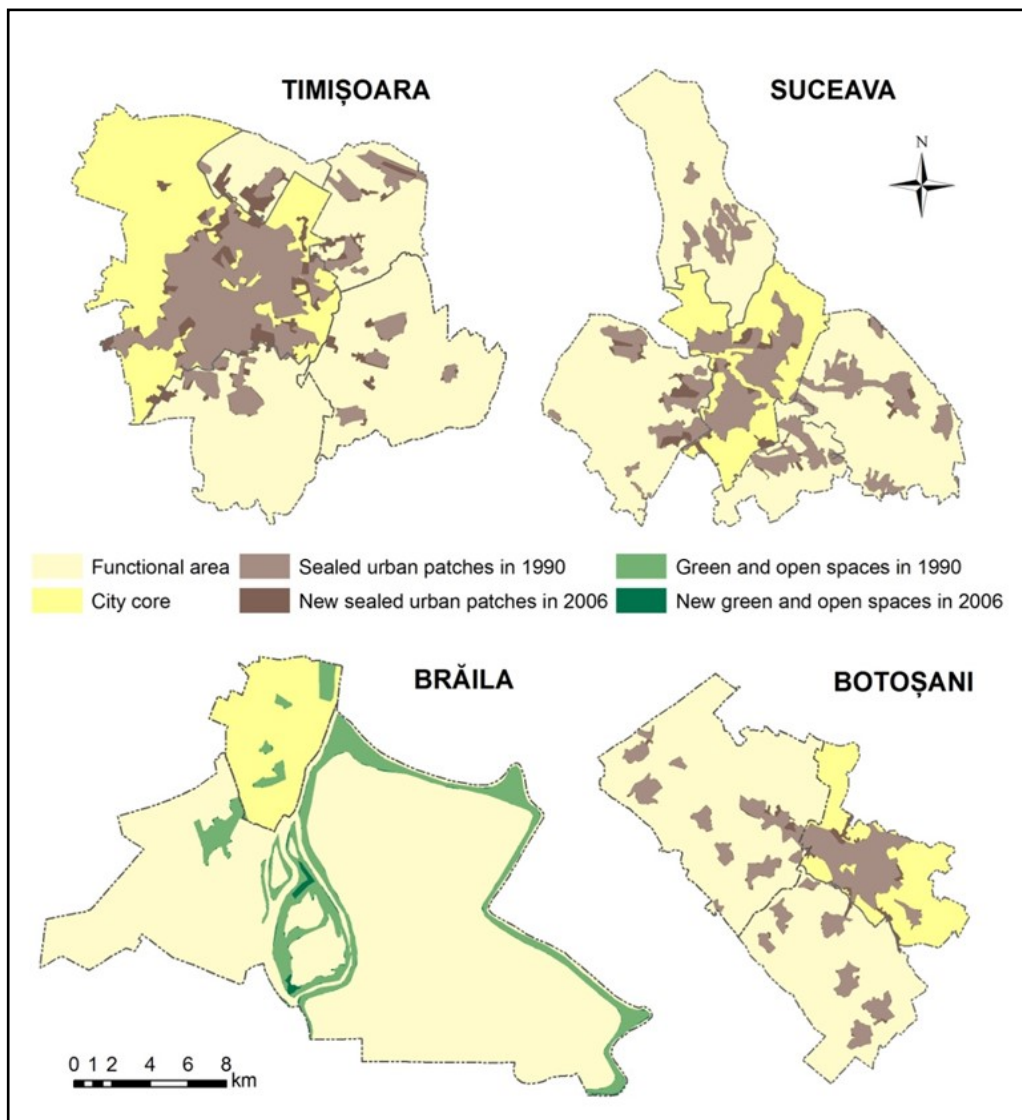


Fig. 4 – Dynamics of sealed urban patches and green and open spaces in four urban areas in Romania

In 45% of cases, **compactness values remained constant** between the two time steps, the share of urban areas with this trend being higher for GD2 type cities. Although it does not provide an overview of urban growth, such values might indicate two possibilities: a) the positive impact of sustainable local policies on urban planning, or b) no significant increase of the built-up areas. Salvati (2013) indicates that under the influence of self-contained urban growth policies, urban areas which were historically compact are more likely to maintain their form over time. We recommend further research in this regard, in order to correlate the findings with local strategies of densification, urban conversion or urban regeneration.

The dynamics of CILP values highlight that **suburbanization** affects both large and medium-sized urban areas. Under the pressure of private investors and encouraged by the local authorities, as they saw it as a way to increase their budget, this process became characteristic to post-socialist cities (Sýkora and Ourednek 2007). In Romania, suburbanization is a severe threat to the sustainable development of the urban landscape due to its connections with exception driven urbanism, abandonment of agricultural land (Grădinaru et al. 2015) and excessive development in areas with low connection to public transportation. The effective control of suburban built-up expansion cannot be achieved as long as the national legislation permits the incremental increase of built-up areas (every 2-3 years), allowing for constant exemptions from the urban plans that are in force.

Even though lower porosity values for DL 1 urban areas indicate less sustainability, they must be analysed in a spatial context. The location of DL 1 urban areas in the plains, mainly involves an increased share of agricultural land in the functional areas. This is in contrast to the DL 2 urban areas, where the proximity to the Carpathians and Subcarpathians ensures high access to nearby green infrastructure.

The need to promote the sustainable development of urban areas is one of the focal points of urban planning at the European level. The European Commission (2014) points out that the unplanned expansion of compact cities compromises the advantages created through the efficient resources use. Furthermore, the Commission highlights the gap created by the differentiated planning of the urban centre and functional areas, and it recommends to focus planning on the functionality of urban areas as an optimal approach particularly where large cities are concerned (European Commission 2011).

As in Romania the horizontal collaboration between the authorities in the city core and the functional areas is rather weak, setting **metropolitan areas** as administrative bodies with decision power in spatial planning, or increasing the power of the existing ones, could become a step in the sustainable management of urban areas (Ianoş et al. 2012). However, this involves the need to reconsider the relation between the city core and its functional area, and the legal and administrative status of suburban communes. As planning tool, the use of **spatial framework plans** at local level for guiding built-up development could be a solution to promote and coordinate sustainable development (Stead and Nadin 2008). Such plans could strengthen cooperation between the local authorities who adopted the plans, thus minimizing the adverse effects of unorganized development due to the competition for attracting funds and investments.

The analysis has some limitations that must be considered. The spatial availability of Corine Land Cover data allowed the inclusion of a sufficient number of urban areas to have an overview of the situation at national level. However, the spatial resolution of the data (i.e. minimum mapping unit = 25 ha) does not allow a detailed analysis. The use of aerial imagery and other cartographic materials with high resolution might reveal a higher fragmentation of built-up areas. The temporal resolution of the data set offered the possibility to analyse the urban form in two periods characterized by different spatial planning approaches: the end of the socialist period and 16 years later. However, as the economic crisis in 2008 affected the real estate

market, and therefore the development of built-up areas (Grădinaru et al. 2015), more recent data might reveal new patterns. Since the Copernicus Program for monitoring land use at European level expects the validation and the launch of CLC 2012, the new dataset can be used for further research.

Conclusions

We showed that post-socialist urban areas either shifted from the compact form to more dispersed patterns, either expanded in a compact manner. Although specific processes of urban expansion, such as suburbanization or periurbanization, affect the vast majority of analysed cities, they are influenced by the development level of the urban area.

The DL 1 urban areas are more dynamic in terms of built-up development as compared to the smaller DL 2 urban areas. The much higher dispersion (e.g. sprawl) of DL 1 urban areas and the tendency to expand and incorporate the built-up land in the functional areas highlight the need to adopt alternative planning approaches. Efficient horizontal planning in the city core (officially, urban area) and its functional area (officially, rural communes) could be achieved by creating planning tools that strengthen their collaboration (e.g. functional metropolitan areas) (Ianoş et al. 2012).

The dynamics of DL 2 urban areas highlighted two issues: a) although urban areas are less affected by sprawl, suburbanization is a process as active as in the DL 1 urban areas; and b) in DL 2 urban areas, urban form indicators showed a greater variability compared to DL 1, but for a large number of urban areas the values remained constant. Such differences highlight the fact that planning should be adapted to local circumstances and to the different development trajectories of mid-sized urban areas.

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EPISTEMIC COMMUNITIES AND SERVICE DELIVERY CHOICES IN SPANISH MUNICIPAL ADMINISTRATIONS

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Abstract: This article contributes to the debate on the use of alternative formulas for public service provision with arguments related to epistemic communities' influence. Drawing on the literature on models of local public service delivery, the role of internal epistemic communities is discussed and tested through the consideration of two different communities related to specific municipal areas such as personal and urban services. The results demonstrate that the association of urban services' epistemic communities with alternative formulas for direct provision to deliver services is greater than in the case of personal services' epistemic community. Those findings contribute to the academic debate not only with arguments and evidence that reinforces the role of variables included in previous research but also by introducing the role of epistemic communities in determining some policy options (as the use of local public-service delivery formulas).

Key Words: *epistemic community, local government, service delivery, outsourcing.*

Introduction

There is a growing body of literature regarding the determinants of the production and delivery of local public services (Brown and Potoski 2003a, Joassart-Marcelli and Musso 2005, Lamothe et al. 2008). Despite their increasing number, the studies undertaken in this field display little consensus on which factors most strongly influence the choice of mechanisms by local governments for public service provision. The current debate concerns the options available to local governments, i.e. whether to opt for the direct provision of certain public services or to choose between alternative mechanisms, such as the creation of special-purpose bodies dependent on the local administration, or contracting services out to external agents, as in the 'make or buy dilemma' (Leiblein et al. 2002, Lamothe et al. 2008).

In the context of this literature, our study aims to add to it further by introducing the role of epistemic communities, an approach that fits neatly in the 'make or buy' debate. However, in addition to the variables already tested (those variables that we use as controls) we also concentrate on those variables that can illustrate the presence of epistemic communities and their role in public-service delivery choices.

The increasing amount of literature on the role played by epistemic communities in the framing of public policies has defined these communities as networks of recognized experts in a specific knowledge field; their tasks are directed towards contributing to the collective debate on subjects related to their field of knowledge, recommending policies and identifying key points for possible negotiation (see, among other authors, Haas 1992, Radaelli 1995, Jordana and Levi-Faur 2004). "It is the prestige, training and reputation of its members that generate the sort of expertise valued by political elites" (Haas 1992: 17) and which serve to reduce the uncertainty present in the elaboration, implementation and reform of public policies, which are rapidly becoming more complex (Marier 2008). Communities of specialists play a decisive role in promoting or rejecting innovations and reforms in the field of public policy, since they have

the explicit objective of influencing the decisions taken by public authorities (Toke 1999, Radaelli 2000). Moreover, they can also use their expert knowledge to create uncertainty to increase the strategic advantage of their purposes (Morin 2014).

Even if there is no clear consensus on how to identify an epistemic community, there is some evidence that highlights the existence of such articulated groups in local governments around different sectoral areas (related to the policy field of intervention). This paper refers to the incidence of two sectoral communities on the selection of particular service-provision mechanisms controlling for other specific variables highlighted by the literature.

In addition to epistemic communities, there are other variables that affect the choice of public-service delivery formulas. Both theoretical and empirical evidence (Ferris and Graddy 1986, Bel and Fageda 2007, Levin and Tadelis 2010, González-Gómez et al. 2011) indicate that the characteristics of the service are a central factor in choosing a mechanism for provision. In other words, certain services are better catered for being delivered by a particular management formula. Such suitability has tended to be associated, according to arguments from the field of economics and more specifically from transaction costs theory, with the specificity of the service and with the difficulty in measuring it (Brown and Potoski 2003a). Our study recognizes the explanatory weight of the nature of the service but it assumes it is constant between the distinct town councils that provide them.

Other studies, in evaluating the decision regarding the management formulas for public service provision, award explanatory power to variables such as the capacities and management structure of the local government or its position in the market of suppliers (Lamothe et al. 2008). The evaluation covers among other areas, the structure of the market, the management model and the capacity to incorporate citizens and business into the process (Navarro Yañez et al. 2008), the metropolitan location of the municipality or its industrial structure, the professionalization of its management level, its fiscal capacity, and the perceptions of the agents involved including public employees (Brown and Potoski 2003a, Joassart-Marcelli and Musso 2005, Fernandez et al. 2008, Zullo 2009). Such research considers not only the specific characteristics of the service but also those of the municipal organisation taking the management formula decision. Although its arguments are based on results from environments removed from the reality of Spanish public administration, they provide the starting point for the present analysis.

The discussion of the role of epistemic communities and its characterization in the literature is complemented by introducing empirical evidence coming from the analysis of public-service delivery mechanisms in every town council in Catalonia with over 5 000 inhabitants. The approximation proposed is based on town councils, which, independently of the nature of the service in question, opt between direct service supply by units of the council itself or by looking for other alternatives. If they pursue the latter they can opt for provision via the creation of special purpose bodies depending on the council (the argument being that they offer greater flexibility, specialisation and ease of cooperation with the representatives of the sector) or outsourcing, thus incorporating private agents into public service delivery.

This article starts with a conceptual discussion on the modes of local service provision and the role of different epistemic communities that forms the basis of our hypothesis. Subsequently, this is followed by a section on the data and methods proposed to test the hypothesis together with a presentation of our results and consequent discussion. The article finishes by stressing the role of epistemic communities on local service delivery and with some concluding remarks.

Modes of Service Provision and Epistemic Communities

This study focuses on the role of certain internal professional collectives which, from technical (not political) positions, reflect opposing tendencies in public management, as they are explanatory variables of the alternative service provision mechanisms selection.

Following the argument of the 'flight' of core structures from public administrations, three modes of public service provision are identified, according to their proximity to the central structure of the administration: (1) direct supply by units of the council itself, (2) provision via the creation of special purpose bodies depending on the council, and (3) delivery by outsourcing. For our research purposes, we contrast direct provision by the council itself (1) to alternative formulas (2 and 3) that are argued to offer greater flexibility, specialisation and ease of cooperation with the representatives of the sector with which the council relates for public service delivery.

The alternatives available for the supply of specific public services, like many internal public administration decisions in Spain, have a considerable technical content, and thus are usually left off in the agenda of the maximum political authority (Salvador Serna 2005). Ideally, epistemic communities that dominate theory and/or experience in the relevant field not only make sense of, and outline alternatives to new or uncertain situations, but also fill gaps in information and formulate a set of technically or scientifically based reasons and arguments to support a particular course of policy action. As Marier (2008: 5) argues, "when a policy problem is highly technical, experts tend to dominate the policy process making it difficult for other political actors to play a potent role", which therefore extends the epistemic community's room for manoeuvre.

In their role in either the promotion or rejection of innovations and reforms in public management, epistemic communities appear to be no different from other interest groups, such as trade unions or business associations. Nevertheless, epistemic communities share at least two fundamental features that distinguish them from the classic interest groups. First, epistemic communities do not directly represent any group in particular that might be affected by the decision in question. It is evident that from their contribution to debates will benefit some actors and it will harm others, but this is not the fundamental motive for their intervention; they do not act as lobbies to explicitly represent a particular sector, but instead they justify their actions as promoting the best interests of the society as a whole. This assumption, however, is relativized by authors such as Houlihan (1999), who underlines the wisdom of at least questioning the affirmation that it is possible to possess significant knowledge regarding the definition of the course of a policy and at the same time, to display no personal or collective vested interest in the subject. Second, the only power of negotiation that epistemic communities possess is their capacity to generate a current of solid opinion, sustained by the intellectual prestige and experience of their members. In contrast to interest groups, they possess no tools to promote a specific approach or decision other than those derived from their authority as specialists.

Individuals with similar profiles establish informal networks for information and knowledge exchange to produce common positions with regard to specific management options. Epistemic communities share specific understandings, values, and beliefs, even though their members might come from a variety of disciplinary backgrounds or professional settings and their members may have the power of validating knowledge in the domain of their expertise (Tamtik and Sá 2012). Even if there is no clear body of knowledge, the concept of 'epistemic arbitrage' introduces the role of professionals that mediate between knowledge pools for strategic advantage and, if successful, how they can become the 'arbiters' on what knowledge and practices are most influential in their area (Seabrooke 2014). The related concept of 'communities of practice' reinforces the weight of shared notions of competent performance that are fundamentally epistemic and recognized among peers. These communities can be

defined in terms of “intersubjective social structures that constitute the normative and epistemic ground for action, but they also are agents, made up of real people, who – working via network channels, across national borders, across organizational divides, and in the halls of government – affect political, economic, and social events” (Adler and Pouliot 2011: 18-19). Their influence is especially relevant when policy-makers face complex and problematic situations in which neither causes nor solutions are clear-cut and actors’ interests remain ambiguous – in other words, a scenario where ‘ideas’ matter most (Weishaupt 2010). We argue that, in the field of public-service provision modes, these ideas come from different ‘epistemic communities’ of top managers and high-ranking technical staff, who are located in decision-making positions, and are members of networks of experts in policy making that develop within and around municipal organizations.

Our study identifies two sectoral professional communities as being important in service formula decisions. The first sectoral epistemic community is defined around urban services. This is a widespread community composed of external professional associations (especially related to engineering and town planning), specialized urban consultants and public officials in local administrations working in urban services (such as town planning and management services such as water supply or street cleaning). In regards to public service provision, a common feature of this community is its proximity to management in the private sector along with their traditional opposition to the direct public management of services. Unfortunately there is a lack of available data about the local public officials and about the unities of the regional administration that promote a public-private relationship, although there are professional associations that could be related to this community – such as engineers (*Col·legi d’Enginyers*) – important consultants and service-provider firms – such as the building companies specialized in public works – and some Departments of the regional government – such as the Department of Territorial Policy and Public Works – that have a clear orientation to the public-private relationship promotion. The authors’ own qualitative data – coming from interviews and direct observation in medium sized municipalities (Tarragona and Sant Cugat del Vallès), supralocal governments (*Diputació de Barcelona* and *Diputació de Girona*) and municipal associations (*Associació Catalana de Municipis*) – support the argument of professional linkages among top managers and high-ranking technical positions related to urban services areas. In order to identify the impact of the urban services epistemic community, our paper assumes the presence of an epistemic community of urban services in the management of the most common local urban services – despite differences in specificity and measurability – as the top managers and high-ranking technical positions in these services have similar profiles.

The second sectoral epistemic community is defined around social services (also called ‘personal services’ in local Spanish administration, due the kind of areas covered by this level of government). This field includes a wide range of different professionals from services as wide ranging as culture, social services, nursery schools, care of senior citizens, immigration or libraries. Due to this diversity, they are a less consolidated epistemic community, even though there are agents related to it. These agents stem from NGOs (non-governmental organisations) and other similar third-sector associations, such as academic research centres – specifically related to political and social sciences – and regional administration departments with clear orientations to social care assistance (*Departament de Benestar i Família*). Again there are no statistics about the profiles of the local public officials in charge of these areas. The authors’ own qualitative fieldwork, based on interviews and direct observation in big and medium sized municipalities (Barcelona and Tarragona), supralocal organisations (*Patronat Flor de Maig*, now integrated in the *Diputació de Barcelona*), and professional networks promoted by regional administration (through the *Departament de Benestar i Família*) supports the existence of a community consisting of top managers and of those in high-ranking technical positions related to personal services areas. Even with its heterogeneous composition, the top managers and high-ranking technical staff in charge of personal services could be characterised as a community regarding the direct service provision. This is because of their low identification with

the classic public administration and their reticence for private sector collaboration. Furthermore, they are known for having unwillingness to engage with the private companies to provide services, except perhaps in the case of agreements with non-profit organisations.

