SPATIAL INTEGRATION AS A FACTOR OF OVERCOMING THE CRISIS IN SOUTH - EAST OF EUROPE

Minas Angelidis
Professor of Urban and Regional Planning, School of Architecture
National Technical University of Athens (NTUA)
angelidi@central.ntua.gr

Abstract

The paper refers to the competitiveness of cities and the spatial integration in European Union, which are becoming increasingly important in the context of the current economic crisis. It examines specifically Athens, Sofia and Bucharest, capitals of Greece, Bulgaria and Romania, the EU countries of South-East of Europe (SEE) and focuses on the potential of these capitals to constitute a development axis, which will function as a catalyst to improve the competitiveness of the SEE, in order to obtain a stronger position in the EU space.

As can be seen in a more general level, the SEE countries follow the general development patterns of the EU "South" for Greece and "East" for Bulgaria and Romania, which have a competitiveness deficit in relation to the EU "North", as they continue to count more on labour intensive goods than on technology and innovation. In the decade before the crisis, the three countries experienced a rapid economic growth with the capitals as engines -especially in Bulgaria and Romania- which increased the regional disparities. Some of the factors of competitiveness of the three capitals, particularly those associated with labour and human capital have been improved. In contrast, in terms of economic structure / specialization as well as technology and innovation, there were individual developments with contrasting direction. Almost all factors deteriorated during the crisis period, which had a greater impact on the three capitals. The key sector of technology and innovation remains weak and dependent on the strongest European centres.

The three capitals can significantly improve their competitiveness if they accord priority to investments in research as well as in the development of dynamic branches, in relation with a more efficient use of their highly qualified human potential. The development of appropriate synergies among them can considerably improve both their competitiveness and that of SEE through its spatial integration. Thus, the development patterns of both the three capitals and SEE could become more competitive at international level, and thus more resilient to crises.

Key words: *competitiveness, innovation, spatial integration, South-East Europe, Athens, Sofia, Bucharest*

Introduction

The paper refers to the competitiveness of cities and the spatial integration in European Union, which are becoming increasingly important in the context of the current economic crisis. It examines specifically Athens, Sofia and Bucharest, capitals of the respective countries of South-East of Europe (SEE). In the following the term “South-East Europe” / SEE refers only to the area covered by Greece, Bulgaria and Romania, member states of the EU.

The paper focuses on the potential of these capitals to constitute a development axis which will function as a catalyst of the improvement of the competitiveness of the SEE in order to obtain a stronger position in the entire EU space.

Specifically, are examined successively: the methodology and indicators that have been used, the basic hypothesis of the study, the division of the three metropolitan regions in zones, the position of the three countries in the world and Europe, their development features and interdependencies and the regional development disparities inside SEE. Next, the paper discusses in depth the different components of the competitiveness of the three capitals: the economic structure / specialization, the labour force, the technology and innovation and the quality of the available human potential. The general conclusion summarizes the advantages of the spatial integration of the SEE in strengthening its competitiveness, and thus its "resilience" in economic crises.

The paper is at first based on the work of the NTUA team which participates in the project ESPON[1] GROSEE / Emergence of growth poles network in South-East of Europe (2012-2013) but it has also incorporated conclusions which have been derived from specific additional elaborations and estimations, which are not related to GROSEE[2].

Methodology and indicators

Competitivenessof territorial units and, specifically, of cities, is a very complex concept. Therefore, it is difficult to understand its underlying factors as well as to measure it. A first aspect of the concept refers to the cities competitiveness as single entities. A second aspect which is partly analysed in this paper is the integration of cities into economic and urban networks.

A large part of the relevant recent literature is covered by ESPON projects, because the latter have examined many features of all cities of the EU. Researches and publications outside ESPON usually refer only to a few countries or a few characteristics of all cities across the EU. Specifically the project ESPON 3.4.2 "Economy" (2006) has defined as key drivers of territorial competitiveness, the economic structure / specialization, the technology and innovation and the human resources -as well as the accessibility and the institutional /governance factors which are not examined in this paper. The ESPON projectson cities in relation to polycentricity: ESPON 1.1.1 (2005), 1.1.3 (2006) and ESPON 1.4.3 (2007) as well as other relevant ESPON programs as, indicatively, FOCI / Future Orientations of Cities (2010) and ATTREG / Attractiveness of European Regions and Cities for Residents and Visitors (2011) have adopted more or less, the same line of analysis.

According to several relevant studies, the various economic branches are not of the same significance regarding the competitiveness of cities. Some, such as Advanced Producer Services (APS) and HT (High Technology) activities are of strategic importance thus they should be specifically analysed (see in Goebel et al, 2007 and Thierstein - Droß 2008, Angelidis et al 2011).

[1]European Spatial Planning Observation Network

[2]Lead Partner of ESPON GROSEE is the University of Bucharest and Project Partners, apart NTUA, are: the Union of Architects in Bulgaria and the University "Al. I. Cuza" of Iasi. It should be clarified that the conclusions of the project which are used in this paper have been exclusively resulted from the elaboration conducted by the NTUA team, scientific coordinator of which is M. Angelidis and members: M. Kotronaki, E. Tsigkas and A. Potouridis, who have participated in the analysis of specific issues and the elaboration of respective data. M. Angelidis is the author of the paper. In a few cases, clarifying comments on Sofia and Bucharest, given by the respective partners, have been used. Specifically, the elaboration of data and figures has been done exclusively by the NTUA team.

Also, of particular interest are some European Commission reports, which discuss inter alia the changes in the factors that impact territorial competitiveness in the current frame of globalisation. See indicatively the EC Fifth Report on Economic, Social and Territorial Cohesion (2010) which brings evidence on the fast growing influence of innovation and "Europe 2020" (EC 2010) on the development strategy of EU, which underlines the importance of "smart development".

In order to evaluate the contribution of the individual factors in the overall competitiveness of the three cities, we have chosen some "more appropriate" indicators or "priority indicators", through wider lists that were drafted in the frame of specific ESPON projects, such as FOCI (2010), INTERCO (2012), SIESTA (2011), POLYCE (2011) and METROBORDER (2010) or have been used in the recent European Commission5th Cohesion Report (2010) or have been included in "Europe 2020" (2010) and "Lisbon strategy" (Lisbon European Council 2000). We have used both appropriate **simple** indicators and some already commonly used **composite indicators** of competitiveness, such as labour productivity.We have also placed emphasis on the systematic study of the relationships among the several factors of competitiveness and appropriate territorial typologies in order to conclude on the performance of the three cities and countries in comparison with the respective regional, national and EU-27 averages.

However, we aimed at using the indicators not in a static and fragmentary manner, but as evaluation criteria of the individual factor of the competitiveness of **global patterns[3] of spatial development** in the three capitals and countries and the identification of the **drivers of change** of these patterns. This approach, which has been adopted by several ESPON programs (see indicatively in ESPON FOCI (2010) and ESPON Spatial Scenarios (2006) allows us to proceed in more reliable analyses of the future perspectives and, therefore, in more appropriate policy recommendations for cities and regions.

Given the fact that the recent **crisis** created a new context for territorial development, we considered as very important to examine in depth the impact of the crisis in the cases of the three capitals compared to the respective changes in the rest EU cities and regions (see, among others: EU 2010 / URBACT and ESPON ECR2, 2012). Finally, we have focused on the **trends of changes** in the competiveness of the three capitals in order to better define their future perspectives, on the basis of which can be drawn appropriate planning proposals.

The whole analysis was structured around the following hypothesis: **the reinforcement (emergence) of the development axis Athens - Sofia - Bucharest can act as a catalyst for increasing competitiveness through the spatial integration of the entire SEE.**

Analysis

1. The basic idea: the three capitals as cores of the SEE spatial integration

The ESPON 2006 project 1.1.1 (2005) constructed a typology of Functional Urban Areas / FUAs, which is based on the average scores of seven features and functions of the FUAs: population, transport, tourism, industry, knowledge, decision-making and administration. Subsequent ESPON projects have enriched the definition of FUAs. See in Figure 3 the FUAs of Greece, Bulgaria and Romania. The ESPON concept of Metropolitan European Growth Areas / MEGAs is even more important for our analysis, as **MEGAs of SEE may be seen as the core nodes of a potential "Global Integration Zone" in SEE functioning as a "counterweight" to the "Pentagon", the most "integrated" area of the EU space.** The "Pentagon" is defined,

[3]Or types - in the frame of appropriate spatial development typologies

schematically, by London, Paris, Milan, Munich and Hamburg. See, among others, for the features and advantages of spatialintegrationinAngelidis2004. SEE includes four MEGAs: Athens, Sofia, Bucharest and Thessaloniki. In the next sections we will evaluate whether Athens, Sofia and Bucharest can undertake this role -on the basis of their specific features and the relationships among them (particularly regarding competitiveness).

We should notice here that **the three capitals exercise a determining but of different character role in their respective national urban systems** – see more detailed in ESPON FOCI (2010). In **Greece**, Attiki at first place and Thessaloniki secondly constitute very strong centres of urban networks at supra-regional and regional levels. The majority of the rest regional urban networks are rather monocentric, as the primary city has a very prominent role. There are few cases of morphologically and functionally polycentric urban systems, which include mostly small and medium sized cities. In **Bulgaria** and **Romania**, Sofia and Bucharest, respectively, constitute strong centres of urban networks at supra-regional and regional levels (with less powerful role compared to Attiki). The majority of the rest regional urban networks are rather polycentric, as the respective primary city has a medium intensity role.

2. The division of the three metropolitan regions in zones

Athens, Sofia and Bucharest are metropolitan regions with significant population and economic potential. Each of them consists of zones of different spatial levels, which usually present quite different spatial dynamics. Therefore, it is absolutely necessary to delimit these zones in order to avoid comparing incomparable data, a quite common mistake in spatial analyses. Specifically, we distinguished for each metropolitan region: (a) the Core City (CC), (b) the Functional Metropolitan Area (FMA), which includes the CC and the, beyond this, peri-urban area (c) the "Metropolitan Region" (MR), which includes the FMA and an "Outer Metropolitan Ring" (OMR), a region in which the FMA has a strong influence. See in detail in ESPON GROSEE Inception Report (2012).

Because most of the available data in Eurostat are given in NUTS (Nomenclature of Territorial Units for Statistics) levels2 and 3, we have approximated the functional zones CC, FMA and MR of the three capitals with statistical units NUTS. See for a detailed analysis in the ESPON GROSEE Inception Report (2012). In the following, we refer to data on Functional Metropolitan Areas (FMA) of the three capitals, which correspond to NUTS3 units of Eurostat, as follows: Attiki: GR300, Sofia: BG411 and BG412, Bucharest: RO321 / Bucharest and RO322 / Ilfov. Where we do not follow this general approach, we make specific reference to specific statistical units.

Apart from general factors impacting on the competitiveness of the three metropolitan regions (see in next), specific geographic features of each one have also a considerable impact.The population potential of Athens / Attiki (3,8 millions of inh. at FMA level in 2011 - provisional data EL.STAT) is considerably greater than that of Bucharest and Sofia (2,1 and 2,3 million, respectively). Thus, Athens has a considerably more extended area densely populated and occupied by economic installations than the other two capitals. Also, the existence of the Athens basin, which is surrounded by mountains, hampered the expansion of economic activities in the rest Attiki region, which does not apply for Bucharest, which is situated in a low land area or for Sofia.

3. The SEE in the world and Europe

3.1. The integration of the SEE in the world space

The role and specialization of countries and groups of countries in the world tradeare key components of their integration in the world space (see in detail in ESPON TIGER 2012). Bulgaria and Romania are specialised in export of products of more labour intensive industries while Northern and North-Western Europe still focuses in export of manufacturing technological products. While Greece belongs to Mediterranean countries which occupy intermediate positions regarding exports -between the manufactured and technological goods, on the one handand the labour intensivegoods, on the other-, it is still very specialized in no manufactured goods.