The characteristics of the two sectoral communities just described lead to the formulation of the following hypothesis:

The epistemic community related to personal services will be more prone to direct service provision than the epistemic community of urban services (that will tend to promote service provision through other formulas such as special purpose bodies or outsourcing).

We have incorporated a set of control variables into our model that the literature found to be related with the adoption of the different forms of public service delivery. The expected effect on direct service provision of such variables is based on previous research. We expect a negative effect in the case of the existence of markets around the city that will be able to provide public services (measured through municipality location in a metropolitan area) (Brown and Potoski 2003a), a negative effect of fiscal stress (financial situation of the local government) (Zullo 2009) and no effect from the political orientation of the municipal government (Joassart-Marcelli and Musso 2005). We included three more variables whose effect on the direct service provision needs to be explained in more detail. These are the private-type of local public employment, the asset specificity and the service measurability.

Spain follows the Continental European or '*Rechtsstaat*' tradition of public administration (Pollitt and Bouckaert 2004), namely 'closed' civil service systems, with specific regulations covering entry via competitive examinations, lifelong contracts, systems of remuneration and standardized career paths, which is associated with a certain rigidity in human resources management. However, for certain posts, councils may choose to contract staff under private sector employment conditions, a formula associated with a greater flexibility in personnel management (Salvador and Ramió 2009). If one of the main reasons to outsource several local public services is to overcome public administration rigidities, town councils with a greater proportion of private-type local public employment do not need to opt for public service formulas that are different from direct provision. The private-type of local public employment can be understood as an indicator of flexibility to manage human resources in continental models of public administration. For this reason, we expect a positive effect of this variable on direct service provision.

The other two variables are "asset specificity" and "service measurability". They measure the characteristics of the services. Asset specificity is the degree of specialized investments required to produce the service – such as specific location, specialized human skills, specialized tools or temporary requirements. Service measurability is a measure of the difficulty that the local government has in measuring the outcomes of the service and/or in monitoring the activities required for delivering the service. Regarding the characteristics of the service provided, Brown and Potoski's (2003a) results show that the mode of service delivery is affected by the asset specificity and service measurability. Brown and Potoski (2003a) in their study on service production decisions collected data on asset specificity and service measurability for a list of the United States local services from city managers and majors through a survey conducted by the authors. Their results show that as the asset specificity increases from medium to high, the probability of direct service provision decreases and when the difficulty of measuring increases from medium to high, the probability of direct internal production increases. In consequence, we expect a negative effect on direct service provision for services with high asset specificity and a positive effect for services with high difficulty of service measurability.

Data

When reviewing the proposed explanations of the role of political and institutional factors in the selection of mechanisms for local public service provision, research shows significant variations in the weight of the variables considered, due to the sample employed. This article aims to contribute to this debate by providing evidence based on data collected in 2007 and 2011 by the *Fundación Carles Pi i Sunyer de Estudios Autonómicos y Locales* of all municipalities of over 5 000 inhabitants in the Autonomous Community of Catalonia, from a total of 187 town councils. The city of Barcelona has been excluded from the analysis as an outlier, due both to its higher level of self-government compared with other towns and cities and to its population size: 1 668 700 of the 7 210 508 inhabitants of all Catalonia in 2007 (Statistical Institute of Catalonia). For each local administration the data file combines data on its structure and functioning at political and management level, its special purpose bodies and related organisations, its public services and the management formula employed in their production, and financial and budgetary information.

The exhaustiveness of the information compiled is combined with the fact that the data file covers all the local administrations in Catalonia. Consequently, this data source permits the inclusion in this analysis of the distinct management options implemented by councils with significant internal variation, in population size, socio-economic features and government and institutional characteristics, among others. The data supplied here are not an opinion but evidence, gathered through the city council officials and further tested by consulting complementary information sources, to confirm their validity.

The 23 services included in the study are: public lighting, cemeteries, refuse collection, street cleaning, drinking water supply, sewerage, maintenance of public parks, access to population centres, selective refuse collection, environmental protection, public libraries, popular and traditional culture, social services, public sports facilities, music conservatories and schools, kindergartens, adult education, food and beverage control, markets, civil protection, slaughterhouses, crime prevention and public actions related to health. These are statutory services established by the Law 7/1985, 2 April, Regulating the Bases of Local Government and other services which in practice are usually provided at this administrative level in Spain. In total, 4 301 units of analysis are available, for which the mode of service provision by each municipality is documented in 3 509 cases. The size and characteristics of the towns included in the study permit the consideration of the pattern of municipal service provision as constant together with the assumption that the set of municipalities share a similar pattern of public services, both statutory and additional.

The variables employed are now described. The dependent variable is the *direct service provision in 2011*. It is a dummy variable with 1 = "direct provision by the council itself" and 0 = "otherwise". The zero-category includes outsourcing – legal formulas of concessions, shared profit contracts, leasing, agreements and commercial enterprises/joint cooperatives – and delivery via special purpose bodies – with formulas of autonomous body, commercial enterprise, or public commercial entity. The explanatory variables are also dummy variables that indicate the existence of the two epistemic communities: the *Epistemic community of urban services* formed by the professional collective managing urban services (1 = "epistemic community of urban services", 0 = "otherwise") and the *Epistemic community of personal services* formed by the professional collective managing personal services (1 = "epistemic community of personal services", 0 = "otherwise"). In the two explanatory variables, the value of 1 is given when there are members of the corresponding epistemic communities in the provision of the service. There is a group of services (food and beverage control, markets, civil protection, slaughterhouses, crime prevention and public actions related to health) in which neither the epistemic communities of urban services nor of personal services can be found.

These services (that constitute 26% of the cases) are too diverse for identifying any other epistemic community in them.

In addition to the dependent and explanatory variables, we introduced the variable *direct service provision in 2007* and a set of control variables that, according to the literature, can have an effect on the probability of direct service provision. The first group of control variables refers to the characteristics of the municipality and its government. These are:

Metropolitan area. It is a dummy variable (1 = "Municipality located in a metropolitan area", 0 = "otherwise").

The *Political orientation of the local government*. It is calculated as the mean of the position on the left-right scale of each party forming part of the government coalition, weighted by the percentage of councillors that each supplies to it. The formula employed is:

$$\text{Ideological orientation of municipal government} = \sum_{i=1}^k \frac{C_i}{E} \cdot W_i$$

with k = number of parties that form the government; C_i = number of councillors of party i ; W_i = ideological position of party i and E = total number of councillors in the government. Data comes from the *Barómetro de Opinión Política del Centro de Estudios de Opinión*, July 2008.

Fiscal stress. It represents the difficulties that each municipality has in borrowing and it is the quotient between consolidated expenditure plus recognised liabilities (interest and amortisations included in Chapters 3 and 9 of the expenditure budget) and ordinary revenue (included in Chapters 1 to 5 of consolidated revenue) (Bel et al. 2010).

Private-type local public employment. It is the percentage of the council's total number of employees with contractual relationships equivalent to those in the private sector.

The second group of control variables refers to the characteristics of the service. Brown and Potoski (2003a) provide data of the asset specificity and service measurability for a list of services in a 1 to 5 scale. Higher values indicate that the service is more assets specific or more difficult to measure, respectively. The authors did an adaptation of it to the services provided by Catalan municipalities. The calculus of the asset specificity and service measurability values for the Catalan local services has been based on the values of Brown and Potoski study (2003a). Firstly, the list of services present in the Brown and Potoski's article (2003a) was confronted with the list of local services included in the Catalan study. We found some Catalan services with no equivalent and some others subdivided in two or three services in the Brown and Potoski's list (2003a). The decision taken was the following: for those Catalan local services that have a unique equivalent service in Brown and Potoski's study (2003a), the value of it has been taken; for the Catalan local services subdivided into two or three equivalent services in Brown and Potoski's table (2003a), the average of their values has been taken; for the rest of the services, those that don't have any equivalent service in Brown and Potoski's study (2003a), the values for asset specificity and service measurability have been decided by the authors who have based their decision on the analogy with other services that are similar as regards the specialized investments and the 'difficulty-to-measure' outcomes and to monitor the activities required to deliver the service. Table 3 in the Appendix shows the adaptation of Brown and Potoski's (2003a) values of asset specificity and service measurability to the services provided by the Catalan municipalities undertaken by the authors. Once we have obtained the values for these two characteristics of the services, we created two new variables called *High asset specificity* and *High difficulty of service measurability*. They take the value of

asset specificity and service measurability respectively when this value is above the mean, and zero when it is equal or below the mean. The rationale for this operationalisation is that we assume that asset specificity and service measurability do not have any effect on the probability of direct service provision when they are low but they have an effect (negative and positive respectively) when they cross the threshold located at their mean.

Table 1 displays the list of variables included in the analysis, along with their expected effects on the dependent variable and the corresponding descriptives.

Table 1

Variables employed in the analysis and expected effect on service provision

	Expected effect	%	Min	Max	Mean	St. Dev.
Dependent variable						
Direct service provision in 2011		71.8				
Explanatory variables						
Urban services epistemic community	Negative	43.5				
Personal services epistemic community	Positive	30.4				
Control variables						
Direct service provision in 2007	Positive	73.3				
Metropolitan area	Negative	19.6				
Political orientation of the government	No effect		2.93	8.27	4.71	1.03
Fiscal stress	Negative		0.01	0.33	0.09	0.05
Private-type local public employment	Positive		3.92	93.55	56.17	19.35
High asset specificity	Negative		0.00	4.09	1.74	1.83
High difficulty of service measurability	Positive		0.00	3.76	1.58	1.67

Source: Observatori de Govern Local de Catalunya 2007. Fundació Carles Pi i Sunyer; Brown and Potosky (2003a)

Methods

Because our dependent variable is dichotomous and not continuous, linear regression models are not appropriate in this study. Instead, the logistic regression model is one in which: the dependent variable y that takes only values 1 and 0 – is transformed into one new variable called “logit” that is equal to the natural logarithm of the odds-ratio of the probability π that y takes value 1.

$$\text{logit} = \ln\left(\frac{\pi}{1 - \pi}\right)$$

With this transformation the dependent variable is continuous and it can be expressed as a linear combination of the explanatory variables. As a result, the logistic models are appropriate when the dependent variable is dichotomous. In addition to the problem of non-continuous dependent variable, our data presents a hierarchical structure in which our units of analysis – the services provided – are grouped into municipalities. This hierarchical structure suggests the possibility of the existence of a correlation among the observations pertaining at the same municipality. And, when this occurs, the appropriate technique to use is the multilevel modelling.

In consequence, to test the hypotheses proposed, a multi-level logistic causal model was estimated, in which the variable representing the public-service management formula in 2011 was predicted from the presence of epistemic communities in 2007 – once the effect of the management formula in 2007 and of a set of variables related to the institutional and contextual characteristics of the municipality and of the services in 2007 was controlled. Each service provided by the municipalities constitutes an observation (first-level of analysis) and the observations are grouped in municipalities (second-level of analysis). This strategy allows the testing of the effect of the presence of epistemic communities in a municipality in a specific moment in the management formula of the services some years later avoiding endogeneity problems.

Previously to the estimation of the multi-level logistic regression we tested if, as assumed, there is independence in the mode of service provision across municipalities. For this reason, we initially test if there is a ‘municipality effect’ with the estimation of a two-level null model. It is a model with only an intercept and municipality effects whose specification is the following:

$$\ln\left(\frac{\pi_{ij}}{1 - \pi_{ij}}\right) = \beta_0 + u_{0j}$$

Here, π_{ij} is the probability of direct provision of the service i in a municipality j in 2011; β_0 is the intercept; and u_{0j} is the random effect specific to the municipality j . The random effect is assumed to follow a normal distribution with the variance $\sigma_{u_0}^2$. In the case where the variance of the random effect had been found significant, a multi-level model is needed because of the existence of intra-class correlation. Then, in a second step we will introduce our explanatory and control variables. The specification of the full model is the following:

$$\ln\left(\frac{\pi_{ij}}{1 - \pi_{ij}}\right) = \beta_0 + \beta_1 \cdot X1_{ij} + \beta_2 \cdot X2_{ij} + \sum_k \gamma_k \cdot Zk_{ij} + u_{0j}$$

Here, $X1_{ij}$ and $X2_{ij}$ are our two explanatory variables. They signal the presence of each one of the epistemic communities in the service i delivered by the municipality j ; Zk_{ij} are the control variables; β_1 , β_2 , and γ_k are the coefficients of the explanatory and control variables respectively. When the variance of the random effect u_{0j} becomes non-significant we have to interpret that the explanatory and control variables explain all the differences between municipalities.

The models have been estimated with the STATA command *xtnlogit*, applying the Maximum Likelihood estimation using the adaptive quadrature with 7 integration points.

Results and Discussion

Table 2 presents the estimates of the two models of prediction for the probability of direct management versus other management forms. The first model estimated, M0, which does not include explanatory variables, confirms that multi-level techniques are advisable in this study. It can be observed that the residual variance among councils is significant and considerable. This indicates that, as hypothesized, there exists a ‘municipality effect’, in the sense that the services belonging to the same municipality have management forms more similar to each other than to the services belonging to other councils.

Having justified through M0 the suitability of applying a multi-level model to the data, the second column of Table 2 presents the results of the estimation of the probability of direct

management versus other management forms, taking as explanatory and control variables the set of variables described in Table 1.

Table 2

Probability of direct service provision in 2011. Multi-level logistic regression

	MO	M1
<i>Sectoral epistemic communities</i>		
Urban services epistemic community		-2.035 ***
Personal services epistemic communities		-1.017 ***
<i>Control variables</i>		
Direct service provision in 2007		4.723 ***
Metropolitan area		-0.533 *
Left-Right position of the government		0.135
Fiscal stress		-3.035 +
Private employment contracts		0.005
High specificity		-0.120 **
High difficult to measure		0.091
<i>Constant</i>	0.970 ***	-0.399
Residual variance among municipalities	0.129 ***	0.319 ***
Deviance (= -2·Log likelihood)	4,162.0	1,257.8
Number of observations	3,509	2,680
Number of municipalities	187	151

+ Significant at $\alpha \leq 0.10$; * Significant at $\alpha \leq 0.05$; ** significant at $\alpha \leq 0.01$; *** significant at $\alpha \leq 0.001$

Source: Observatori de Govern Local de Catalunya 2007. Fundació Carles Pi i Sunyer; Brown and Potoski (2003a).

The results confirm the importance of the presence of sectoral epistemic communities on the mode of municipal service provision and they provide evidence in favour of our hypotheses. The epistemic communities of both urban services and personal services have a significant and negative effect on the probability of direct service management. In terms of Tamtik and Sá (2012), both communities have the power of validating knowledge in the domain of their expertise and, exercising 'epistemic arbitrage' (Seabrooke 2014), both become the 'arbiters' on what practices are most influential in their area. As Table 2 shows, this means that the probability of outsourcing or management through special purpose bodies is higher when one of these two epistemic communities is present than when they are not.

However, the fact that the probability of not having direct management is higher for the epistemic community of urban services than for the epistemic community of personal services provides evidence in favour of our hypothesis. That is, although the probability of direct management is higher when there is an absence of epistemic communities ruling the service, the epistemic community of urban services is less prone to direct management than the epistemic community of personal services. These results could be understood as the effect of how professional linkages among top public managers and high-ranking technical positions related to urban services areas with external professional associations and specialized urban consultants working in this field, favours their proximity to management in the private sector along with their opposition to the direct public management of services. In the case of personal services community, even their heterogeneity, the results could be understood in terms of their low identification with classic public administration and by their reticence for private sector collaboration (except perhaps in the case of agreements with non-profit organisations).

As we argue in the previous section, the field of public-service provision modes constitute an scenario where 'ideas' matter most (Weishaupt 2010) and, consequently, some results can be explained in terms of the influence of both epistemic communities composed by top managers and high-ranking technical staff, who are located in decision-making positions in urban services and personal services areas, that are members of networks of experts in policy making that develop within and around municipal organizations.

Regarding the control variables, the impact of the mode of service provision in 2007 is significant and especially noticeably to inform the mode of service provision in 2011, as a reflex of inertia in a crisis environment in the local administrations. Additionally, as regards the effects of the characteristics of the services and the contextual effects of the municipality, the results displayed in Table 2 confirm partially our expectations. Those services with high asset specificity have higher probabilities of not being provided directly and this result is independent of the city location and its financial situation. In addition, the political orientation of the local government does not have any effect on the mode of service delivery as we expect. However, the variable related to the difficulty of service measurability is not significant although its coefficient has the expected positive sign. This lack of significance could be attributed to the presence of the variable mode of service provision in 2007 that captures its effect.

The results of control variables are in accordance with other bodies of research that have incorporated indicators of the urban context of cities (Brown and Potoski 2003a, Brown and Potoski 2003b, Fernandez et al. 2008, Bel and Fageda 2011). These results allow us to confirm that councils located in metropolitan areas tend to use outsourcing for public service (or, at least, other alternative formulas than direct provision). The political orientation of the municipal government, another factor underlined by various studies (Fernandez et al. 2008, Joassart-Marcelli and Musso 2005), is not significant in our study, but the obtained results must be contextualized in the Spanish administrative system. As public management issues in Spain have traditionally been omitted from the agenda of public debate – being reserved for more 'technical' spheres, especially the sub-central levels of government and administration (Salvador Serna 2005) – the impact of the political ideology variable does not significantly affect the choice of management options for the local public service delivery. Also, in accordance with the literature, the results show that councils with financial difficulties will tend to use alternative formulas other than direct service provision, such as the creation of special purpose bodies or outsourcing. But the Spanish context contributes to the explanation of the impact of the 'local government fiscal stress' variable (Joassart-Marcelli and Musso 2005, Zullo 2009). The regulatory framework allows the creation of special purpose bodies (quasi-autonomous entities ultimately dependent on the council) and it gives the councils considerable flexibility to borrow independently from their parent authority – a strategy commonly employed by fiscally stressed councils. There are other studies that discuss the effect of local public employment, conceived of as an interest group, on the type of public service delivery (Fernandez et al. 2008, Bradbury and Waechter 2009) and that focus on variables such as the percentage of public employees in relation to the population or the degree of unionisation of public employees (Bel and Fageda 2007). In order to contribute not only to this literature but also to introduce institutional context features regarding public employment, our analysis focuses on the characteristics of public employment in terms of the type of labour contract used as an indicator of the flexibility to manage human resources in continental models of public administration. The results on the field of public-employee management do not support the argument of the use of alternative formulas to direct provision as options to overcome public administration rigidities, as this variable is not significant. The results are also aligned, partially, with studies that emphasize the incidence of service characteristics on the mode of service provision. The effect of high asset specificity is negative over direct provision as it is expected in Brown and Potoski (2003a). But the effect of the high difficulty of service measurability is not significant, possibly because the main decisions related with this variable were taken in a previous period, during the first half of the 2000 and its impact is captured by the variable *direct*

service provision in 2007.

Conclusion

The results of this study contribute to the academic debate on the use of alternative formulas for public service provision not only with arguments and evidence that reinforces the role of variables included in previous research but also by introducing the role of epistemic communities in determining some policy options (as the use of the local public-service delivery formulas).

The evidence confirming the direction of control variables connects the study in the afore-mentioned academic literature on local public service delivery. However, the results allow us to introduce new insights pertaining to the epistemic communities' role as it has been highlighted in the results and discussion section. The association of the epistemic community related to urban services with alternative formulas to direct provision to deliver services is confirmed, and it is greater than in the case of personal services' epistemic community.