Also, the degree of specialisation of exports in services highlights contrasting roles of the different EU countries in the international division of labour. For example, Ireland and Luxemburg sell more services than goods. Greece belongs to a range of countries[4] in which trade of services represents more than half of their trade of goods while the respective ratio is around 30% for the entire EU27. Bulgaria and Romania, similarly to the rest East European as well as Central European countries, have a low share in export of services.

According to the typology developed by the ESPON TIGER project (2012)for the geography of trade at regional and country level:

(a) Bulgaria and Romania belong to Type1 which includes countries with trade very oriented to Europe, both to Central-Eastern EU and the Eastern neighbourhood of EU.

(b) Greece belongs to Type 4 which is similar to the EU average, but with a trade more oriented toward Eastern European regions, China and Japan.

3.2. The integration of the SEE in the European space

SEE includes Greece, which was integrated in EU relatively early (1981), and Bulgaria and Romania, which entered EU much later (2007). The three countriesare included not only in the specific spatial patter not SEE but also in more general spatial patterns (types) that include the 27EU member states. Two such general typologies are often used in the EU spatial analysis.

(1) The EU27 countries can be divided in three major types according to their economic performance, measured by their Gross Domestic Product (GDP) per capita: **highly developed moderately developed and less developed countries.** See for instance the use of this division in the 5th Cohesion Report (2010). See for a detailed discussion of this typology in ESPON INTERCO (2012). We should note that Bulgaria and Romania are included in “less developed” countries, while Greece in “moderately developed” countries.

(2) More interesting is a "territorial" typology that distinguishes the 27 member states of the EU (plus Norway and Switzerland) in three groups according to their geographical location, as follows -see in Figure 1: (a) "Northern countries" - **EU "North”**[5] (b) “Southern countries”- **EU "South"**[6] (c) “Eastern countries”- **EU “East”**[7]. These three "territorial" groups correspond largely to the previous three groups of countries: the "Northern" to the “highly developed” countries, the “Southern” to the “moderately developed” and the “Eastern” to the “less developed” countries. See

[4]Including also Denmark, Iceland, Cyprus and Malta

[5]Luxembourg, Norway, Switzerland, Denmark, Ireland, Netherlands, Sweden, Finland, Austria, Belgium, Germany, France and the United Kingdom

[6]Italy, Spain, Cyprus, Greece, Portugal and Malta

[7]Slovenia, Czech Republic, Estonia, Slovakia, Hungary, Latvia, Lithuania, Poland, Romania and Bulgaria

in Figure 1the GDP per capita in 2008[8]of the EU countries -divided into "north", "south" and "east"- as% of the average EU27 (= 100).

Obviously, this "territorial" division does not fully follow the ranking of the above ratio of GDP. For example Slovenia, which is part of the "East", has a higher index value than Portugal and Malta, which belong to the "South". It is worth noting that the three "territorial groups" have a strong" internal homogeneity" based on the statistical analysis of the above index values as for the coefficient of variation (x 100), which is equal to the quotient of standard deviation (stdev) by the mean. On the basis of this coefficient of variation, the "South" presents relatively higher "internal homogeneity" (22) compared to the "North" and "East" (36 and 35 respectively).

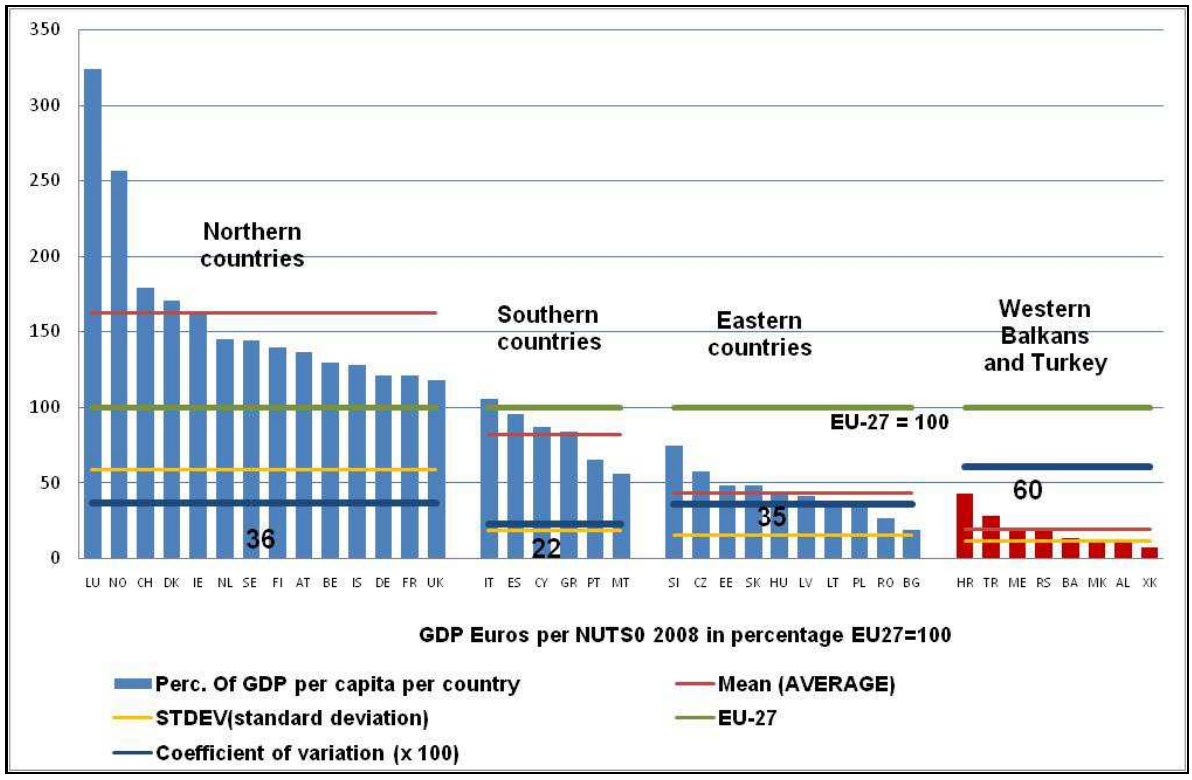

Figure 1: Per capita GDP in PPS(Purchasing Power Standard)in % of the EU27 average (=100)in 2008, per country,in EU27, Norway and Switzerland –divided in North, South and East- and Western Balkans and Turkey.Own elaboration, based on Eurostat data