Finally, all the data used in this study comes from a single region, Catalonia, and the exhaustive nature of the data and the period (prior to the present economic crisis) reinforces their value in contributing to the academic debate on local public-service provision formulas. The contribution on local service-delivery alternatives is also relevant to the debate about the rescaling and redistribution of competences among different levels of government, which is currently being promoted by Spain through the *Ley 27/2013, de 27 de diciembre, de racionalización y sostenibilidad de la Administración Local* (Law 27/2013, from 27 December for the rationalization and sustainability of local administration). The data and discussion offered in the article is also relevant in order to reshape the map of actors involved in this process. One promising research avenue is to look more closely at those epistemic communities that have been discussed in this article and their contribution to institutional change.

Appendix

In order to calculate the values of asset specificity and service measurability for the 23 local services provided by Catalan municipalities included in the study, we have elaborated a table of equivalence for each one of them with one or several services from the list included in the Brown and Potoski (2003a) study (Table 3). The values for services in the first column are equal to (or the average in the case of several equivalent services) the corresponding values of services listed in the second one. For services with any equivalent in Brown and Potoski's list (2003a), the estimates have been undertaken by the authors.

Table 3

Asset specificity and service measurability for Catalan municipal public services

<i>Services in Catalan municipalities</i>	<i>Equivalent services in Brown & Potoski (2003)</i>	Asset specificity	Service measurability
Public lighting	Electricity utility management	4.08	2.96
Cemeteries		2.37	2.41
Refuse collection	Commercial solid waste collection Residential solid waste collection	3.03	2.02
Street cleaning	Street / Parking lot cleaning	2.26	2.00
Drinking water supply	Water distribution Water treatment	4.03	2.40
Sewerage	Sewerage collection and treatment	4.09	2.36
Maintenance of public parks	Parks and landscape maintenance	2.33	2.11
Access to population centres	Operation of para-transit systems Traffic signal installation and maintenance Traffic control and parking enforcement	3.00	2.49
Selective refuse collection	Solid waste disposal Residential solid waste collection	3.17	2.09
Environmental protection		3.00	3.5
Public libraries	Operation of libraries	3.50	2.61
Popular and traditional culture	Operation of cultural and arts programs	3.00	3.26
Social services	Personnel services	2.58	3.31
Public sports facilities		3.50	2.80
Music conservatories and schools	Operation of convention centres/ auditoriums	3.58	2.77
Kindergartens	Child welfare programs Operation of day-care facilities	3.44	3.76
Adult education		3.00	3.26
Food and beverage control	Sanitary inspection	3.06	2.57
Markets		2.50	2.00
Civil protection		3.80	3.25
Slaughterhouses		3.00	2.60
Crime prevention	Crime prevention/control	3.37	3.60
Public actions related to health	Public health programs	3.46	3.74

Asset specificity and service measurability are measured in a 1 to 5 scale. Higher values indicate more asset specificity and that it is more difficult to measure the service, respectively.

Source: Own elaboration based on Brown and Potoski (2003a)

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INDIVIDUALISATION OF DEPRIVED AREAS IN ROMANIA'S SOUTH WEST REGION

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Abstract: Measuring territorial disparities is the first step in studies aiming to improve territorial cohesion. As intraregional disparities are often higher than inter-regional ones, an analysis of development at local level is needed in order to define areas of intervention for specific targeted policies. The aim of this study is to individualise deprived areas in Romania's South West region through the use of the Principal Component Analysis run on 15 social, economic, demographic and physical indicators defined at local level (LAU 2 units). By computing a global index of deprived areas, 13 areas were individualised at regional level, with the results being compared with other studies on deprived areas (Romania's poverty map, Social Development Index and Less-favoured areas). The final output showcased the differences in defining deprived areas according to the used methodology, with a need to standardise such methods for policy targeting in the future while also considering environmental quality factors.

Key Words: *territorial disparities, Principal Component Analysis, territorial cohesion, environmental quality, less-favoured areas.*

Introduction

The European Union's territory is characterized by geographical discontinuities (Faludi 2004), with the geographical space being by excellence heterogeneous (Ancuța 2010). Giving priority to the support of regions whose development is lagging behind (CEC 2003) and ensuring that community policies' impacts fit into a spatial framework (Faludi 2004), represent determinants for the emergence of another concept in the EU policy – territorial cohesion. Considered to be a way of spatializing the European Social Model (Davoudi 2005), the concept of territorial cohesion focused on interconnecting economic effectiveness, social cohesion and ecological balance, thus *putting sustainable development at the heart of policy design* (CEC 2008).

On the one hand, territorial cohesion can be seen as a way of adding a spatial justice dimension to the spatial policy at European level (Davoudi 2005), underlining the importance of spatial concentration for overcoming differences in density, connecting territories for overcoming distances and cooperation for overcoming divisions (CEC 2008). On the other hand, when discussing uneven development across regions we can use the concept of regional competitiveness (Huggins et al. 2014). The geographical variance of competitiveness, stemmed from the differential development of regions depending on drivers of growth (Audretsch and Keilbach apud Huggins et al. 2014), can be measured according to the characteristics of the regional business environments (Huggins et al. 2014). Consequently, while territorial cohesion has strong social and spatial justice components, measuring the variance of competitiveness across geographical space is mostly based on economic factors.

As such, territorial cohesion can be viewed as the attempt to reduce (often economic) disparities between different spatial categories (Niebuhr and Stiller 2003). Including other concepts such as territory, development or spatial equity (Ancuța 2010), territorial disparities are considered to be a fundamental characteristic of a society's spatiality (Benedek and Kurko

2011). Their analysis become a first obligatory step for studies on the way to improve territorial cohesion (Ancuța 2010), with a multi-scalar approach being encouraged due to the fact that intraregional differences are often much higher than inter-regional disparities (Goschin et al. 2008, Ianoș et al. 2010). Consequently, some argue that territorial cohesion should be an issue of policy aimed at national or regional levels, and not at EU level (Niebuhr and Stiller 2003), while others even consider that cohesion at continental level cannot be achieved if disparities in revenue at local level are not reduced (Ianoș et al. 2010).

Unequal spatial distribution can determine specific paths of territorial development (Benedek and Kurko 2011), often determined by path-dependent economic factors which proved to be difficult to reverse (Salvati and Zitti 2011). Other factors also become important when assessing territorial disparities: countries with a better quality of government often register lower levels of spatial inequality (Ezcurra and Rodríguez-Pose 2014), while growth gaps can also be explained by the geographical location and transport facilities (Démurger 2001).

The objective of this paper is to individualise the deprived areas – territories defined at inter-local level, with social, economic and infrastructure issues which impede development – in Romania's South West region and to verify the obtained results with other previous attempts in the Romanian literature to determine disadvantaged areas.

At territorial level, disparities between different areas can be identified and be appreciated quantitatively through the use of socio-economic indicators (Medeiros 2012). In the wake of the challenge posed by social and economic cohesion at territorial level, the intervention in such disadvantaged areas becomes of utmost importance, as the lack of measures can lead to real problems in territorial management (Ianoș et al. 2010). The identification of this type of areas requires the detection of development discontinuities, as well as the analysis of territorial development processes at different scales (Ianoș et al. 2009).

Although the study of territorial disparities is relatively new in the Romanian literature (Ancuța 2010), there is a special attention given to the different methods of defining disadvantaged areas through the use of various criteria. For example, a profoundly disadvantaged area can be defined as an area characterized by the spatial contiguity of minimum 5 LAU 2 units, where the average of the global development indicator is 25% under the global indicator of the disadvantaged area in which it is contained or it is 75% under the regional level average (Ianoș and Heller 2006), with 8 indicators being used for the individualisation of these areas. Other studies seek to identify profoundly disadvantaged areas through indicators referring to quality of life, development potential or economy, with the identified areas being the product of both historical evolution and accessibility levels (Ianoș et al. 2010). Measuring territorial disparities at a lower spatial scale can also be done in a cross-border context (Nagy 2014), with three components – demographical, quality of life and economic indicators – being used in this case in a factorial analysis. In other cases, a global index is calculated based on standardised values of elementary variables, also with three similar categories of variables being considered: social, economic and life standard indicators (Ancuța 2010).

Other studies prefer to measure disparities at NUTS 3 (county) or NUTS 2 (region) level, with the focus on either economic aspects (Benedek and Kurko 2011), rural development issues (Dachin 2008) or complex approaches which seek the construction of a relevant index (Ianoș et al. 2013). The results of these studies are often in the form of typologies: a typology of multi-criteria disparities at county level (Goschin et al. 2008) or a typology of advantaged and disadvantaged areas defined at local level (Ancuța 2010).

Besides the above mentioned studies which seek to identify disadvantaged areas, there is an important research focused on defining a hierarchy of Romanian communes according to their development (Commune Development Index – Sandu et al. 2009), also on the basis of simple

economic and social indicators, which are then standardised and aggregated into indices. Poverty maps also fall into this category: they present a geographic profile of welfare, underlining the areas with a great concentration of poverty, where resources need to be allocated (Pop 2004). Welfare and social exclusion indicators support the realization of these maps.

Nevertheless, beyond similar concepts found in literature, the concept of disadvantaged areas can be associated with several policies at EU and national level. The European Commission defines the less-favoured area through the territories where agricultural activities are impeded by natural factors such as climate, terrain slope or soil fertility. An area can thus be considered less-favoured if agriculture is endangered by certain economic or environmental issues (Giesecke et al. 2010). The fragility of agricultural activities, limited access and population decline are amongst the factors used to define less-favoured areas (Ruben et al. 2007), with the lower agricultural potential of the areas being explained not only by natural features like soil or climate, but also by their limited infrastructure or poor access to markets (Fan and Hazell 2000).

The less-favoured area measure is one of the oldest measures (since 1975) with a territorial projection in the EU's Common Agricultural Policy (Dwyer et al. 2007), as part of its second pillar. However, poor people which live in these environments often face poverty and resource degradation issues (Ruben and Pender 2004). Consequently, the second pillar of CAP is trying to support these rural regions that are lagging behind through different measures (Shucksmith et al. 2009) aimed at preventing agricultural land abandonment (Giesecke et al. 2010) caused by demographic or economic factors (IEEP 2006). However, the CAP is currently considered to be insufficient in new member states facing structural problems in their rural areas (Gorton et al. 2009).

The European Commission defines 4 categories of less-favoured areas which can access funds in the second pillar of PAC (IEEP 2006): mountain areas, areas affected by specific handicaps, areas with environmental restrictions and other less-favoured areas. In Romania, the communes that are declared as less-favoured areas are included in the National Rural Development Programme 2007-2013 (MARD 2010). However, the criteria used to define these areas are strongly connected to their agricultural potential, thus ignoring other social and economic problems which a territory can have.

At national level, between 1996 and 2005, some economic and social policies were promoted, aimed at stopping the decline of the areas affected by industrial restructuring or massive layoffs and at attracting investments by offering financial incentives. These areas, called deprived areas, are defined in the Romanian Law (Governmental Order no. 24/1998, Law no. 20/1999) as geographical areas which face one of the following conditions:

- they had mono-industrial productive structures (which included over 50% of the total employees in the area);
- they were mining areas with over 25% dismissed personnel;
- collective layoffs affected over 25% of the employees in that area, following the restructuring of economic agents;
- the unemployment rate surpassed by 30% the average at national level;
- they were isolated areas with poorly developed infrastructure.

Nevertheless, the law suffered numerous changes (Governmental Order nr. 525/1999, Law no. 507/2004), the only remaining criteria being those related to the unemployment rate and the degree of isolation. Between 1998 and 2001, 35 deprived areas were declared in Romania, mostly located in mining and industrial areas. These areas are not active anymore, as the financial incentives were only offered for ten years.

Consequently, the concept of deprived area does not have an up to date legislative framework, as it was initially defined in a different socio-economic context (the end of the 90s). The lack of legislative framework is an opportunity to try to redefine the criteria on the basis of which these deprived areas are declared, also taking into account the methodological aspects employed in other reviewed studies.

The following section seeks to shortly describe the main elements which have influenced the deepening of territorial disparities in Romania's South West Region. I considered that for a regional analysis of territorial disparities, the LAU 2 level is the better option as it enables the detection of contiguous territorial units – deprived areas – which can then become areas of intervention for specific targeted policies.

Study area: Romania's South West Region

The territory chosen for this analysis is the Romania's South-West Region (Oltenia), one of the poorest regions in the country according to recent economic indicators (it ranked 7th out of 8 regions for direct foreign investments in 2013 – National Bank of Romania data – and for GDP/capita in 2013 – Eurostat data). As far as economic activities are concerned, Oltenia is the most important region for the Romania's energy industry, fact which is highlighted by the existence of hydroelectric and power plants with the highest capacity in the country (Erdeli and Cucu 2007). However, the energy industry along with the extraction of lignite in the Motru-Rovinari or Alunu-Berbești areas, have an increased pressure on the region's environmental quality. Furthermore, the industrial decline which characterized Romania after 1990 has affected an important number of cities in the region, especially the ones which have relied on a single industrial activity (Dumitrescu 2008, Constantinescu 2012).

The region consists of five counties (Mehedinți, Gorj, Dolj, Vâlcea, Olt) and 448 base territorial administrative units (LAU 2 units). Of the 40 cities located in the South West Region, only the five county capitals and the municipality of Caracal (Olt) exceed 20 000 inhabitants. Hence, 85% of the region's cities can be considered small towns, which are known to have a reduced resilience as they face economic decline (ESPON 2006). Moreover, 16 of the 40 cities (40%) are the result of forced urbanisation during the communist area (rural communities which have been declared cities between 1945 and 1989), while 8 communes have been declared cities after 1990 (Săgeată 2011). The over-urbanization of the communist area is strongly sustained by the fact that centrally planned industrialization was directly related to urbanization (Harris 1970 apud Constantinescu 2012). The structural problems of the region's urban system are also motivated by the fact that six of the region's cities (Motru, Rovinari, Țicleni, Bumbesti Jiu, Balș, Brezoi) are considered to be mono-industrial (Dumitrescu 2008). Of the three deprived areas declared in the region (Governmental Order no. 24/1998), two contain such mono-industrial cities (Schela deprived area – the city of Bumbesti Jiu; Motru-Rovinari deprived area – the cities of Motru and Rovinari). Public services are also lagging behind compared to other regions, as underlined by the comparison with the South Muntenia region regarding health services (Costaiche and Niculae 2014).

As far as rural areas are concerned, after the fall of the communism and the fragmentation of large-scale collective farms, the agricultural system can be characterized by degradation and social disintegration (Fraser and Stringer 2009). It is the case especially in the counties of Dolj and Mehedinți, depending greatly on agriculture and affected by the destruction of the irrigation systems after 1990 and by population migration (Mazilu and Bădiță 2014). Consequently, although agriculture is an important resource for the region, with over 1 million hectares of land available for cultivation, the region is characterized by inferior productivity due to insufficient technical equipment, small-scale agricultural enterprises and underdeveloped irrigation systems (Necula and Necula 2012). The demographic vulnerability of the region, especially in its rural areas (Mazilu and Bădiță 2014), along with aridization problems in the southern area

with high agricultural potential (Prăvălie et al. 2014) and uncorrelated actions regarding land use changes (Petrișor 2015), contribute to a low level of capitalization related to the region's agricultural potential.

As explained above, Romania's South West Oltenia region presents notable territorial disparities when compared to the more developed regions in the country. However, a thorough analysis of the situation in LAU 2 units, as the one proposed in this article, could give a more detailed insight on the structural problems existing at local and inter-local level.

Methodology

The first step of the study was to identify the deprived areas in the Romania's South West Region according to other previous studies or legal provisions. Consequently, four maps were realized using GIS software that showcased, at regional level, the LAU 2 units falling into different deprived area categories (Table 1).

Table 1

Previous studies regarding the identification of deprived areas

No.	Type of area	Study / legal provision
1	Deprived area	Governmental Order no. 525/1999, Law no. 507/2004
2	Deprived communes	Poverty map (Pop 2004)
3	Under-developed communes and towns	Settlement Social Development Index under 30 – communes – or under 65 – towns (Sandu 2011)
4	Less-favoured areas	CAP – National Plan for Rural Development 2007-2013

The second step was the calculation of 15 economic, demographic, social and physical indicators (Table 2) for all 448 LAU 2 units in the region, using data from the Ministry of Regional Development and Public Administration. Descriptive statistics and all possible paired correlations were computed using SPSS 20 in order to suppress the variables whose variance could also be closely explained by other variables as well. After having a final list of indicators, a Monte Carlo Parallel Analysis (condition Eigenvalue > 1) was run in order to identify the number of components which need to be taken into account for a correct Principal Component Analysis.

The Principal Component Analysis (PCA) showcased the indicators which explain the most part of the variation of all indicators taken into consideration in the analysis, with the method relying on the assumption that the variation of the level of development is explained not only by the variation of factors specific to each variable, but also by common factors (Ianoș et al. 2013). The method was also used in other studies focused on measuring territorial disparities at LAU 2 unit level (Nagy 2014).

For each PCA component, an index from 1 to 5 was computed for each LAU 2 unit based on quantile statistical breaks, where 1 signified that a LAU 2 unit was in the lower 20% of that indicator's variation at regional level, while 5 signified that a LAU 2 unit was in the upper 20%. Eventually, based on weights given to each index according to the cumulative variability percent explained (extracted from the PCA), a global index of deprived areas was computed at LAU 2 unit level. Consequently, the deprived areas were identified at regional level, according to the following conditions:

- the global index of deprived areas for each LAU 2 unit is in the lower 40% of the index's variation;
- there are minimum 4 contiguous LAU 2 units which register such values;

Table 2

Indicators used for the deprived areas analysis (LAU 2 level)

No.	Indicator	Year	Type of indicator
1	Income per inhabitant	2012	Economic
2	Total turnover	2009	
3	Employment rate (percent of employees from total population)	2011	
4	Income dynamics (%)	2005-2012	
5	Accommodation units (-1 – no units; 0 – guest houses; 1 – hotels)	2012	
6	Emigration rate (‰)	2008	Demographic
7	Dynamics in the number of housing units (%)	2005-2011	
8	Population dynamics (%)	2005-2011	
9	Inhabitants/household	2011	Social
10	Number of teachers (‰)	2011	
11	Number of doctors (‰)	2011	
12	Health services provided (-1 – no service; 0 – dispensary; 1 – hospital)	2011	
13	Educational services provided (-1 – school only; 0 – professional school; 1 – high-school)	2011	Physical
14	Amount of gas distributed to the population (cubic metres/inhabitant)	2011	
15	Amount of water distributed to the population (cubic metres/inhabitant)	2011	

- if a single LAU 2 unit is in the upper 60% of the index's variation, but it is surrounded by LAU 2 units in the lower 40%, it will also be included inside the deprived areas for contiguity reasons.

In the end, the deprived areas individualised in Romania's South West Region were compared to the results of previous studies in order to verify the accuracy of our findings.

Results and discussions

Romania's South West Region contains three deprived areas, according to the provisions of the Romanian Law in 1999 (Fig. 1). The three areas (Albeni, Motru-Rovinari, Schela) are all located within Gorj county and have been declared deprived areas mainly due to the decline of the large-scale mining industry (coal).

As far as the study regarding Romania's poverty map is concerned (Fig. 2), most of the identified deprived communes were located in the county of Mehedinți (especially in the northern and eastern part), with others scattered in the counties of Dolj and Vâlcea and with the counties of Gorj and Olt accounting for only one commune each. Nevertheless, a more recent analysis regarding a Social Development Index for all settlements, computed on both urban and rural areas, underlines the problems of the region's urban system: over a quarter of the region's cities (11 out of 40) are considered to be under-developed. As far as rural areas are concerned, the issues of poverty described by Pop in 2004 do not seem to have been solved in 2011, as the same areas in Mehedinți county appear to be under-developed. Moreover, the

western part of Dolj county represents a concentration of under-developed communes as well, along with other parts in the north and south-east of Olt county or in the central part of Vâlcea county.

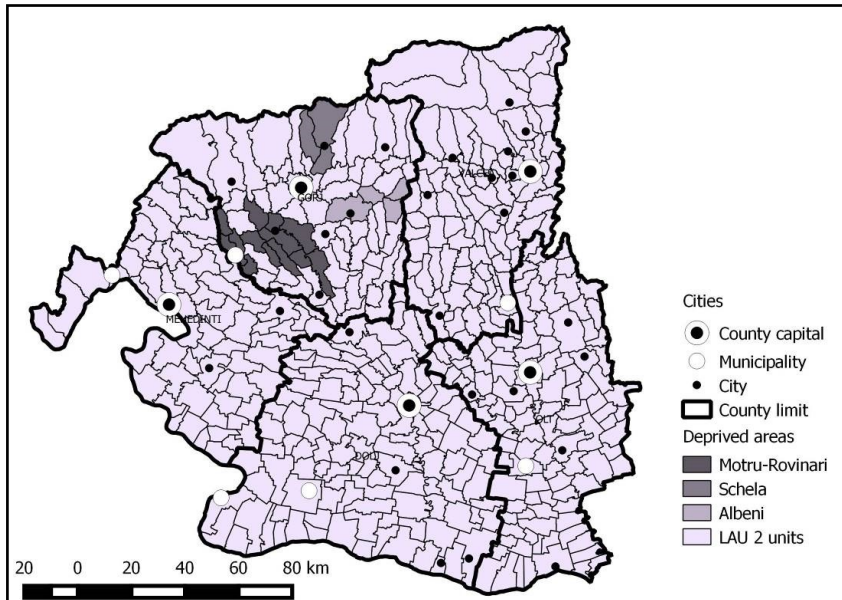


Fig. 1 – Deprived areas according to Romanian Law
Source: Governmental Order no. 525/1999 (processed by the author)

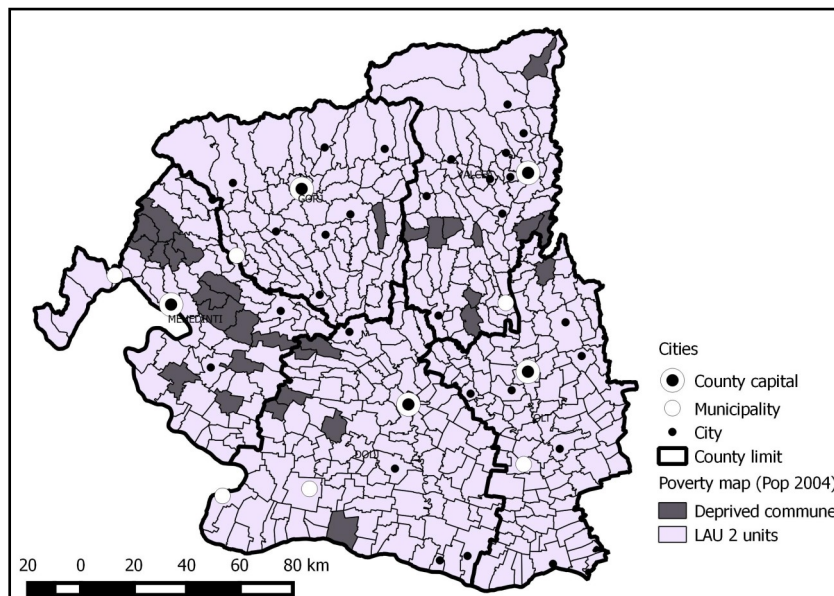


Fig. 2 – Deprived communes
Source: Pop 2004 (processed by the author)

An analysis of the less-favoured areas as they appear in the Romania's National Rural Development Programme 2007-2013 (Fig. 4) reveals a concentration of mountain areas in the north part of the region, but also some areas with specific handicaps concentrated in the south of the region (along the Danube and the Jiu valley), in the Motru-Rovinari lignite basin (Gorj county) and in the western part of Dolj county.

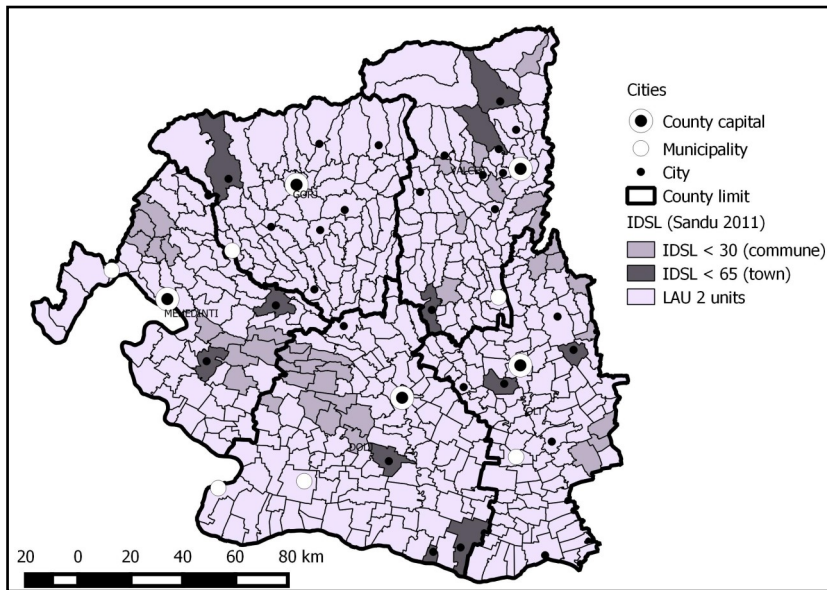


Fig. 3 – Settlement Social Development Index (IDSL)
Source: Sandu 2011 (processed by the author)

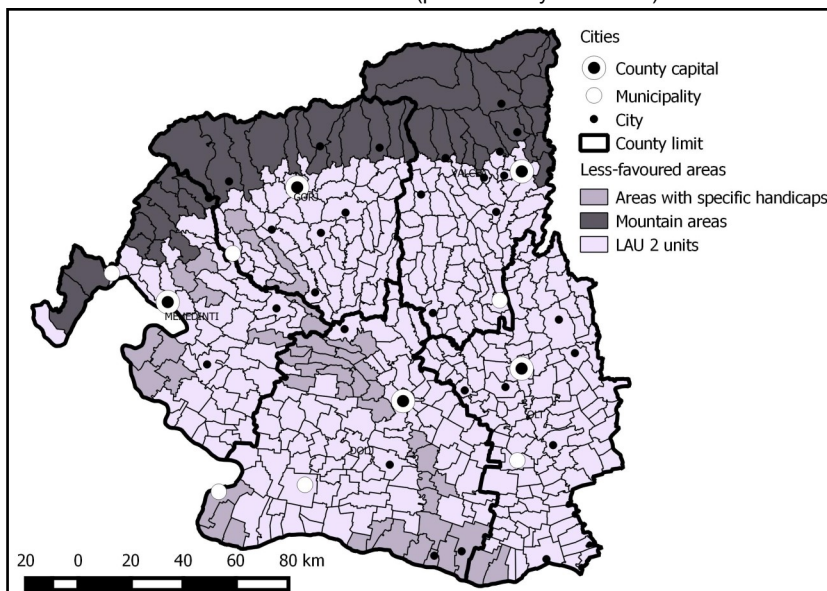


Fig. 4 – Less-favoured areas in Romania's South West Region
Source: National Programme for Rural Development 2007-2013 (processed by the author)

Each of the above methods for determining areas which are lagging behind focuses on different components for the individualisation of deprived areas: unemployment rate (mostly) in the case of the deprived areas declared by the Romanian law; social exclusion and poverty indicators for the poverty map of Romania (Pop 2004); aggregated social and economic indicators for the Social Development Index (Sandu 2011); and factors related to agricultural potential for the less-favoured areas.

As a result, I tried to individualise the deprived areas in the Romania's South West region through the use of the PCA statistical method, applied on 15 pre-selected indicators (variables). The descriptive statistical analysis and paired correlation results determined me to eliminate three of the indicators (total turnover, income dynamics and health services provided), which had a correlation of above 0.95 with the income per capita variable.

The Monte Carlo Parallel Analysis (Eigenvalue > 1) determined the number of components to be considered in the PCA to be four. Consequently, the result of the Principal Component Analysis was that four components from the 12 indicators analysed accounted for a cumulative 55.63% of the entire variability of the dataset. These four components are detailed in Table 3, along with the weight of each component in the global index of deprived areas.

Table 3

Indicators used for the deprived areas analysis (LAU 2 level)

No.	Indicator	Year	Type of indicator	Weight
1	Employment rate (percent of employees from the total population)	2011	Economic	42.96%
2	Population dynamics (%)	2005-2011	Demographic	22.63%
3	Dynamics in the number of housing units (%)	2005-2011	Demographic	19.22%
4	Number of teachers (‰)	2011	Social	15.19%

In order to compute the index, each of the four indicators was normalized, a value between 1 and 5 being given to each LAU 2 unit for each indicator according to their position in the regional hierarchy (quantile breaks), as seen in Fig. 5. The lower the index, the worse is the situation in a LAU 2 unit.

The deprived area index underlines the intraregional disparities that exist between the south and the north of Romania's South West Region. Consequently, while the two northern counties, Vâlcea and Gorj, do not have any LAU 2 units contained in a deprived area, in Mehedinți county 34 LAU 2 units are in a deprived area (51%), in Dolj county 69 units (62%) and in Olt 47 LAU 2 units (42%). While the county capitals can often be found in the upper 20% variation of the deprived area index, the same cannot be said about the smaller cities in the region. In fact, two cities, Vânju Mare and Băilești, are included in deprived areas, with the latter registering a high value of the index, but being surrounded by communes with lower values. All in all, profound rural areas have registered lower values of the index, underlining their socio-economic issues, including lack of proper public services and technical infrastructure. However, rural areas polarized by cities with a low degree of development are also included in deprived areas at regional level, as it is the case of the communes located near Corabia, Drăgănești-Olt, Scornicești (Olt county), Bechet, Dăbuleni, Segarcea (Dolj county) or Strehaia (Mehedinți county).

In the end, 13 deprived areas were identified in the South West region, with their delimitation being realized according to their geographical position, including the existence of neighbouring cities. Table 4 synthesizes this output and compares it with the results of previous studies (Fig. 7).



Fig. 5 – Normalization of the four selected indicators

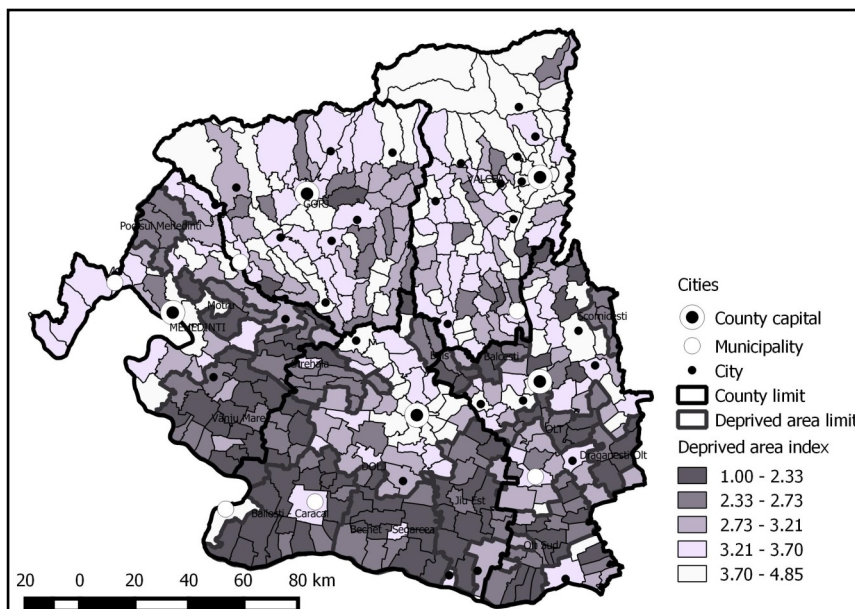


Fig. 6 – Deprived area index – Romania's South West Oltenia Region

Table 4

Deprived areas – Romania's South West Region

No.	Name	Counties	LAU 2 units	Deprived communes	Under-developed communes	Areas with specific handicaps
1	Podișul Mehedinți	Mehedinți	4	3	3	0
2	Motru	Mehedinți	4	2	0	1
3	Strehaia	Mehedinți, Dolj	16	3	9	11
4	Vânju Mare	Mehedinți, Dolj	27	5	4	1
5	Băilești – Caracal	Dolj	19	0	0	2
6	Bechet – Segarcea	Dolj	15	1	0	4
7	Jiu Est	Dolj	16	0	0	6
8	Olt Sud	Olt	20	0	0	2
9	Drăgănești Olt	Olt	5	0	3	0
10	Slatina Sud	Olt	10	0	0	0
11	Scornicești	Olt	4	0	2	0
12	Bălcești (Olt Nord)	Olt	4	0	0	0
13	Balș	Olt, Dolj	6	0	0	0
TOTAL			150	14	21	27

These outputs mean that almost a third of the region's territory can be considered as part of a deprived area. When comparing these results with other studies, 14 of the LAU 2 units individualised in this study also appear in the 2004 poverty map of Romania (45% of the deprived communes defined in that study), 21 are also included as communes with a Social Development Index of under 30 (50% of the under-developed communes determined by that study) and 27 are also part of a less-favoured area (57% of the communes defined as areas with specific handicaps). The differences can be explained by the fact that each of the above-mentioned studies had a different aim and methodology, with this study focusing on a broader typology of indicators. Furthermore, this research has a strong inter-communal element that other studies did not have, with the exception of the definition of less-favoured areas with special handicaps. Its aim is to identify deprived areas containing at least four contiguous LAU 2 units, with more isolated communes thus being excluded from this delimitation.

The index of deprived areas, comprised of economic indicators (employment rate), demographic indicators (population dynamics – illustrating population decline, but also the dynamics in the number of housing units, which can partly explain the physical development of certain LAU 2 units) and social indicators (number of teachers – an indicator strongly related to the provision of educational services), can be viewed not only as a measure of territorial disparities. It can also be considered a measure of the strength of urban-rural relations at local level, with the under-developed cities with IDSL under 65 (Sandu 2011) characterized by a less visible spill-over effect in the neighbouring communes compared to the values of the index registered in the communes around larger cities as Craiova or Râmnicu Vâlcea, for example.

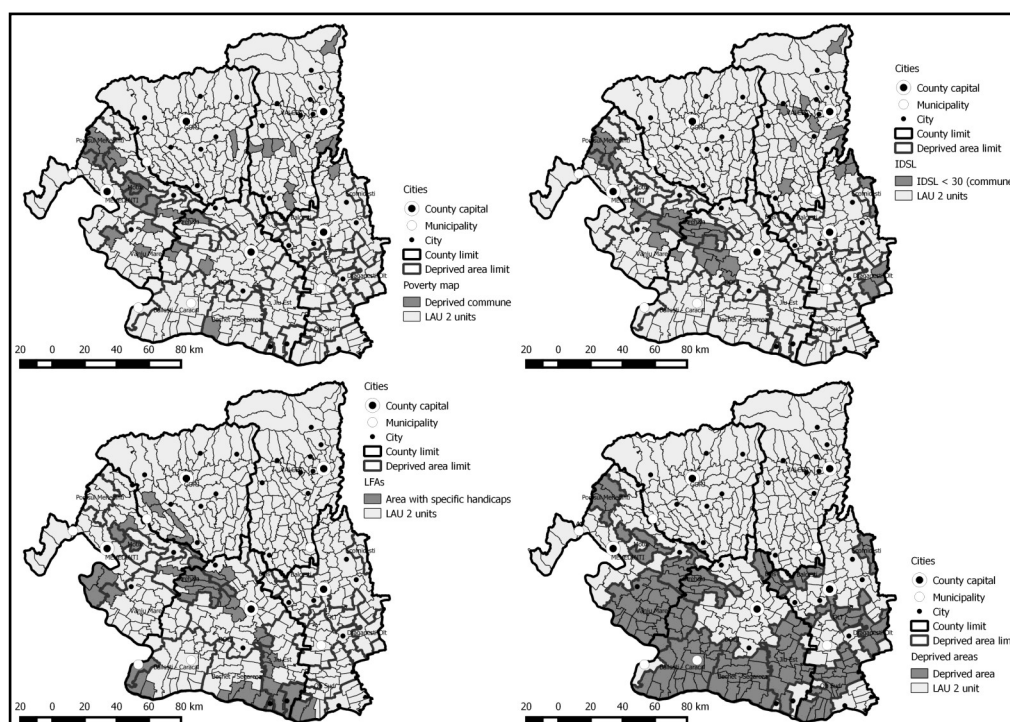


Fig. 7 – Comparing the results with previous studies and legal provisions

While this research focused mainly on indicators related to social and economic dysfunctions, territorial disparities should also be analyzed from the point of view of the environmental quality in an area (Zuindeau 2007, Ancuța et al. 2015). As a result, environmental problems related to socio-economic polarization or imbalances in the distribution of natural resources can greatly contribute to territorial disparities (Ferrara et al. 2014). Land quality issues and their reflection on the well-being of population (Salvati and Zitti 2007) are just one of the complex environmental problems which can deepen territorial disparities at intraregional level. Consequently, it is necessary to include environmental quality as a factor in the analysis of territorial disparities in order to achieve positive results in the sustainable development of these areas (Zuindeau 2007, Ancuța et al. 2015). Moreover, the interventions aimed at reducing territorial disparities and encouraging growth run the risk of causing significant environmental impacts in disadvantaged and ecologically-fragile areas (Salvati and Zitti 2011), thus causing other social and economic problems in the target area.

Conclusions

Deprived areas should be the subject of territorial policies, as in the case of less-favoured areas supported through the CAP's second pillar. The fact that these areas are lagging behind also represents a motivation for identifying specific measures that can aid in their development, under the umbrella of cohesion policy. Consequently, the individualisation of deprived areas could lead to solutions for the treatment of the territories that have a high risk of becoming territorial poverty pockets (Ianoș et al. 2010).

While rural development is often seen as a basic condition for narrowing regional disparities (Dachin 2008), the projects financed in these areas in the last programming period have only partly aided the development process. Tourism is often seen as a key to the positive future of

deprived rural regions, however the results so far point mostly towards a need to moderate the general optimism regarding the role of tourism in development (Ribeiro and Marques 2002). As far as the development of rural tourism in Romania is concerned, there are restrictive factors such as poor infrastructure, low living standard and lack of proper training of householders (Mazilu and Bădiță 2014) which need to be addressed so that a development strategy based on tourism could be successful. Consequently, interventions in deprived areas must be made only after a thorough analysis of the areas' dysfunctions and potential and should target the narrowing of intraregional disparities by encouraging endogenous development. There are no universal solutions to these problems, which is why an area-based approach realized at intercommunal level, for each deprived area, can have a better chance of success.

The differences between the results of this paper and the results of previous studies reveal the need to standardize the analysis models based on empirically-based results according to the specific regional or national policies proposed for implementation in the defined areas of intervention. A special focus on the methodology used for defining deprived areas can also help in the identification of policy target variables, including early-warning indicators which describe the evolution of different factors (Salvati and Zitti 2011).