Figure 1 also presents the Candidate and Potential Candidate Countries for EU membership (CC / PCC) **-the Western Balkans, which consist the "rest part" of the historical and geographical unit of the Balkans, the "entire" South-East Europe(both in the EU and not)**. Turkey is also a Potential Candidate country. Because the Western Balkans countriesconstitute the "neighbourhood" of the Community SEE, it is worth noting that a future economic integration of the "entire" SEE will be difficult, as the Western Balkans countries present a significantly lower per capita GDP than the "poorer" countries of EU -with the exception of Croatia,the GDP per capita of which in 2008 was higher thanthat of Romania and Bulgaria.

[8]In the above analysis we have used data for 2008because this is the year of turning to the crisis, during which successive changes in the relative index values have occurred for some of the EU countries -see in next

It should be stressed that during the crisis the distance between the EU North and the EU South widened considerably (Figure 2).

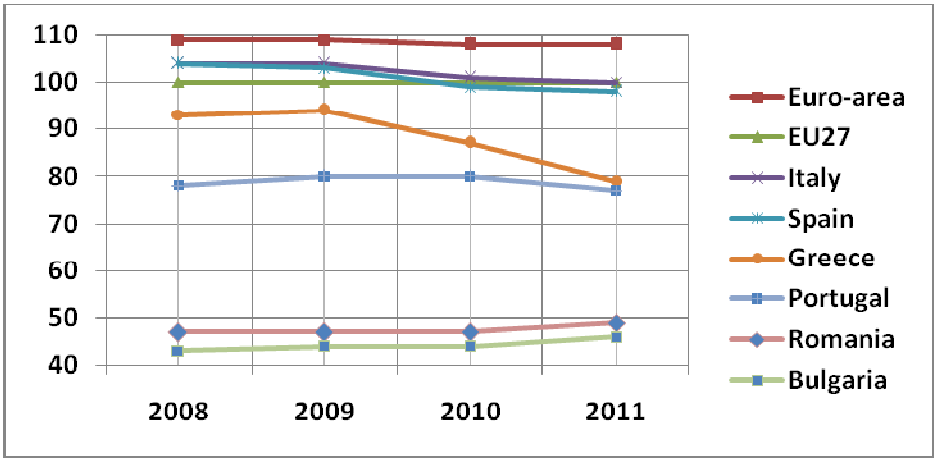

Figure 2: Per capita GDP in PPS in % of the EU27 average (=100) during the crisis period 2008-2011, in Euro-zone, SEE countries, Italy, Portugal and Spain. Own elaboration, based on Eurostat data

4. The SEE countries development features and interdependencies

During the ’90s, a reconversion process was undergoing in Bulgaria and Romania similar to that for the rest Eastern European (EE) countries: transition to the market economy, continuous integration to the global economy, shrinking of agriculture and industry, raise of the service sector, important economic development difficulties accompanied with decrease of the population. In Bulgaria and Romania, as in most cases of the EE countries, capital cities attracted population and activities at the expense of the smaller cities and the countryside. Greece follows to a significant extent the South-European economic development pattern: shrinking of agriculture and industry, growth of the sectors ofservices and tourism, which is related to some extent to the over-development of the construction sector.

We should note here that the differences of Bulgaria and Romania as well as Greece, at lower degree, from the highly developed EU27 countries as for the social and environmental features are also very important. However, these differences are not examined in the frame of this paper.

GDP in PPS per capita in most regions of Bulgaria and Romania was less than half of the EU-27 average in both 2008 and 2012, while per capita GDP in Greece was clearly higher.

Before the crisis, from 2000 to 2008, all SEE countries experienced high annual growth rates. The starting year of the **crisis** (2008) marked a particular strong reversal of the previous tendency in SEE. It is worth noting that a reversal of similar intensity is also observed in the case of the Western Balkans, which is the "neighbourhood" of SEE (EC / DG Economic and Financial Affairs 2012, Backé-Gardó 2012 and Bartlett-Prica 2012).

Greece was much more affected by the crisis, while Romania and Bulgaria followed with a comparatively lower per capita GDP decrease. The high level of debt and the following implementation of a not successful model of budgetary adjustment led to greater difficulties in the case of Greece. The way out of the crisis, mainly for Greece (and less for Romania and Bulgaria) depends on the EU response to the more general economic crisis of the entire EU27 -primarily of the Euro-zone. The three countries try to improve extroversion and competitiveness of their economies, as well as to substitute a part of their imports with domestic production in combination

with structural reforms. **The improvement of the cooperation and policy coordination among the three SEE countries and capitals could contribute to the successful implementation of the under revision (due to the crisis) national development strategies**.

Regarding the evaluation of the **spatial economic interdependences** within the SEE but also from / to the rest of the EU, the amount and the spatial orientation of Foreign Direct Investments (FDI) is an important indicator -which is very closely related to competitiveness. The higher share of FDI in all three countries comes from the more developed EU countries. Specifically, FDI towards Romania come at first from its neighbour Austria, while FDI from Greece to both Romania and Bulgaria hold one of the first places in the respective ranking. They mainly concern financial services and communications (investments by big companies) as well as trade, services, industry, construction and real estate, where investments come from big as well as smaller companies (Iammarino and Pitelis 2000 and Bozhilova 2010). In all, **Greek DI in Bulgaria and Romania during the last twenty years had an important impact on the raising of competitiveness through territorial integration in SEE**.

In addition, other forms of interdependence among the three countries are gradually growing, almost continuously, during the last twenty years-such as: (a) commercial exchanges, tourist flows (from Greece to Bulgaria and Romania at a first stage but also from Bulgaria and Romania to Greece later on) and immigration.

More specifically, immigration from Bulgaria and Romania to Greece (mainly towards Attiki and Northern Greece and less to other Greek regions) was much more important than the opposite and concerned mainly the services sector, but also construction, industry and agriculture. It should be stressed that a shift of labour force towards Greece due to higher wages in the latter, matched quickly with a shift of intense labour force industries, mainly small and medium sized, towards Bulgaria and Romania. A shift of significant interest for territorial development regards the relocation of industries of Northern Greece to Bulgaria, particularly in the south, in search of lower paid workforce. In general, Greek DI were at first concentrated on Bucharest and Sofia and secondly on the rest big cities of Bulgaria and Romania (see in ESPON FOCI 2010 and Angelidis et al 2011).

In conclusion for the sections 1 and 2, Greece followed during the last two decades several particular features of the “South” EU development pattern, while Bulgaria and Romania followed those of “East” EU. In all three countries, the economic crisis has interrupted the highly growth rates of the period 2000-2008 and had a greater impact on Greece. The interdependencies among the SEE countries have been developed very significantly over the last twenty years in issues related to competitiveness, such as FDI, trade and tourism, but also shift of labour forceespecially from Bulgaria and Romania to Greece. However, the dependency links of the three countries on economies of stronger EU countries in key sectors of competitiveness, such as FDI, have also been significantly deepened. The unequal nature of trade exchanges between SEE and the EU "north” – SEE import from the "north" high technology goods and export to the latter low technology goods-was maintained, if not grown.

5. The regional development disparities inside SEE

As we have already seen, per capita GDP in PPS of Greece is much higher than that of Bulgaria and Romania. Therefore, it is anticipated that in 2009 almost all the NUTS3[9] regions of

[9]They correspond to “regional units” of the actual administrative division of the country according to the Law “Kapodistrias”

Greece had higher GDP than all the respective regions of Bulgaria and Romania (Figure 3). In Greece, the higher GDP values are observed in Attiki and in its neighbouring NUTS3 units, as well as in the touristic area of Cyclades, followed by the areas of the axis Athens - Thessaloniki and the rest touristic island areas. In Bulgaria, the regions of FMA of Sofia and the other big cities: Varna, Burgas and Stara Zagora clearly distinguish from the rest of the country. The same applies to Romania for the regions of FMA of Bucharest and some of the other big cities: Timisoara, Cluj Napoca, Brasov and Constanza.

During 2000-2009 the higher % changes of GDP per capita are observed in regions of Romania with the higher rates corresponding to Bucharest and its closer cities and in Timisoara (Figure 4). In Bulgaria the higher change rates are observed in Sofia and its neighbour regions, as well as in the centre and the west of the country. In Greece relatively higher increases correspond to some island regions and Attiki.

Overall, the three capitals have much higher GDP per capita than their respective countries, but also presented higher GDP growth rates than the other regions of their countries.