In this regard, the inclusion of environmental quality factors can greatly enhance an analysis of deprived areas, as it can underline complex problems related to land degradation or land use change which have an important impact on the quality of life. While the urbanization and high revenue of areas, such as the Motru-Rovinari lignite basin, have caused the registration of a relatively high score in the deprived area index, it is clear that the profound environmental degradation in this territory (Braghină et al. 2008) will represent an important limitative factor in the future development of the area. All in all, the analysis of deprived areas at regional level should be linked to the analysis of restrictive environments, in order to have a clear vision on the territorial disparities involved and to design strategic plans with adequate measures of intervention.

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EXPLORING THE QUALITY OF EMPLOYMENT IN ROMANIA AT DIFFERENT TERRITORIAL LEVELS

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Abstract: The paper aims to explore the quality of employment at different territorial levels (national, macro-regional, regional, county and local level). The first section of the study approaches the quality of employment in terms of several perspectives (sociological, economic and geographical). Methodological aspects are discussed in the second section, with focus on the selection of statistical indicators by two main criteria: the relevance of the indicators and their availability for all the mentioned territorial levels. The largest part of the paper presents the analysis results, basically the typologies of the mentioned territorial levels in terms of selected indicators mirroring the quality of employment. The study shows that there exists a relationship between the situation of the quality of employment (weak, average or good) and the different territorial levels analysed.

Key Words: *quality of employment, decent work, labour market, territorial level, Romania.*

Introduction

The quality of employment is an issue of importance for everybody: people, institutions, governments, economic actors, communities. Thus, the quality of employment has increasingly become the focus of attention among labour market analysts, researchers from many and diverse fields of sciences, and policy makers in the European Union and worldwide.

The quality of employment is promoted by the European Union's official documents and strategies (e.g. Social Policy Agenda 2005, Europe 2020) as a "guiding principle" for rising standards and ensuring a more equitable sharing of progress. The three mutually reinforcing objectives – smart, sustainable, and inclusive growth – specified in the Europe 2020 Strategy (European Commission 2010) represent the background for the other European official documents and also for the theoretical, methodological or applied scientific papers which approach employment and social development (Balkyte and Tvaronavičiene 2010, Cooke and De Propris 2011, Lazaroiu and Roscia 2012, Budzianowski 2012, Leschke et al. 2012, Capros et al. 2014).

Geographically speaking, the labour market has an intrinsically local or spatially constituted level of operation and regulation (Peck 1996, Peck 2003, Martin 2000, Martin and Morisson 2003, Castree 2010, Weller and Campbell 2014).

The approach proposed in the present research is consistent with the international conceptual and methodological framework on the quality of employment. The aim of this paper is to analyse the quality of employment from a multi-territorial perspective, with a focus on two different and dependent research directions: firstly, to identify the statistical variables and indicators for analysing the quality of employment which are available at different territorial levels; secondly, to obtain territorial typologies in terms of quality of employment. The paper starts with a review of the literature which explores the very numerous statistical indicators of the quality of employment. This section contributes to highlighting the intrinsic territorial valence of the quality of employment. Also, in this part of the paper, the Multivariate Analysis is used to

investigate macro-regional, regional, county and local typologies in terms of quality of employment.

The quality of employment: different approaches

In the economic and sociological literature, the term “quality of employment” is related with other terms, such as: decent work, quality of work, quality of working life, job quality or good / bad jobs (Bescond et al. 2003, Bonnet et al. 2003, Ghai 2003, Arvigan 2005, Johri 2005). The development of these concepts in terms of their definition has evolved from simple studies of job satisfaction towards more comprehensive evaluations of job and employment quality (Burchell et al. 2012).

The concept “decent work” launched by the International Labor Organization (ILO 1999) considers every aspect of employment, e.g. working conditions, rights, social dialogue, personal goals, as well as more standard measures such as income. “Decent work” implies opportunities to obtain decent and productive work, in such conditions of freedom, equity, security and human dignity (ILO 1999) but it is extremely vague and all-encompassing and almost impossible to measure across countries using the same set of statistical indicators (Burchell et al. 2012). The concept “decent work” is thus related to Sen’s capability approach as it considers not only the availability of jobs, but a broad range of aspects associated with work which the individual has reason to value (Sen 1997, Clark 2000).

The concept “quality of work” is more comprehensive than “decent work” and it includes better jobs and a balance between working life and personal life; it implies better policies, fair remuneration, a work organisation adapted to the needs of both businesses and individuals; it is based on high skills, fair labour standards and decent levels of occupational health and safety and it includes the facilitation of occupational and geographical mobility (van Bastelaer 2002).

The “quality of employment” is a subjective and multidimensional concept, hence it is difficult to define. Reflecting this difficulty, it has no standard or agreed definition in the academic or expert literature. Being defined more broadly, it includes the objective characteristics related to employment (specific to the job and generally relating to the wider labour market), the characteristics of the worker, the match between the worker and the employment characteristics, and the worker’s subjective evaluation (job satisfaction) of the employment characteristics. Very briefly, it implies the organisation of work and its adaptation in relation to the needs of both companies and employees (van Bastelaer 2002). Van Bastelaer and Hussmanns (2000) define quality of employment as a set of characteristics that determine the capability of employment to satisfy certain commonly accepted needs.

The concept of quality of employment implies a comprehensive and all-inclusive approach to the labour market that considers all aspects of work. The quality of employment is important not only due to reasons of individual welfare, but also because of its importance to the society as a whole (Sehnbruch 2004). The quality of employment matters as much as the quantity of employment, because employment is an important socio-economic dimension of life (a “space”, using Sen’s 1997 expression) in which inequality manifests itself not only through the unemployment rates but also through the job characteristics themselves.

High quality jobs are also generally the most productive ones, and they require higher levels of skills from workers. Low quality employment is not randomly distributed in the population. In general, women, youth, older people, less educated people, less skilled people, ethnic minorities and people who are disadvantaged in some way and/or are at the margins of the labour market are more likely to be in a low quality employment situation, perpetuating such disadvantages (van Bastelaer 2002). Conceptually, it may be useful to divide job quality into

two broad areas, employment quality and work quality. Employment quality, referring to those aspects of the employment relationship that have a potential impact on the well-being of workers, covers all the aspects related to the employment contract (remuneration and working hours) and career development. Work quality, referring to how the activity of work itself and the conditions under which it takes place can affect the well-being of workers, is focused on the aspects linked with autonomy, intensity, social environment and physical environment (Muñoz de Bustillo et al. 2009).

In the scientific literature, there are many contributions in the field of quality of life highlighting the link between this one and the quality of employment (Harvey 2001, Greenhaus et al. 2003, Sehnbruch 2004, Gallie 2007), the level of education (Moretti 2004, Aceleanu 2012) and the life satisfaction (Andren and Martisson 2006, Ferrante 2009).

In Romania, the concern on the quality of employment is expressed at institutional and political levels and it is materialized by the strategies, national plans and programmes elaborated and implemented by the Ministry of Labour, Family, Social Protection and the Elderly, by the national, counties and locals agencies for employment, while being monitored/controlled by the Territorial Labour Inspectorate. All these official institutions and documents represent the legal background for numerous studies focused on the quality of employment in the larger framework of the quality of life (Zamfir 1990, Mărginean and Bălașa 2005, Mărginean and Precupețu 2008, Mărginean and Precupețu 2011, Vasile et al. 2011).

Geography shares with the other disciplines the theoretical framework of the quality of employment concept, improving it, but there is no sub-disciplinary geographic direction on the "quality of employment". Rather, this topic is situated at the intersection of the subfields of economic, regional and social geographies (Weller and Campbell 2014). In completing the socio-economic approach, geographers offer a different perspective, being based namely on the spatial dimension. This approach implies several aspects, the most important ones being to point the following: the factors that distinguish geographically the characteristic features of employment and unemployment; the correlation of employment with territorial disparities (Goschin 2008), looking at the characteristic features and structure of employment and unemployment, including the evolution trends of the local and/or regional economy within a national context (Șerban and Tălângă 2015); the identification of socio-spatial effects of employment, qualification, requalification, professional updating and reconversion of labour at territorial level.

Labour geography, term coined by Herod (1997) to designate an emergent body of largely left-critical research, has its roots in the sub-discipline of economic geography that focuses on employment issues. The labour geography approaches the employment issues emphasizing its acute awareness of power and inequality, and its left sensibility, politically speaking (Castree 2010).

In the mid-20th century, the geographer who upheld the idea that geography should study labour as a discipline was Renée Rochefort (1961), saying that if Geography wishes to remain a live science it ought to study labour, because labour is the most important human activity, it is the source of welfare, the force which permanently changes, organises and even destroys the surface of the Earth, the personality of an area resulting from the way society has explored and valorised its natural and labour resources just through labour (Rochefort 1961: 2).

Geographers view the quality of employment as an outcome of the multiple and inherently specialized structures and processes at work inside labour markets (Castree et al. 2004, Weller 2008), as a result of a complex and dynamic relation of labour.

Materials and methods

Analysing the quality of employment follows some principles, including its applicability by national statistical institutions. This is one of the most important principles, vital for characterising the quality of employment at national level and for acting to improve it if at low levels. To capture the complete picture of the relations established between the different social and economical processes and phenomena that have shaped the quality of employment across the EU member-states and EU regions, the international system of statistical indicators should be supplemented, observing the rule of applicability/availability by all member-states, both at national and (macro)regional level and even at the local territorial one (Davoine et al. 2008). Furthermore, the international framework of statistical indicators should be adapted according to the existing data-base or to the specific country's socio-economic background (Ciutacu and Chivu 2007).

The main criteria for selecting the needed statistical indicators were their relevance to the Romanian labour market and their availability at all the different territorial levels considered in the analysis. The availability of the same statistical data at all four territorial levels is a very important aspect for mapping out the indicators and analysing them at different spatial levels. Some statistical indicators, which meet the two above-mentioned criteria, were identified in Sehnbruch's (2004) and Ciutacu and Chivu's approaches (2007). Sehnbruch (2004) analysed five dimensions of the Chilean labour-market, centred on income, social security coverage, contractual status, employment stability and professional training received. The Ciutacu and Chivu (2007) approach followed closely the Eurofound model of job and employment quality, their quality-of-employment analysis focusing on four aspects: career and employment security, development of skills, reconciliation of working and non-working life, health and well-being. These two studies have revealed that there are some indicators which might mirror the quality of employment at all territorial levels, meeting at the same time the desideratum of relevance for Romania and for the study-area, as well as the availability of data at all territorial levels. These indicators, employed in the present analysis, are: general rate of employment (EMPLOY); rate of unemployment (UR); rate of employment in agriculture (EMPLOYAGR); rate of employment in non-agricultural activities (divided into manufacturing sector – EMPLOYMANUF and tertiary sector – EMPLOYTERT); and the percentage of employees per total employed population (EMPLOYEEES). In our study, these indicators are computed from the statistical data available at macro-regional, regional, county and LAU2 levels provided by the National Institute of Statistics (TEMPO Online and the results of the Population and Housing Census 2011).

The method used to analyze these indicators is the Hierarchical Ascending Classification (Multivariate Analysis). This method allowed us to obtain territorial typologies in terms of quality of employment, the Hierarchical Ascending Classification performing a precise hierarchy over large data sets which helps the rapid creation of nested partitions in a dataset (Bruynooghe 1977 quoted by Șerban and Tălângă 2015, Rokach and Maimon 2010).

The general rate of employment provides information on the extent to which an economy generates jobs, the empirical evidence suggesting that it has a higher correlation with economic development, measured by GDP per capita, than with the labour force participation rate (Akyeampong 1996, Anker et al. 2003). The lack of employment opportunities in the manufacturing sector and the insufficient level of development in the tertiary sector (whose restructuring is reflected by the depleted rate of employment values in the manufacturing and in the tertiary sectors) augmented the importance of agricultural activities (Ciutacu and Chivu 2007). In this way, the rate of employment in agriculture indicates that the increase of the population employed in this sector was due not so much to the needs of agriculture, as to the redundant workforce from other sectors of the urban economies (Mateoc-Sîrb et al. 2014). The economic structure of employment is linked with urbanization and the rapid rural-urban

migration (in the case of developing countries, Anker et al. 2003) and with the inverse process of migration, from urban-to-rural, in the transition economies (Ianoş 1999). Unemployment (loss of the labour-force potential) is the effect of the mismatch between the quality and quantity of labour offer and demand, reflected by the capacity of the local/regional/national economy to create new jobs and to maintain the existing ones (Mocanu 2010).

Results and discussion

National level. Once Romania joined the EU (in 2007) and once the financial and economic crisis set on (in 2008), the national labour market continued to be characterised by persistently low employment and high inactivity rates coupled with a shrinking working-age population due to population ageing and outward migration, as well as under-employment in agriculture (European Commission 2015).

The resulting taxonomy of the European employment quality models is based on an enlarged dataset that includes the Laeken indicators and it appears to identify four job quality systems in the EU. Romania is included in a new Member State cluster (together with Poland, Hungary, Bulgaria, Slovakia, the Czech Republic, Latvia, Lithuania and Estonia). This implies low productivity levels, low socio-economic security and unfavourable working conditions (e.g. high health risks), which are partly offset by the relatively low work intensity (Davoine et al. 2008).

The European Foundation for the Improvement of Living and Working Conditions (Eurofound 2013), which elaborated an inventory of employment and working conditions in Romania (starting with 2001), highlighted the main features of the national labour-market: a decreasing employment rate (which means, on the one hand, reduced employment security, and a fundamental goal of workforce employment policies, on the other hand); the existence of two labor-markets, one specific to urban economic activities and regulations, converging with the EU characteristics, and the other one, a "natural labour-market", characteristic of the rural space (where payment and taxation of the value of work are not made on a regular basis), with predominant agricultural activities and with a market economic mechanism which in many cases is not the rule; dependency of the quality of work and life on job satisfaction and revenue (Ciutacu and Chivu 2007).

Macro-regional level. Class 1 comprises two macro-regions (I and IV) in which the general quality of employment situation is close to the national average. An exception is made by the general occupancy, the employment in the manufacturing sector (above the national average, with a positive impact on the quality of employment) and the occupancy in tertiary activities (below the baseline, negatively affecting the quality of employment). Class 2 is represented by the Macro-region III which includes Bucharest-Ilfov region and the industrialized area of Prahova, Argeş and Dâmboviţa counties. In this context, the quality of employment is good, it being the cumulative effect of the indicator values analyzed: the general employment rate, the percentage of employees per total employed population and the rate of occupancy in tertiary activities have high values, above the baseline; the values of the unemployment rate and occupancy in agriculture are below the national average. Class 3 contains the Macro-region II, with a problematic quality of employment: the values of unemployment rate and of employment rate in agriculture (with negative impact on the quality of employment) are above the national average; concomitantly, the indicators with a positive effect on the quality of employment have values below the national average (Fig. 1).

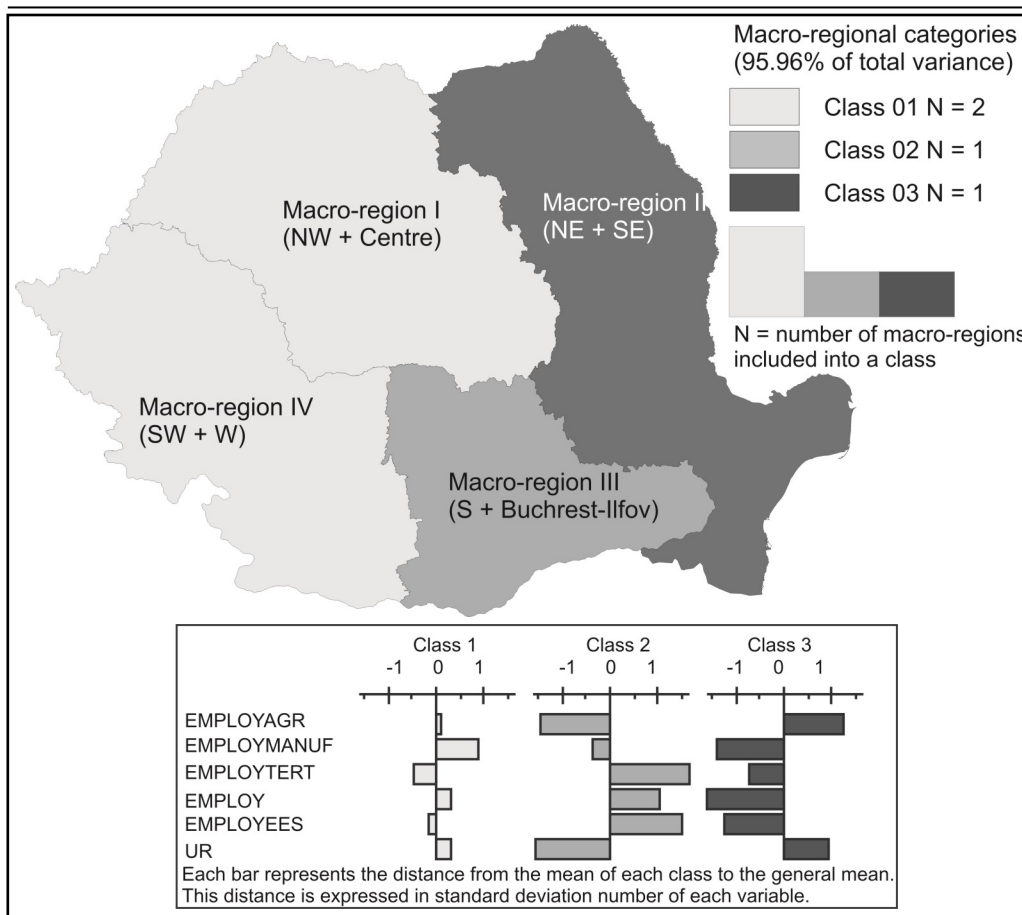


Fig. 1 – Types of macro-regions

Source: Population and Housing Census 2011, TEMPO Online, National Institute of Statistics
Made with Philcarto (<http://philcarto.free.fr>)

Class 1 = the general quality of employment situation is close to the national average, excepting two indicators (employment in the manufacturing sector - above the baseline and occupancy in tertiary activities - below the baseline);

Class 2 = the quality of employment is good due to the cumulative effect of the selected indicator (high values of the four indicators with a positive impact on the quality of employment and low values of the other two indicators – the occupancy in agriculture and the unemployment rate);

Class 3 = a problematic quality of employment (the indicators with positive effect on the quality of employment have values below the national average).

The eight **development regions** are divided in the three classes. Class 1 includes the North-East, North-West, West and South-West regions. In this class, the quality of employment is notably distanced by the national average, because of the values of general occupancy below the national average, including the manufactured and tertiary sectors. Also, the problematic situation in terms of quality of employment is generated by the values of unemployment rate and of occupancy in agriculture, which are above the national average. Class 2 is represented

only by the Centre region, which registered a high quality of employment. This is due to the benefit resulting from the values of general occupancy, the share of employees per total employed population and the employment in the tertiary sector, which are above the national average; at the same time, the indicators with a negative impact on the quality of employment (occupancy in agriculture and unemployment rate) registered values below the national average. Class 3 includes South, Bucharest-Ilfov and South-East regions in which the quality of employment is very close to the national average (excepting the share of employees per total employed population above the national average) (Fig. 2).

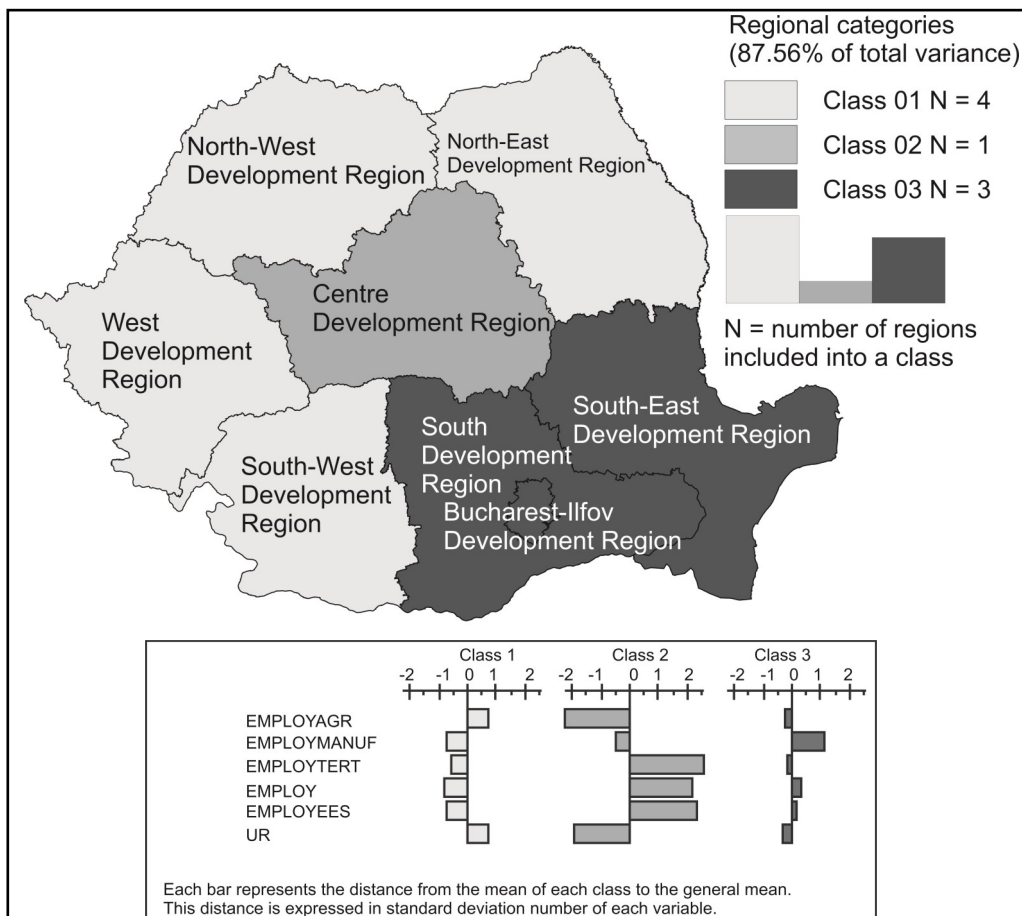


Fig. 2 – Types of regions

Source: Population and Housing Census 2011, TEMPO Online, National Institute of Statistics
 Made with Philcarto (<http://philcarto.free.fr>)

Class 1 = the quality of employment is weak, notable distanced by the national average, the indicators with negative effect on the quality of employment being above the national average;
 Class 2 = good quality of employment (the indicators with positive effect on the quality of employment are above the national average and those ones with a negative impact are below the baseline);
 Class 3 = the quality of employment is very close to the national average (excepting the share of employees per total employed population above the national average).

County level. Class 1 has the largest number of counties in which the quality of employment is close to the national average: employment in manufacturing activities registered a positive deviation, which has a good impact on the quality of employment. Class 2 includes the western and central counties, but also two southern and south-eastern counties (Ilfov, Constanța) and the Bucharest Municipality. In the counties from the class 2, the quality of employment is good due to the above the national average values of the indicators with positive effect; also, the values of the unemployment rate and occupancy in agriculture (with a negative impact on the quality of employment) are below the national average. Class 3

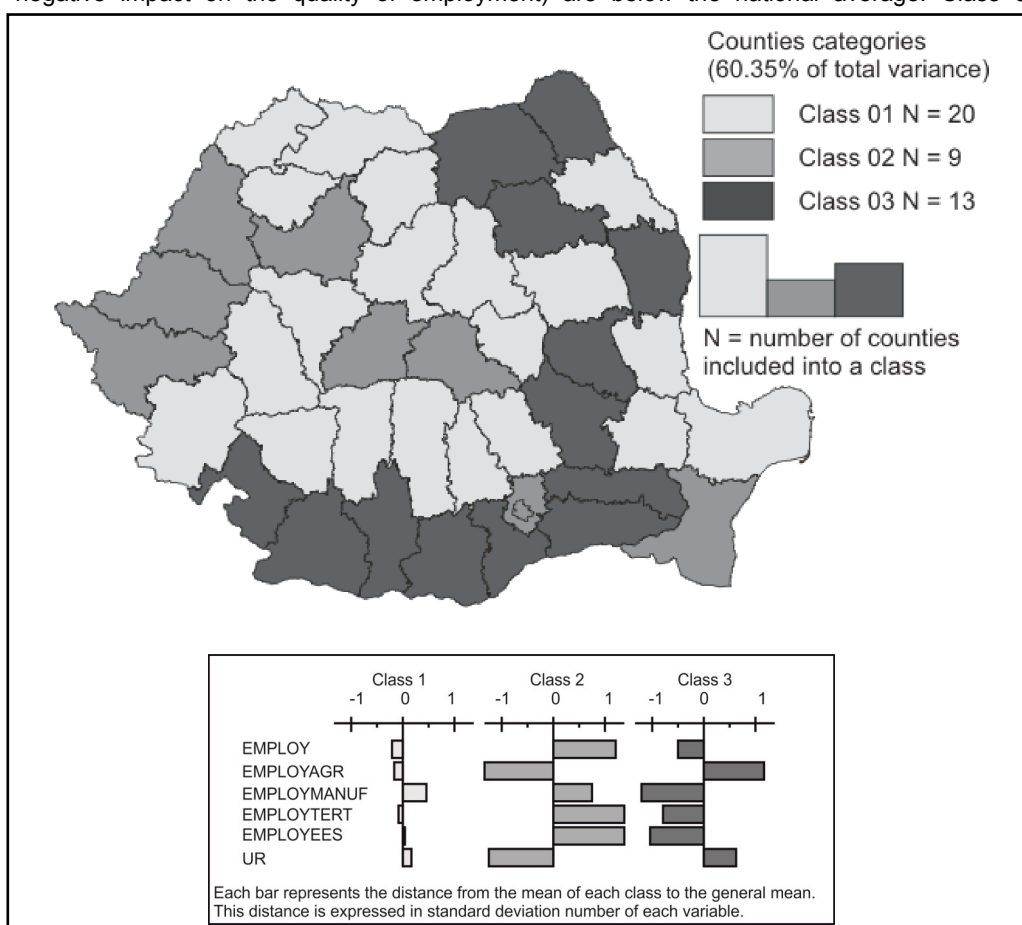


Fig.3 – Types of counties

Source: Population and Housing Census 2011, TEMPO Online, National Institute of Statistics
 Made with Philcarto (<http://philcarto.free.fr>)

Class 1 = the quality of employment is close to the national average;
 Class 2 = the quality of employment is good due to the above the national average values of the indicators with a positive effect; also, the values of the unemployment rate and the occupancy in agriculture (with a negative impact on the quality of employment) are below the national average;
 Class 3 = a weak quality of employment because of the sharp negative deviation in the case of all indicators with a positive effect.

comprises the southern and eastern counties of Romania. These counties are characterized by a weak quality of employment because of the sharp negative deviation in the case of all indicators with a positive effect; concomitantly, the indicators with a negative impact on the quality of employment have values above the national average (Fig. 3).

In this study, the selected **local level** is represented by the 266 local administrative units of the Romanian Danube Valley (Fig. 4).

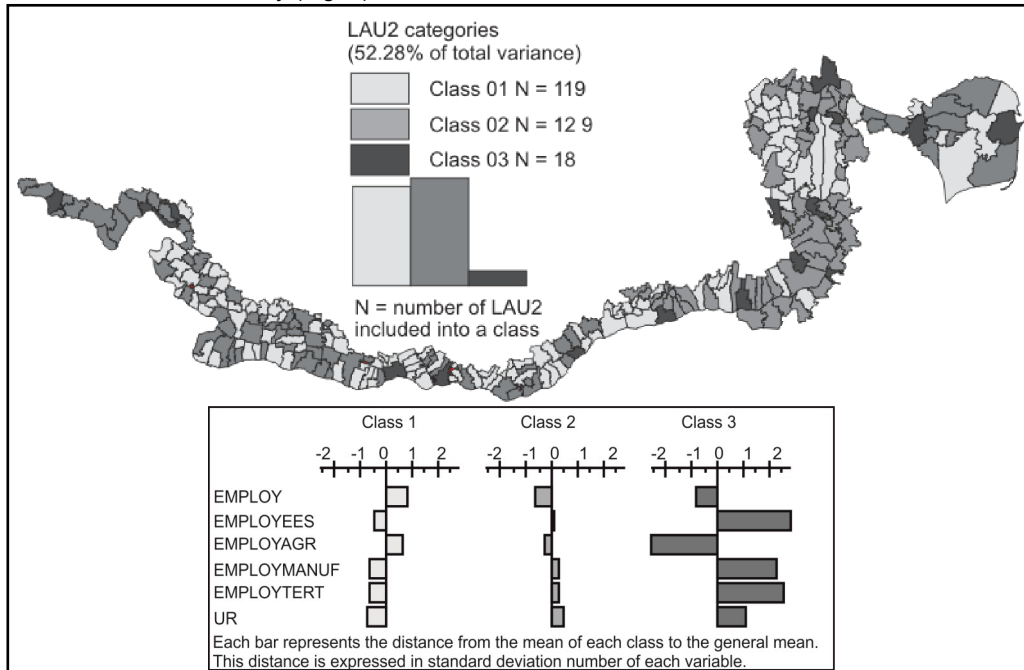


Fig. 4 – Types of LAU2

Source: Population and Housing Census 2011, TEMPO Online, National Institute of Statistics
Made with Philcarto (<http://philcarto.free.fr>)

Class 1 = the quality of employment is weak because of the sharp positive deviations registered by the occupancy in agriculture and because of the sharp negative deviations recorded by the indicators negatively impacting the level of the quality of employment;

Class 2 = the quality of employment is relatively close to the national average, with some trends toward increasing the quality of employment (a weak positive deviation recorded by the occupancy in non-agricultural activities), but there still exist the positive sharp deviations of the rate of unemployment, the negative notable deviation of the general occupancy both with negative effects on the quality of employment;

Class 3 = the quality of employment is relatively good due to the advantageous position against the national average value of indicators with a positive effect; concomitantly, the values of the unemployment rate is generally high and the general occupancy rate is lower than the baseline.

Four out of the 12 Danubian counties fall into two different classes: Galați, Brăila and Tulcea counties in the class with a quality of the employment close to the national average and Constanța in class 2 with a good quality of employment (Fig. 3). The closest to the national average are the indicators falling into classes 1 and 2, which include the largest extent of the Danubian territorial administrative units (all rural localities and the small Danubian towns). The quality of employment is conditional on the rural local economy, which shaped the local labour

market and the general living conditions in the rural areas. Since agriculture represents the main rural economic activity in the Danube Valley, the quality of employment is low because of the high occupancy in agriculture (a sharp positive deviation impacted negatively the quality of employment level); also, occupancy values below the national average in non-agricultural activities have a negative effect on the quality of employment. The modeling role of agriculture is shown by the sharp negative deviation of the unemployment rate (class 1) and by the positive deviation in class 2 (where occupancy in agriculture is below the baseline). Class 3 included the majority of the Danubian urban territorial units that recorded a relatively good quality of the employment, compared with the rural area and the small Danubian towns (Fig. 4). The occupancy in non-agricultural activities is higher than the national average but the general occupancy represents a real problem because of the cumulated effects of restructuring the town industries (top specialisation in metallurgy in Galați, Călărași, Zimnicea and Tulcea cities and in the chemical industry in Turnu Măgurele – Ianoș 1999). The effects of restructuring the town industry was primarily in the downscaling of specific activities and even in stopping them altogether, reducing jobs and closing down industrial units, hence growing unemployment. Along the Romanian Danube Valley, urban economies were severely affected by the restructuring process, the rural economy being dominated by subsistence.

CONCLUSIONS

Exploring the quality of employment in Romania at different territorial levels highlighted three main conclusions.

The majority of statistical units or territorial administrative units are included in classes with a weak quality of employment or close to the national average. This situation is obvious for class 1 (which comprises almost half of all macro-regions, regions, counties and the Danubian territorial administrative units) and class 3 (which includes about a third of all counties and regions) (Table 1).

Table 1
Synthetic outline of different territorial levels in terms of quality of employment

Territorial levels	Class 1		Class 2		Class 3	
	Negative distance	Positive distance	Negative distance	Positive distance	Negative distance	Positive distance
Macro-regional	(-0.5)= EM- PLOYTER T (-)	0.5= (UR); 1= EMPLOY- MANUF (+)	(-1.5)= EM- PLOYAGR and UR (+)	1 - 1.5= EMPLOY- TER, EM- PLOYEES and EM- PLOY (+)	(-1)- (-1.5)= EMPLOY- MANUF, EM- PLOYTERT, EMPLOY and EM- PLOYEES (-)	1= EM- PLOYAGR and UR (-)
<i>Characteristics of the quality of employment (% of total statistical units)</i>	close to the national average	50%	good	25%	weak	25%



Table 1

Synthetic outline of different territorial levels in terms of quality of employment

Territorial levels	Class 1		Class 2		Class 3	
	Negative distance	Positive distance	Negative distance	Positive distance	Negative distance	Positive distance
Regional	(-1)= EMPLOYMANUF, EMPLOYTERT, EMPLOYEES and EMPLOY (-)	1= EMPLOYAGR and UR (-)	(-2)= EMPLOYAGR and UR (+)	2= EMPLOYMANUF, EMPLOYTERT, EMPLOYEES and EMPLOY (+)	(=)	1= EMPLOYMANUF (+)
<i>Characteristics of the quality of employment (% of total statistical units)</i>	weak	50%	good	12.5%	close to the national average	37.5%
County	(=)	0.5= EMPLOYMANUF (+)	(-1.5)= EMPLOYAGR and UR (+)	0.5= EMPLOYMANUF 1= EMPLOY, EMPLOYTERT and EMPLOYEES (+)	(-0.5)= EMPLOY (-1)= EMPLOYMANUF, EMPLOYTERT and EMPLOYEES (-)	0.5= UR 1= EMPLOYAGR (-)
<i>Characteristics of the quality of employment (% of total territorial administrative units)</i>	close to the national average	47.6%	good	21.4%	weak	30.9%



Table 1

Synthetic outline of different territorial levels in terms of quality of employment

Territorial levels	Class 1		Class 2		Class 3	
	Negative distance	Positive distance	Negative distance	Positive distance	Negative distance	Positive distance
LAU2	(-0.5)= EMPLOYEES (-1)= EMPLOY-MANUF and EMPLOYTERT (-)	1= EMPLOYAGR (-)	(-1)= EMPLOY (-)	0.5= UR (-)	(-1)= EMPLOY (-) (-2.5)= EMPLOYAGR (+)	2.5= EMPLOYEES, EMPLOY-MANUF, and EMPLOYTERT (+) 1= UR (-)
<i>Characteristics of the quality of employment (% of total territorial administrative units)</i>	weak	44.7%	close to the national average	48.4%	relatively good	6.8%

(Source: authors' compilation)

(+) = positive effect on the quality of employment; (-) = negative effect on the quality of employment; (=) = neutral effect on the quality of employment.

Positive distances: weak = 0.5, notable = 0.5 - 1.0, sharp = 1.0 - 1.5, strong = >1.5;

Negative distances: weak = (-0.5), notable = (-0.5) - (-1.0), sharp = (-1.0) - (-1.5), strong = < (-1.5).

EMPLOY = general rate of employment; UR = rate of unemployment; EMPLOYAGR = rate of employment in agriculture; EMPLOYMANUF = manufacturing sector; EMPLOYTERT = rate of employment in the tertiary sector; EMPLOYEES = % of employees per total employed population.

The good quality of employment is characteristic for the Macro-region III, the Development Region Centre and for the western and central counties, for two southern and south-eastern counties and for the Bucharest Municipality.

Also, a relatively good quality of employment was recorded for the large and medium Danubian municipalities and towns; - generally, the quality of employment at local level appears to be weak (class 1 in types of LAU2), even in the situation in which the quality of employment is close to the baseline existing deviations with negative effects (e.g. the general occupancy below de national average, the unemployment rate above the baseline). This weak quality of employment at local level is matched with the weak quality employment recorded by the Danubian counties (class 3 in types of counties) and even with the weak quality of employment registered by the Development Region South-West (class 1 in the types of regions) (Table 1).

This type of research has some practical implications, enabling decision-makers to act by taking into account the relationships established between the different structures of employment (occupancy in agricultural and in non-agricultural activities, the employees, the employed and the unemployed population).

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STEPS IN UNDERSTANDING THE ROLE OF INSTABILITY UPON URBAN TERRITORIAL SYSTEMS

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Abstract: Instability is an omnipresent process that creates the conditions for adaptation and change. A territorial system cannot develop without instability. A high degree of system instability points out an acute structural and functional disorder. The present study proposes a method to measure system instability through economic structural and functional changes inside urban territorial systems. The analysis is done by quantifying the changes and transfers in internal economic hierarchies. System instability shows the role that the system plays in its environment and consequently the measures that can be taken to amplify or hinder (depending on the desired outcome) that role. The conceptual framework captures the adaptive processes associated with system instability and both structural and functional changes are evidenced. The non-linear processes were analysed for the urban territorial system of Baia Mare (Romania) underlining their role in the city's adaptation to the changing of its environment. The proposed method starts from the assumption that internal systemic hierarchy is a very stable parameter of state. If the system is unstable, significant changes of the internal hierarchy will happen, and this will be reflected in a strong structural and functional shift. Measuring system instability helps better understanding the impact that change and adaptation have over the territorial system and its environment. Understanding these processes may offer policy makers the evidence they need to take actions in a conscious manner.

Key Words: *systemic instability, self-organisation, urban territorial system, non-linearity, Baia Mare.*

Introduction

Systemic instability relates to the dynamic interaction of the system variables that are under the influence of an unequal cause–effect relation that results into feedbacks and amplifications that change the structure and behaviour of the system. Such systems are defined as non-linear systems (Kiel 1991) that, under the impact of instability, continue to exist in a new form of equilibrium and a superior state of organization or, on the contrary, they may face chaos and a falling state of organization. But chaos generally represents only a stage in the entire existence of a system while instability transforms it after that into a new system with a different structure and functionalities grounded on its former identity and functions.

Non-linear processes represent the main drivers of territorial systems' dynamics and their analysis faces problems related to predictability, reproducibility, testability, and explainability. All these analysis prerequisites have one feature in common – instability, which is seen as the source of complexity, self-organization, and pattern formation (Langer 1980). In this way, measuring instability can represent a starting point for assessing a territorial system's complexity, self-organization, or determination of a specific pattern (system's identity). The evaluation of specific processes in non-linear territorial systems in relation to systemic instability should be done by rather more qualitative approaches than by 'pure' quantitative ones dedicated to classical technical and exact systems (Schmidt 2011, Hellesland 2012, Chesi 2015).