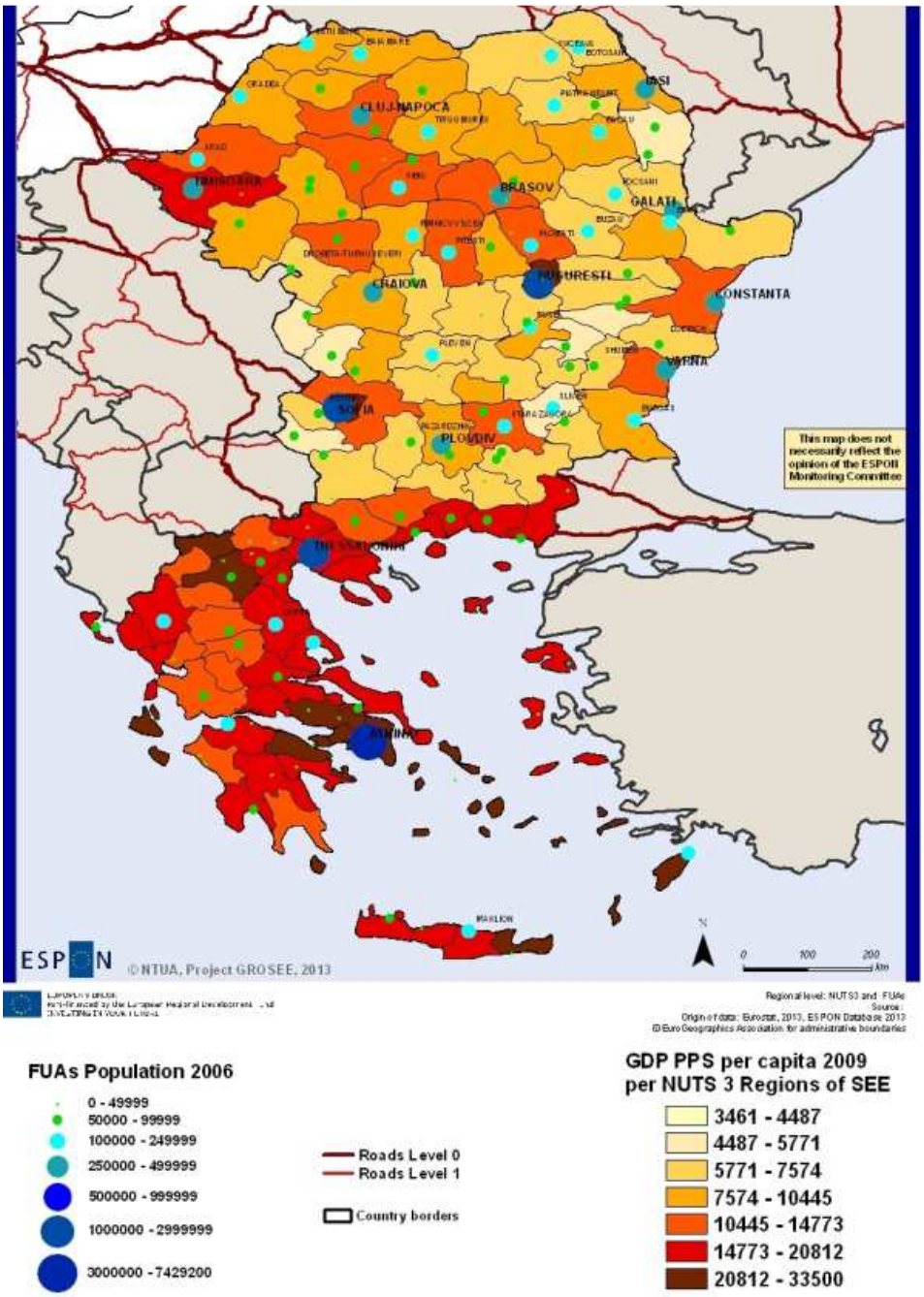

Figure 3: GDP PPS per capita in 2009 per NUTS3 regions and FUAs population 2006 in SEE.
Own elaboration, based on Eurostat and ESPON data

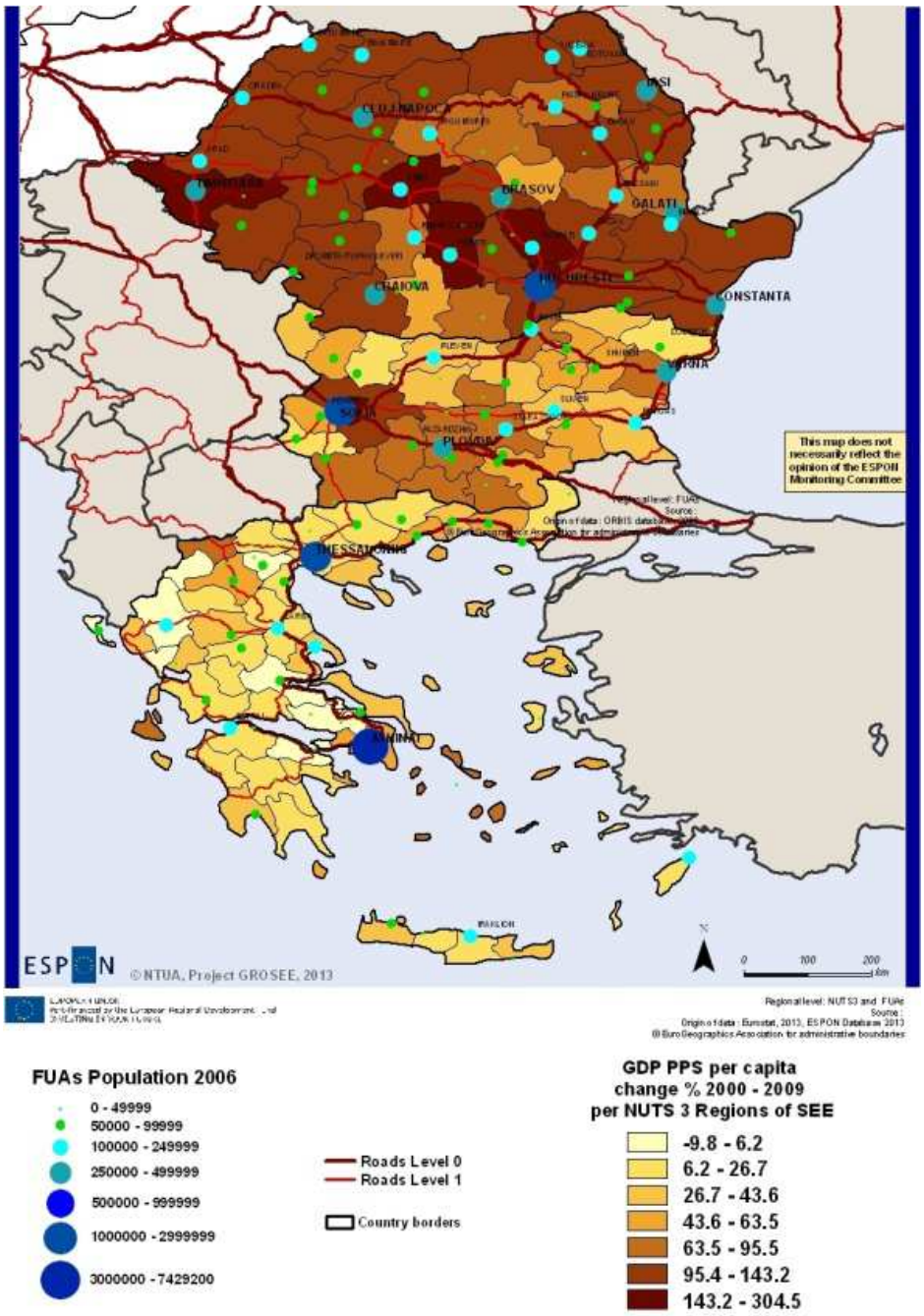

Figure 4: GDP PPS per capita change 2000 – 2009 % per NUTS3 regions and FUAs population 2006 in SEE. Own elaboration, based on Eurostat and ESPON data

Dispersion of regional GDP per inhabitant[10] is a good tool to measure regional development inequalitiesin a country. On the basis of this dispersion in 2009 **at NUTS2 level**, it

[10]Since 2007, Eurostat has calculated a new, derived indicator which records the differences between regional per-inhabitant GDP PPS and the national average, and makes them comparable between countries. This dispersion indicator is calculated at NUTS 2 and at NUTS 3 levels. For a given country, the dispersion 'D' of the regional GDP of the level 2 (or 3) regions is defined as the sum of the absolute differences between regional and national GDP per inhabitant, weighted on the basis of the regional share of population and expressed in percentage of the national GDP per inhabitant

results that regional inequalities were much more pronounced in Bulgaria (value of the index: 40) than in the entire EU27(27). Respective inequalities in Romania were also more important (30) compared to EU. Inversely, they were less important in Greece (24).