In order to reveal such structural changes and non-linear processes inside a territorial system, a specific theoretical framework is also needed to create the necessary conceptualizations. In this sense, the theory of dissipative structures (Prigogine and Stengers 1984, Prigogine 1997) and the theory of complexity are best suited to conceptualize such types of phenomena (Allen 1982, Arthur et al. 1997, Krugman 1997, Cilliers 1998, Martin and Sunley 2006).

The theory of dissipative structures is currently part of the complexity theory while dissipative systems evolved to the complex adaptive systems that enter reconfiguration and restructuring processes as effect of the instability of systemic fluxes and relations. Dissipative structures (Prigogine and Stengers 1984, Prigogine 1997) represent open systems that exist based on the import and export of energy within the external environment (Ianoș et al. 2011). So that, the system requires the entropy that is dissipated or exported back to the external environment in order to maintain its structure and functions. Dissipative structures have a strong dynamics built on vulnerability and non-linear (unstable) relations among the system components, resulting in minor changes with major impact within the system (Prigogine and Stengers 1984, Prigogine 1997).

The complexity theory relates also to the non-linear dynamics of the system's components. So that the system dynamics determined by instability faces different points of equilibrium, non-predictability, inefficiency, asymmetry, lock-in situations and path dependence (Arthur et al. 1997). But the system dynamics is difficult to predict on long term as complexity involves the emergence of order as a result of auto-organization. These emergence and auto-organization processes conduct to (inconstant) resilience and adaptation along the dynamics of the system (Martin and Sunley 2010, Walker and Cooper 2011).

Urban territorial systems function closely to socio-ecological systems that are founded also on an identity of their own (Cumming and Collier 2005) and their internal structure relates to the external environment while they are also vulnerable to disturbances so that they require increased adaptability and resilience (Gallopin 2006, Young et al. 2006, Zurlini et al. 2006, Stokols et al. 2013, Garmestani 2014, Sikula et al. 2015, Văidianu et al. 2015).

The identity or profile of territorial systems should be stable over long periods of time. If this profile is unstable, system instability leads to the emergence of new structures, functions and hierarchies that allow the existence of the territorial system. This happens through the action of another domain of attractors as influenced by the system parameters that change the attraction area to another one characterized by a different type of dynamics.

Systemic instability may be analysed through demographic, economic, social, cultural and spatial variables taking into account their different feedback time. Also, territorial systems may respond differently in terms of rapidity although under the impact of similar intensity of instability processes. Generally, territorial continuities and discontinuities (Ianoș and Heller 2006, Humeau et al. 2010, Finka and Kluvánková 2015) generate more reduced or higher instability impulses among the systems. In the same time, shocks are strongly received or more attenuated while territorial systems process shocks slowly in comparison to a faster handling of others while other systems remain inert to them. Systems' resilience constitutes the main agent of these diverse situations of instability impact. System resilience is defined through the quantity of absorbed shocks before a structural change takes place or as the required time for the system: 1. to recover to its initial state of equilibrium; or 2. to reorganize in search of another point of equilibrium based on its former structure and functionality (Gunderson 2000, Folke 2006, Pike et al. 2010, Filatova and Polhill 2012).

System instability evidences changes in the intensity and direction of flows that run through the territorial system (Zhao 2012, Morandi et al. 2014). The purpose of the study is to present a possible way to determine system instability by revealing the structural and functional changes

generated by economic processes that act inside an urban territorial system (the city of Baia Mare, Romania) in a certain time frame (between 2001 and 2010). The analysis focuses on the factors and processes of radical change in identity and economic structure for the urban territorial system while systemic instability had a crucial role in assuring its adaptive capacity. Within this systemic approach (Ianoş 2000, Flood 2010) of urban territories, a second purpose is to highlight the non-linear processes that come along with this structural change of a local or regional economy: emergence, self-organization and path-dependency (Kiel 1991, Gunderson 2000, Folke 2006, Page 2006, Martin and Sunley 2010, Pike et al. 2010).

Methodology

Study Area. Baia Mare is a medium size city in the urban hierarchy of Romanian cities, being the county capital of Maramureş. Baia Mare is the third largest city in the North-West development region, after Cluj-Napoca and Oradea (Fig. 1). Until the mid of the 90s, Baia Mare was an important industrial city specialized in extracting non-ferrous ores (gold, silver, copper, zinc and lead) and in preparing them as secondary resources for other industrial uses. Machine building and chemical industry were the other activities that shaped the economic profile of the city. The city had a great influence over the regional economy as it attracted workers from a large hinterland making thus Baia Mare act as a central place. This urban territorial system provided strategic resources for the national economy and it provided working places directly and indirectly for much of the counties inhabitants. Following the socio-economic and political changes from 1989 (Bănică and Muntele 2015), Baia Mare started to lose its previous role in the national economy due to a radical shift in the international economical patterns and trade and production that Romania had to undergo. The urban territorial system of Baia Mare went through a radical change of identity. The inhabitants of Baia Mare and from the other surrounding areas depended on the ability of the urban territorial system to adapt to the new economic patterns and to create new economic structures and relations. A new identity was thus created.

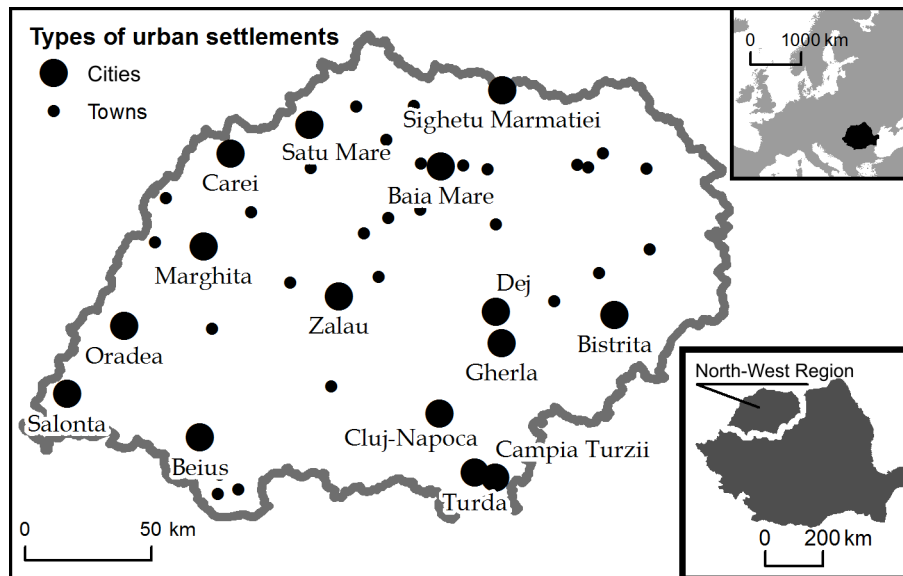


Fig. 1 – Baia Mare and the regional urban system

Applied systemic instability assessment. The objectives of this research were met by using the simple method of the single criteria classification. In this sense, a ranking of the first fifteen economic activities that generated the highest turnover was made for every year in the established 2001-2010 time range. After the ranking for each year, an analysis of the inputs and outputs (how many pairs of economic activities left/entered the hierarchy created by the top 15 turnover producers) was undergone in order to reveal the internal dynamics of Baia Mare as representing the urban territorial system case study. In this logic, all NACE (nomenclature of economic activities) activities that make up the economy of Baia Mare city were centralised for the 2001-2010 reference period. Then, the classification of the top 15 NACE turnover producers for each year was analysed in order to highlight the changes that took place inside the territorial system. The next step of the analysis included the centralisation of these changes, focusing on the pairs of exits and entrances in the hierarchy, in order to search the different patterns created. So that, patterns of stable and unstable economic activities were revealed and systemic instability was conceptualized as marker for the presence of complex territorial processes (Kiel 1991, Manson and O'Sullivan 2006, Martin 2010). The analysis was completed by a short view on three significant industrial regions in Europe, underlining the different directions of addressing systemic instability inside urban systems and good practices for future development support.

Results

On the average, the first fifteen NACE codes inside the analysed urban territorial system represented 4%-5% of the total NACE codes that existed in Baia Mare's economy. These top 15 economic activities generated from 45% to 55% of the total turnover produced by Baia Mare's economy.

Taking into account the economic activities that generated the highest turnover in 2001 (Table 1), the economic profile of the 3rd biggest city in the North-West development region was defined by activities that belonged to commerce and the trade sector. Mining, manufacturing of technological equipment, freight transport, meat processing, constructions, textile industry and metallurgic industry completed this economic profile, specific to a city that already underwent major changes from 1989 until 2000. The closing of mines starting from 1997 and the major dismissal of employees represented the processes with a major impact on the local and regional economy centred on the urban territorial system of Baia Mare.

In 2002, the economic structure was mostly stable apart from the arrival of two new-comers: NACE 3109 – Manufacture of furniture, and NACE 3103 – Manufacture of mattresses. A significant change that happened in 2002 was the rise of mining activities on the first position of the economic hierarchy as representing the biggest turnover generator inside the urban territorial system of Baia Mare. In 2003, the first three positions remained unchanged (mining, wholesale of food, beverage and tobacco and retail sale of food, beverage and tobacco). The newcomer manufacturer of mattresses climbed up to the fifth position, after an increase of its turnover with 15 million Euros in one year.

The year of 2004 confirmed the ascension of the two companies under the NACE code 3103 (manufacture of mattresses). This economic activity managed to double its turnover in 2004 taking the second position in the hierarchy of the largest fifteen producers of turnover. After that, in 2005, the manufactures of mattresses overthrew the emblematic economic activity of the entire region – mining – that for many years represented the biggest producer of turnover. So that, mining fell on the second position being followed by other economic activities such as: the wholesale and retail sale of food; beverage and tobacco.

Table 1

Changes in the hierarchy of the Top 15 economic activities in Baia Mare, considering the turnover between 2001 and 2010

	NACE Code	Hierarchy of Top 15 economic activities (in 2001)	Turnover in million Euros (2001)	Turnover in million Euros (2010)	Place in 2001 (out of 333)	Place in 2010 (out of 402)
1	4711	Retail sale (food, beverage and tobacco)	34	42	1	5
2	4639	Wholesale (en gross) of food, beverage and tobacco	27	28	2	9
3	729	Mining of nonferrous ores	26	2.1	3	103
4	8299	Other support activities for enterprises	23	5.6	4	47
5	2822	Manufacturing of lifting and handling equipment	20	23	5	14
6	4941	Freight transport by road	18	32	6	4
7	1011	Meat processing and preservation	15	22	7	15
8	4120	Construction of residential and non-residential buildings	15	116	8	1
9	4719	Other retail sale in non-specialized shops	14	19	9	16
10	1413	Manufacturing of other types of clothes	14	17	10	18
11	4690	General unspecialized wholesale (en gross)	12	26	11	12
12	4673	Wholesale of wood, construction and sanitary materials	9	35	12	6
13	6619	Other activities auxiliary to financial services, except insurance and pension funding	9	0.3	13	201
14	2511	Manufacturing of metal structures and parts of structures	8	16	14	20
15	2341	Manufacture of household ceramics and ornamental articles	8	4	15	71
16	3109	Furniture manufacturing	7	83	19	2
17	3103	Mattresses manufacturing	0.5	69	111	3
18	4773	Retail sale of pharmaceutical products	4	31	28	7
19	1610	Sawmilling of wood and planing	7	29	17	8
20	1013	Production of meat	3	27	31	10
21	4520	Automotive repair and service	3	26	36	11
22	4531	Whole sale of motor parts	5	24	24	13

Source: calculated data based upon listafirme.ro

The first two positions in the economic rank remained the same in 2006. The considerable change of this year's hierarchy was the strong increase of the constructions' turnover. Another new-comer of 2006 that was going to shape the rank in the coming years was represented by sawmilling and planing of wood (NACE 1610), taking the hierarchical place of support activities for enterprises (NACE 8299).

In 2007, constructions took over the first place of the rank as the biggest turnover generator among the economic activities of Baia Mare. But the most important change that happened in 2007 was the almost total disappearance of the mining activity that suffered a sudden drop in

its annual turnover, from 71 million Euros to 12 million Euros, and then to 4.6 million Euros in 2010. So that, the main economic activity that supported the entire regional economy collapsed. The first three positions of the economic hierarchy now belonged to activities such as constructions, manufacture of mattresses and freight transport. These three economic activities generated together 15% of the total turnover of Baia Mare. In the same time, the turnover generated by the first 15 economic activities dropped from 52% to 44%, as significance in the total economy of Baia Mare, but revealing a diversification of the other economic activities present inside the urban territorial system. Also, the economic hierarchy of the activities with the highest turnover showed a temporary exit of the manufacturers of lifting and handling equipment. Seven out of the fifteen activities included in the rank belonged to the commerce and trade domain.

2008 represents the year when the international economic and financial recession started, having an important impact also on the urban territorial system of Baia Mare, although its effect registered slightly later, starting with 2009. But, until then, in 2008, the total volume of the city's turnover reached its maximum, in relation to the analysed time span (2001-2010). So that, the urban territorial system of Baia Mare produced in 2008 a total turnover of 1.6 billion Euros while its top 15 economic activities covered 707 million Euros of it. In the same time, the first two positions of the economic rank remained unchanged, being occupied by the domains of constructions and the manufacture of mattresses. In terms of dynamics, the economic hierarchy of Baia Mare was characterised by a maximum of two pairs of exits and entrances for the majority of the years from 2001 until 2008.

But, this relative stability of the urban territorial system was strongly challenged in 2009 while the effects of the economic recession were fully received by the economy of Baia Mare. So that, the total turnover of the city lost 300 million Euros in only one year, registering a relative drop of 18.1%. This general economic decrease was also observable in the hierarchy of the top 15 turnover producers, the loss being proportional to that of the total turnover of Baia Mare – there was registered an economic contraction of 17.8%, with a drop from 707 million Euros in 2008 to 581 million Euros in 2009.

Another effect of the economic crisis was the increase of economic instability inside the urban territorial system which was also reflected in the hierarchy of the top 15 turnover producers of Baia Mare. The economy dynamics based on this rank, registered a number of exit/entrance pairs that rose from 1-2 (the average until 2009) to four pairs. The strong change induced by the economic recession lead to several hierarchical shifts so that the economic activities that manufactured goods re-entered the 15 top turnover producers – the production of meat (NACE 1011), the preparation of meat (NACE 1013), the sawmilling of wood (NACE 1610) and the retail of pharmaceutical products (exception) took the place of automotive retail (NACE 4511), automotive exchange parts retail (NACE 4531), constructions of roads and metallurgic manufacturing (NACE 2511).

Traditionally, the constructions domain was considered one of the most vulnerable economic activities during economic recessions, but in the case of Baia Mare it registered a contraction of only 8%, managing to stay in front of the hierarchy of the top 15 activities as the biggest turnover producer in the 3rd largest city of North-West development region.

In 2010, the total turnover of Baia Mare increased with 2% from the previous year, while the increase of turnover for the top 15 economic activities was of almost 10%. It can thus be observed that the large economic activities recovered faster than the entire economic environment of the urban territorial system. Also the economic dynamics constituted of the exits/entrances in the top 15 rank returned to normal values for the analysed urban territorial system. The end of 2010 found on the first four positions of the most important economic activities of Baia Mare: the constructions, the manufacturing of furniture, the manufacturing of

mattresses and the freight transport by road. Also, five out of the total of fifteen economic activities belong to the commerce and trade domain.

Another important aspect of the urban territorial system economy is represented by the transition from its 2001 economic structure to the one of 2010. Seven economic activities from 2001 were absent from the rank of the largest 15 producers of turnover in 2010. These activities are: 0729 – Mining; 1413 – Textile industry; 2341 – Manufacture of ceramic for household and ornamental articles; 2511 – Manufacture of metal structures and parts of structures; 4719 – Retail sale in unspecialised shops; 6619 – Other activities auxiliary to financial services, except insurance and pension funding; and 8299 – Other support activities for enterprises.

At the end of 2010, the following economic activities are new compared to the top 15 hierarchy of 2001: 1013 – Production of meat and poultry meat products (enters the rank in 2009); 1610 – Sawmilling of wood (enters in 2006); 3103 – Manufacturing of mattresses (enters in 2002); 3109 – Manufacturing of furniture (enters in 2002); 4520 – Service of automobiles (enters in 2007); 4531 – Wholesale trade of motor vehicle parts and accessories (enters in 2004); 4773 – Retail sale of pharmaceutical products (enters in 2009). If during the 2001-2010 period four manufacturing economic activities dropped out of the top 15, their places were taken by other four manufacturing economic activities in 2010.

Also of a special importance are the economic activities that were present in the top 15 ranking in 2001, then absented for a certain number of years in order to reappear in 2010. These economic activities are 1011 – Processing of meat, and 2822 – Manufacturing of lifting and handling equipment. Their dynamics reveals that these economic activities have the capacity to come back strongly after the shocks they received due to different disturbances inside or upon the urban territorial system.

Discussion

The main findings of the analysis based on the economy dynamics of the urban territorial system of Baia Mare show that systemic instability generates opportunities for innovation, adaptation and development (Folke 2006).

The year of 2007 represented a turning point in the evolution of the economic profile of the urban territorial system of Baia Mare. This year revealed the manifestation of several non-linear processes like emergence understood as the appearance of a new economic structure with new economic leaders, while emblematic activities were pushed to the limit of extinction.

The process of self-organization started when the backbone of the regional economy disappeared almost entirely, but the urban territorial system resisted to collapse. The urban territorial system continued to exist, but under a different economic structure and functionality. Actually, the urban territorial system captured the effects of this traditional economic structure disappearance with little disturbance being produced, if we take into consideration only the volume of the total turnover and not the associated social effects. In fact, the volume of the total turnover of Baia Mare increased both in 2007 and in 2008. Afterwards, the decline of the general turnover of the urban territorial system was attributed to the turbulences created by the world economic crisis that manifested as instability and source of chaos (Choi and Douady 2012).

Over the 10 years that were analysed, few economic activities managed to enter the firstly established hierarchy of the top 15 turnover producers – there were only 26 entrances in total for the 2001-2010 period. Also, very few newcomers succeeded to maintain a constant presence in the top 15 ranking after their entrance. The specific of Baia Mare economy's dynamics constitutes the evidence that the stability of the hierarchy is high despite of the

observed changes. These facts point out that the economic activities of the urban territorial system were strongly tied up to decisions made in the past and this constitutes one of the major causes that stopped them from having sudden jumps in the turnover volume, as a general rule.

The dynamics of the exits and entrances in the hierarchy of the top 15 turnover generators constructs the synthetic image of the structural change of the urban territorial system (Table 2). So that, the evolution of the economic profile of Baia Mare registers different situations of stability and instability, together with some sudden or random changes that took part and generated the transition from the 2000 economic profile to the specific one of 2010.

Taking into consideration the total turnover produced by the top 15 economic activities, this domain of attractors seems to be stable even though the changes that happened were massive. Between 2001 and 2010, six economic activities never left the top 15 hierarchy (Table 2):

- 4120 – Construction of residential and non-residential buildings;
- 4639 – Wholesale (en gross) of food, beverage and tobacco;
- 4673 – Wholesale of wood, construction and sanitary materials;
- 4690 – General unspecialized wholesale (en gross);
- 4711 – Retail sale (food, beverage and tobacco);
- 4941 – Freight transport by road.

As easily noticed, four out of six economic activities belong to the trade domain while any economic activity that belonged to the manufacturing sector had the necessary capacity and critical mass to hold its position without interruption in the top 15 hierarchy for the 2001-2010 period.

The group of economic activities with a presence of 90% among the major economy actors of the urban territorial system during the analysed time frame is made out of the manufacturers of mattresses (3103) and furniture (3109) and the retail sale in unspecialised shops (4719). The manufacturers of furniture and mattresses entered the top 15 economic activities of the city in 2002 and never left the hierarchy until 2010. Also, these activities represent the only newcomers that managed to improve their position and climb to the top 15. If the manufacturers of furniture have a strong tradition in the region, the manufacturers of mattresses constitute a totally new activity with impact at this territorial scale.

At the end of 2010, the manufacturers of furniture and the manufacturers of mattresses represented the two economic activities that were producing the second and the third largest turnover in Baia Mare. Innovation and investment assured the economic performance and competitiveness of these activities while economic crisis related changes produced the instability of the economic environment (Choromides 2015, Nunes and Lopes 2015). Their example with the consolidation of their high position after managing to enter the top 15 economic activities of the urban territorial system depicts the classical example of breaking from the path-dependence (Ianoș 2000), but, as showed earlier, these represent the only two cases. Considering this fact, it can be summarised that the forces inside the hierarchy of turnover producers are very strong and conservative, allowing a very difficult process of position consolidation for the newcomers on the economy stage of the urban territorial system.

Table 2

Synthesis of the dynamics of economic activities that entered the hierarchy of the top 15 turnover producers in Baia Mare (2001-2010)

NACE code	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Frequency of appearance in top 15 (%)
729											60
1011											40
1013											20
1413											50
1610											40
2341											10
2511											80
2822											70
3103											90
3109											90
4120											100
4211											20
4322											20
4511											30
4520											40
4531											60
4639											100
4673											100
4690											100
4711											100
4719											90
4773											20
4941											100
5630											10
6619											10
8299											50
Legend	present										
	absent										

Source: calculated data

Economic activities that have a presence of 50% or lower in the 2001-2010 rank of the top turnover generators can be characterized by a lack of critical mass and an important inconsistency in keeping the position they formerly won. But, a special attention is required by the group of economic activities with a presence of only 10% or 20% in the hierarchy of the most influent economic actors. These activities can be defined as accidents of appearance in the top 15 rank, but they still have the necessary throb to make it as the most important generators of turnover although they lack the capacity to maintain a sufficient critical mass to keep their gained position. But, the economic activities with this kind of meteoric appearance can always perform a sudden jump in the hierarchy if the territorial conditions are suited (Braghină et al. 2011).

The economic profile of the city of Baia Mare changed radically taking into consideration the transformations of the turnover volume and structure. Seven out of the fifteen economic activities that were producing the largest turnover in 2001 dropped out of the top 15 rank in 2010. The emblematic and traditional economic activities for the economy of the entire region – mining and metallurgic industry (gold-silver ores and other complex ores) – contracted their

action reaching the limit of extinction. Their top places were taken by the furniture and mattresses manufacturers. Although the industry of furniture represents also a tradition for the region, the producing of mattresses constitutes a complementary activity which is exogenous for the region and it is characterised by high entropy (González de Molina and Toledo 2014), fact that may put the urban territorial system in a vulnerable state and impact it negatively. The sustainable development of the urban territorial system requires to presence of endogenous fluxes as they increase its capacity to adapt to systemic instability and, concretely, to the shocks produced on the free market. Also, the strong position held by trade activities in the economy of Baia Mare and their continuous development represent a strong point of concern considering that such activities drain out the financial capital of the urban territorial system.

Systemic instability generated both positive and negative feedbacks upon the urban territorial system. While the accumulation of positive feedbacks may also lead to instability and to a critical point where the system is unable to maintain its continuity, negative feedbacks determine the reduction of the volume, intensity and frequency of the causes that produces certain effects. In this way, the negative feedback of systemic instability employs a role of control or regulator upon the urban territorial system. As a concrete example for the city of Baia Mare, instability inside its economic system during the transition period resulted in increased unemployment rate. But the high number of unemployed people generated a significant search of jobs outside the country. While the unemployed population out-migrated, the number of the unemployed decreased inside the urban territorial system of Baia Mare.

Systemic instability allowed the urban territorial system of Baia Mare to adapt to different types of economic environment changes, although the costs of this adaptation were extremely high economically and, most of all, socially. But the chaos that the urban territorial system had to face during the reshaping of its economic structure triggered not only costs, but also some benefits, which accomplish a significant role in the manifestation of adaptive processes (Hinsch and Komdeur 2010). So that, as result of exogenous socio-economic factors, the territorial pressure and stress exerted over the physical urban environment reduced significantly once the mining and metallurgic industry were closed and land use transition produced as a non-linear process in association with these economic changes having both social and environmental implications (Ohla et al. 2007, Lambin and Meyfroidt 2010, Șerban and Tălângă 2015). Another benefit related to the manifestation of systemic instability is constituted by the fact that the urban territorial system adapted successfully to the structural changes and it allowed the development process to restart.

Ruhr region (Germany), the Moravian-Silesian region (Czech Republic), and the Silesian region (Lower Silesian Voivodeship, and the Silesian Voivodeship in Upper Silesia, Poland) represent several examples of former industrial territories across Europe taken as case studies for assessing systemic instability and its role in defining new urban systems. These regions developed on a common functionality – heavy industry founded on coal mining – and entered a similar evolution path based on non-linear processes. Generally, all mentioned regions faced three types of shock and disruption that generated the strong diminishing of their initial industrial activity: 1. the shift of the international economic pattern activities from the heavy industry to the highly specialised industry and the growth of the tertiary sector; 2. competition on global markets; and 3. the stop of governmental funding due to the European Union development regulations (Riley and Tkocz 1999, Kretschmann 2013). As a result, the industrial European regions of this type required adaptation measures and new directions of existence. Systemic instability generated significant changes in their structure and functionality but they proved a high degree of resilience and continued their economic activities achieving growth at a different level. But, there can be easily observed a gap between the West and the (former communist) East due to different development contexts (Blazyca et al. 2002, Adamovský and Holešinská 2012).

So that, among these case studies, Ruhr area represents a model of recovery and positive impact of instability on all territorial components of the system through a tertiary-type economic restructuring and the implementation of a sustainable land management built on integrated governance (Wegener 2012, Chmielewska and Otto 2013, Kretschmann 2013, Reuschke et al. 2013). A comparison between the Moravian-Silesian region and the Silesian region, which are more similar in terms of evolution and dynamics, shows that the type of addressing instability – severe restructuring for the first case; and cautious restructuring grounded on entrepreneurship and a special taxing system, in the second case – constitutes the main factor of achieving or not successful redevelopment (Adamovský and Holešinská 2012, Hajduga 2014). So that, the Moravian-Silesian region faced unsustainable growth and fragile resilience while the Silesian region followed a continuous gradual development-based transformation path even under the economic crisis impact (Riley and Tkocz 1999, Adamovský and Holešinská 2012, Kenc 2013, Poplawski 2013, Hajduga 2014). But both urban systems – the Silesian region and the Moravia-Silesian region, currently functioning on different industrial activities – require the assuming of new changes and adaptation processes to sustain their development on long-term (Olszak and Ziemba 2011, Tödting et al. 2011, Zuzanska Zyško and Szajnowska Wysocka 2013, Hajduga 2014).

In relation to the urban territorial system of Baia Mare, the European case studies highlight the importance of regional development and multiple stakeholders' intervention grounded on a sustainable planning approach for supporting economic growth through complex activities in the context of a more globalised systemic instability.

For future research, systemic instability and its impact upon urban territorial systems may be addressed through analysing disturbance patterns and identifying sustainable directions for their management and the support of system's adaptation and resilience processes (Zurlini et al. 2006).

Conclusions

Systemic instability proved the complexity of the urban territorial system of Baia Mare. Under the impact of systemic instability and within the framework of resilience, the urban territorial system under analysis followed the second path, reorganizing itself until another point of equilibrium was achieved. As a synthesis of the situation, the '90s economic system of Baia Mare, dominated by mining and metallurgic industry, faced the national economic change and transition from the planned economy to the market economy as a significant shock – competitiveness on a free market represented the main triggering factor of systemic instability. Resulted structural and functional changes were major while mining industry collapsed and stopped its activity and the metallurgic industry considerably reduced its activity. The territorial framework of system instability stopped the economic system of Baia Mare to recover to its parameters before the shock. But the economy of the urban territorial system continued to function, and, after a certain time, efficiently, grounded on new parameters and another domain of economic attraction.

The emergence of a different economic leader inside the system economy produced the manifestation of the process of auto-organization that resulted in changes of the structure and economic profile of Baia Mare. Involving adaptation, the alternative point of economic system equilibrium was attained while this novel organisation of the urban territorial system was more resilient to the new instability manifestations than the former system structure and functionality.

Systemic instability created the necessary context for some businesses to grow and replace the economic activities that became obsolete and inefficient. In this way the urban territorial system reshaped its function and structure to fit the conditions of the existing environment.

The shock induced by the extinction of emblematic economic activities was absorbed by the system and its influence on the level of the total turnover was small. Instead, the main disturbing factor was represented by a global system instability phenomenon (Young et al. 2006) – the economic recession – that led to a significant drop of the total turnover in only one year. All these changes registered inside the economy of the urban territorial system revealed the emergence of a new economic structure and profile, where trade and non-traditional economic activities lead a dominant position.

Complexity of urban territorial systems requires an integrated approach in addressing systemic instability in relation to all territorial components (including the social, environmental, resource and land use issues together with its economic aspects) founded on strategic planning (Ianoș et al. 2009, Pincetla et al. 2012, Comino and Ferretti 2016) and anticipatory governance (Boyd et al. 2015) in order to employ the required comprehensive instruments of management and action.

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BOOK REVIEWS

COASTS for PEOPLE: Interdisciplinary Approaches to Coastal and Marine Resource Management

Routledge, New York, 2015, 394 p.
ISBN 978-1-138-77980-8

Reviewed by NATAȘA VĂIDIANU,
Ovidius University of Constanta, University of Bucharest, Romania

Coasts for People: Interdisciplinary Approaches to Coastal and Marine Resource Management, written by Fikret Berkes, is one of the Routledge series of books designed for students, researchers, management professionals, and policy makers. This book represents a great contribution to the literature on coastal management and brings international research experience and knowledge about coasts and people.

This book provides information regarding the diversity and importance of coastal problems and contains theoretical analysis with best-practice coastal management approaches. The focus is explicitly on coastal resources and their users, respectively on the new form of resource management, with a community-based approach and looks not just at the ecological issues, but also from societal and human perspectives.

The book is organized clearly into 12 chapters, the first of which refers to coastal and marine resources and elements of paradigm change. This chapter provides a descriptive overview of coastal ecosystems and their social, ecological, and economic objectives. In author's view, one way to deal with uncertainty and complexity of a system is to build local institutions that can learn from crises, respond to change, nurture ecological memory, monitor the environment, self-organize and manage conflicts. Moreover, Berkes's approach is to build working partnership between managers and resource users.

Chapter 2 examines the context of resource management science, redefining the concepts of resource and management. There is also a discussion of the different management practices which require a readjustment of concepts. The historical "baggage" is also considered as a conventional idea of resource and management.

Chapter 3 explores the social-ecological systems, integrated complex systems that include social (human) and ecological (biophysical) subsystems. This chapter discusses drivers and globalization and uses the development of aquaculture to illustrate the interdependent nature of social and ecological subsystems. The social-ecological systems are used to explore the multiple linkages among dependent social and ecological components of marine and coastal systems.

Chapter 4 describes the history, content, and application of resilience theory. It starts by covering some of the basic concepts of resilience, which have already appeared in the preceding chapters in the context of changing paradigms, redefining management, and social-ecological systems. From author's perspective, resilience is one of the cornerstones of the arguments in this book. The Holling's notion started as an ecological concept, characterizing the capacity of a system to maintain itself in the face of disturbance (Holling, 1973). Resilience thinking deals with interacting systems of people and nature can best be managed in the face of disturbances, surprises and uncertainty (Berkes *et al.*, 2003; Walker and Salt, 2006).

Therefore, three topics of application are explored: how resilience deals with social-ecological systems; the ability to analyze the changes; and the exploration of policy options for uncertainty and change. Conventional resource maximization approaches tend to reduce natural variability, impairing the renewal capacity of ecosystems and the ability to absorb shocks and stresses.

Chapter 5 shows that many of the marine and coastal resources issues we face are problems, which can be managed by various governance approaches. This chapter contains details about commons theory, community-based management institutions, and participatory management. The reader is informed that most coastal resources are fugitive – “the fish you don’t catch today may be caught by someone else tomorrow, hence the need for collective action”.

Chapter 6 is closely related to the previous one, as co-management is one of the applications of commons theory. In author’s view, managing resources requires sharing management power and building linkages from local level to a higher one. The chapter starts with a broad description of the origins of co-management, explaining its role in four areas: practical problem solving, indigenous rights, and collaborative research and decentralization reforms. The next parts contain some mechanisms that make co-management work (relationships and networks, use of different kinds of knowledge, bringing organizations, leadership, capacity building and social learning), and, in the end, the emergence and models (communication action, instrumental action, and strategic action and self-organization) in building adaptive co-management are described.

Chapter 7 starts with an analysis of the complexity of the coast, which, according to McCay (2008), is forever changing and luminal – an intermediate state that is neither water nor land. Then the perceptions of coastal resources, their governance, and coastal ecosystems restoration are discussed in order to manage these environments.

Chapter 8 outlines the importance of protected areas and coastal conservation and their

relationships to development. Protected areas have been the primary means by which biodiversity was conserved. The International Union for Conservation of Nature (IUCN) is in charge to coordinate and categorize marine and terrestrial protected areas. Long-term biodiversity conservation and effectiveness of management can be achieved through reconnecting social and ecological systems and in partnership with the people making a living in that area.

Chapter 9 argues that livelihoods are a key element in the multifunctional nature of coastal resources and an important management objective. It is outlined that resource managers and policymakers need to address the needs of the coastal fishery sector. Examples in this chapter show that many small-scale fisheries have social enterprise characteristics.

Chapter 10 expands local and traditional knowledge and how such knowledge can be bridged with science to increase the range of information to bear to solve practical problems. The chapter discusses indigenous knowledge as process and the belief component in order to explore its nature and significance. Finally, using illustrations, the chapter describes practical contribution and outlined the ways in which indigenous knowledge and science can be bridged.

Chapter 11 describes ecosystem-based management. The reader is informed that ecosystem-based approaches involve adopting a holistic view of managing resources in the context of their environment. The new “marine spatial planning” concept can help address the problem of fragmented governance. The author mentions that implementing ecosystem-based management in the coastal and marine environment requires a new interdisciplinary science. In the first part of this chapter, there are some examples about ecosystem - based management in the coastal and marine environment. Furthermore, some discussions about marine and coastal environments as complex social-ecological systems and some ways to deal with complexity and uncertainty are explored (Charles, 2001; Norberg and Cumming, 2008).

- Chapter 12 represents a recap of the earlier chapters, exploring the key concepts, theories, and frameworks. Ecosystem - based management is presented as a revolutionary, and not evolutionary. Two divergent strategies about how to move into the future are explored: the neoliberal vision, with increased economic interests in decision-making, and, the second one, related to community - based vision, with social - ecological considerations in order to promote coasts which are managed for people.
- Concluding, this book offers an excellent synthesis and cutting edge knowledge, bringing together many approaches: social-ecological systems thinking, resilience, commons, co - management, community knowledge, sustainable livelihoods, and ecosystem - based management.
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Socio-Economic Geography in Russia
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This book represents the analytical overview of human-geographical research in Russia. It was prepared for the Regional Conference of the International Geographical Union held in August 2015 in Moscow. The book was published under the aegis of the Russian Geographical Society in order to present Russian human-geographical research topics and achievements to a non-Russian speaker.

The book is divided into three parts. The first part presents main issues specific to theoretical and methodological approaches in Russian human-geographical research. During Soviet times human (and, especially, economic) geography was being subject to high ideological pressure. In the post-Soviet times lack of the dominant ideology has led to the "erosion" of theoretical base of geographical science. As the authors mention, since the beginning of the 1990s, human geography in Russia has been suffering from crisis in theory and in education. Nonetheless, Russian geographers have been trying to overcome this crisis and adapt themselves to world leading trends in geographical research. In the authors' opinion, the Russian human geography is "better adapted to the universal context of Human Geography than it was 25 years ago".

Human-geographical research in Russia is grouped in 11 main scientific branches and 5 inter-disciplinary directions. The following branches enjoy a short description in the book: geography of population, urban geography, geography of natural resources, geography of industry, geography of agriculture, geography of transportation, geography of tertiary sector (services), cultural geography, political geography and geopolitics, recreational geography and geography of tourism, as well

as social-economic geography of foreign countries and world geography. Regionalization, regional development, regional policy, environmental management and problems represent inter-disciplinary topics frequently met in human-geographical papers.

The second part of the book deals with the development of human-geographical research in the main institutions of the two capitals, Moscow, the administrative capital, and Saint Petersburg, the cultural capital. Thus, in Moscow geographical research gravitates to two poles: Lomonosov Moscow State University and the Institute of Geography of the Russian Academy of Sciences. From each institution there are presented departments and divisions, whose main objective is human-geographical research (or education). Each presentation starts with the short history of the division, more attention is being paid to the research carried out in the last 25 years. Main contributors are mentioned. Presentations of other research and educational institutions all across the book stick to the same structure.

In Saint Petersburg human-geographical research is concentrated in three universities: Saint Petersburg State University, Herzen Pedagogical University and Saint Petersburg State University of Economics.

As results from the presentation of the capital institutions, their research is mainly focused on elaboration on theoretical aspects of human-geographical research, on synthetic research made at the national level, as well as on studies of other countries or global processes (especially, in the Moscow's leading geographical institutions). In addition, these institutions have the chief role in preparation of

highly qualified specialists for regional universities.

The last part of the book deals with territorial organization of geographical research in Russia. The network of universities and institutes of the Russian Academy of Sciences, presented in the book, covers 43 centers of geographical research and education. Some of the presentations in this part focus on a single institution (e.g., Immanuel Kant Baltic State University); others attempt to cover many institutions and teams (e.g., 11 universities in the Russian Southern region).

Geographical research in regional institutions focuses, mainly, on the issues important for the regions they are located in. However, in the past, some new concepts originated from these institutions, which significantly influenced Russian human geography in its both Soviet and post-Soviet periods (e.g., the concept of territorial production complexes developed at Novosibirsk).

We can conclude that this book has the advantage of presenting, synthetically, main actors, both people and institutions, of Russian human geography, as well as research topics undertaken in each institution in the post-soviet times.

Among the flaws of the book one should mention the way to present the achievements and outcomes, which weakly connects them to main debates in the world leading human-geographical journals. The theoretical part of the book mentions some connections as well as difficulties to adapt national human geographical tradition to current cutting-edge topics in human geography. At the same time, the regional part of the book almost lacks such information. It is due, in part, to the legacy of Soviet school of economic geography, which was completely broken away from other schools. However, thanks to very structured presentation of information an interested academic would be able to overcome this drawback to certain extent.

The book will be extremely useful for those interested in learning more about the trends in the human geography in Russia, in finding the key academics at either level (national or regional), and in the topics of the research carried out in the chief geographical institutions. Besides the printed copy, the book is also available on-line at the site of Russian Geographical Society, which makes it accessible on the Internet from all over the world: http://lib.rgo.ru/reader/flipping/Resource_4249/socio-economic_geography_in_russia%20-%200001/index.html

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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