In all three countries, regional inequalities (regarding this index) rose impressively from 1995 to 2009. However, they increased much more in Bulgaria and Romania, which undergo since 1989 the transition to the market economy and then, in 2007 entered the EU.

The "dispersion" analysis in 2009 at NUTS3 level reveals even more considerable inequalities in all three countries. The respective value for Bulgaria amounted in 2009 to 47, while it reached 37 for Romania and 25 for Greece. Raises of the index from 1995 to 2005 are very important for all three cases; they fluctuate around the double of the 1995 values.

The index value change for Greece from 1999, year of entrance of Greece in the Euro-zone, until 2009 is very important: from 9 to 24. Similarly significant are the raises of the respective values for Bulgaria and Romania from 2007, year of entrance of these two countries in the EU, as well as during the pre-accession period (2000-2006).

6. The factors of competitiveness of the three capitals in the frame of their countries and EU

6.1 Economic factors of competitiveness and indicators of economic performance

Regional competitiveness analyses give often an excessive importance to the purely economic aspects of competitiveness as GDP, income, economic activities, productivity. However, in the line of a more comprehensive approach of competitiveness, the role of other factors such as the labour market, the human capital and the technological readiness should also be examined in depth. In next, while emphasis is given on the competitiveness of the three capitals, their role in the economies of their countries and EU will also be discussed (analysed in more detail previously).

Also, there is a clear distinction between the observed trends before and during the **crisis** period (from 2008 until today) because, as we will see, the crisis has changed significantly the patterns of development of both the three capitals and their countries.

Regarding **economic performance**, we start by the analysis of GDP, which is the most common measure of competitiveness of the regional economies. However, GDP is also a factor of competitiveness, but quite general and not as crucial as it is often presented. Therefore, we will also examine indicators highlighting other aspects of competitiveness, in order to conclude to a global approach of the **competitiveness pattern in the three capitals and countries** (as we have already mentioned we do not examine here the social aspects of competitiveness).Such indicators are: the Gross Fixed Capital Formation (GFCF), the Gross Value Added (GVA), the Foreign Direct investment (FDI) and the population income.

Before the **crisis** (until 2008) GDP in PPS per capita in Attiki approached the EU27 average, but in next it recorded a significant decrease. Bucharest and Sofia showed a remarkable increase in GDP per capita before crisis, while the decrease in the crisis period was lower than Attiki. FDI (Foreign Direct Investments) were clearly focused on the three capitals comparing to their respective countries. Real growth rate of regional GVA during 2001-2008 was, in general terms, higher than the EU27 average.

Turnover for enterprises showed a more dynamic increase during the period 2003-2007 in Romania and Bulgaria than in Greece (data only at country level).

Gross Fixed Capital Formation (GFCF) in Euros amounted in 2005 in Greece to 40 billion and rose up to 53 billion in 2007. In Romania the increase was more important: from 18 to 38 billion (there are no comparable data for Bulgaria). During the first year of the **crisis** (2008), while GFCF in Greece decreased slightly, it continued to increase in Romania. In both countries

there was a sharp decrease during the second year of the crisis (2009). During the entire period 2005-2009 GFCF per inhabitant was clearly higher in Greece compared to Romania.

In both Attiki and Bucharest, GFCF increased significantly before the crisis (2005-2008) – particularly in Bucharest. From 2008 to 2009 a sharp decrease in both capitals was observed, which was more intense in Bucharest. In 2008, per capita GFCF in Euros was higher in Bucharest than in Attiki (8.671 against 5.253). **In other words, GFCF was in the case of Romania more focused on the capital city compared to Greece.**

Disposable household income during 2000-2008 presented a significant increase in Bucharest and Sofia, while the respective change was less intense in Attiki. Hence, the growth rates of the previous economic indicators in the three capitals had an almost similar response in household incomes.

6.2 Economic structure per sectors and branches of activities

The economic structure of cities and regions per activities sectors is a crucial aspect of their competitiveness.

As it results from the analysis of **Gross Value Added (GVA)** per activity sectors in 2009 (Figure 5) the economies of all three capitals present higher shares in a broader sector including trade, transport, hotels and restaurants. However, Bucharest and Sofia record also high shares in industry and construction, while in Attiki there is an increased participation of the wider sector of public administration, defence, education and health, as well as real estate activities. Regarding financial activities (banks) and insurance, as well as information and communication, branches, which are of strategic importance for competitiveness, Attiki presents a more important volume of GVA in comparison with the two other capitals (the latter present bigger shares % than Attiki, but this is less important regarding this issue).

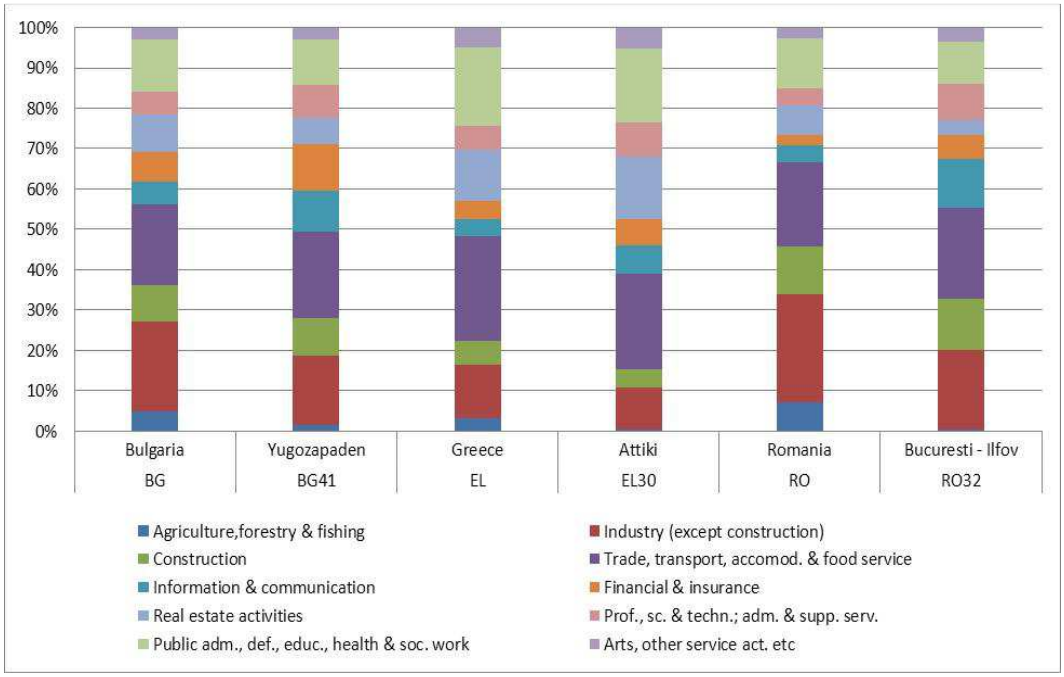

Figure 5: Gross Value Added (GVA) per economic sector in 2009 in the three countries and capitals. Own elaboration, based on Eurostat data

The division of GFCF by activity (there are not comparable data for Sofia) is similar in general terms to that of GVA. The same division pattern is more or less reflected also in the sect

oral structure of employment in 2011 (except for Real Estate activities in Attiki (which had a lower share in employment than in GFCF).

Specific attention should be paid to **tourism** because it is a sector in which all three capitals have an important comparative advantage (in comparison with other EU MRs), not enough exploited so far. In the economic analysis of tourism, **demand and supply** (accommodationinfrastructure) are of crucial importance. From the demand side (arrivals) Attiki presents in 2010 a clearly higher tourism intensity index (nights spent in collective tourist accommodation per 1000 inh.) than Sofia and Bucharest. Arrivals in the three capitals increased before the crisis and decreased slightly in Athens and Sofia during the crisis. Supply, as for the number of bed places offered, has been rising continuously during 2002-2011 in all three cases, with the exception of a small decrease in Attiki after 2009.

6.3. Employment and unemployment, labour productivity

At first, Attiki presented before the crisis both a lower **employment rate** (Figure 6) and a higher **unemployment rate** (Figure 7) in comparison with Bucharest and Sofia.

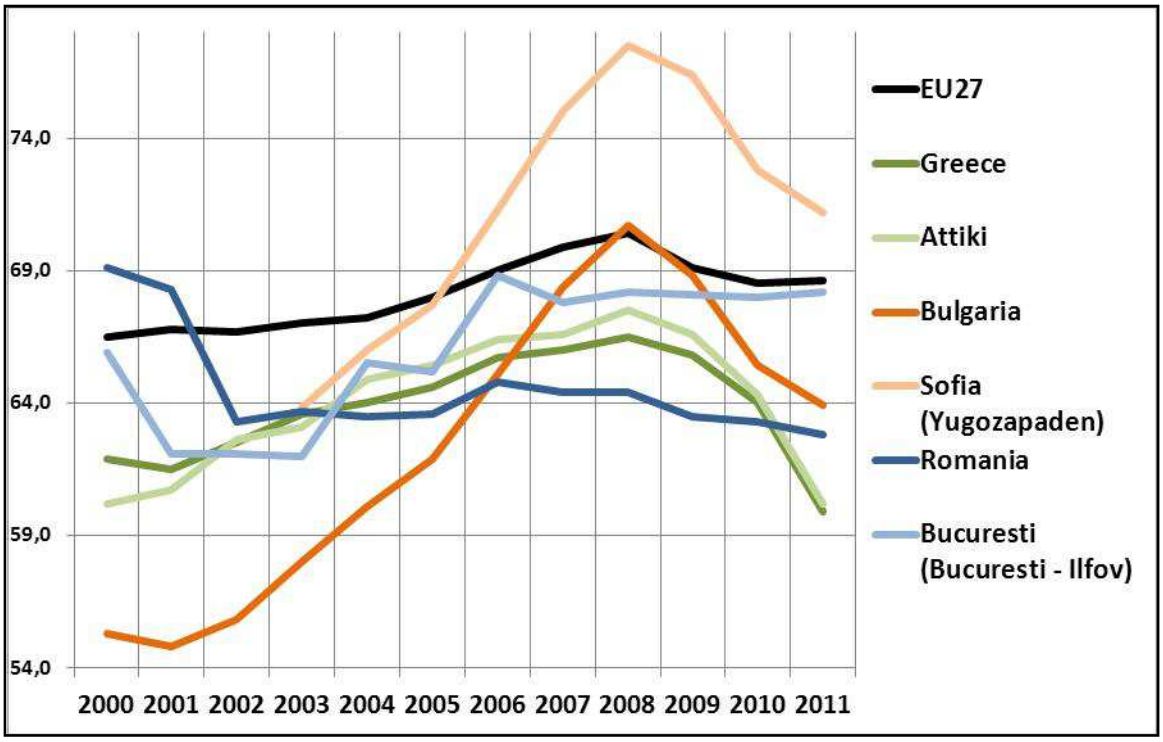

Figure 6: Employment rate % (20 to 64 years) in EU-27 and the three countries and capitals 2000-2011.Own elaboration, based on Eurostat data

During the **crisis** period (2008 to 2011) the **employment rate** of all three countries and the FMAs of the three capitals decreased except for Bucharest. Sofia had in 2011, within the **crisis**, a higher rate than the EU27 average while the rate of Bucharest was similar to the EU27 one. Inversely, the rates of Attiki as well as of the three countries were much lower than the EU27 average, which is quite negative.

Nonetheless, the **unemployment rate** is more important. This rate has risen impressively during the crisis period in Attiki, reaching 28,3% in October 2012. It is the first time that Attiki records the highest unemployment rate among the Greek regions.

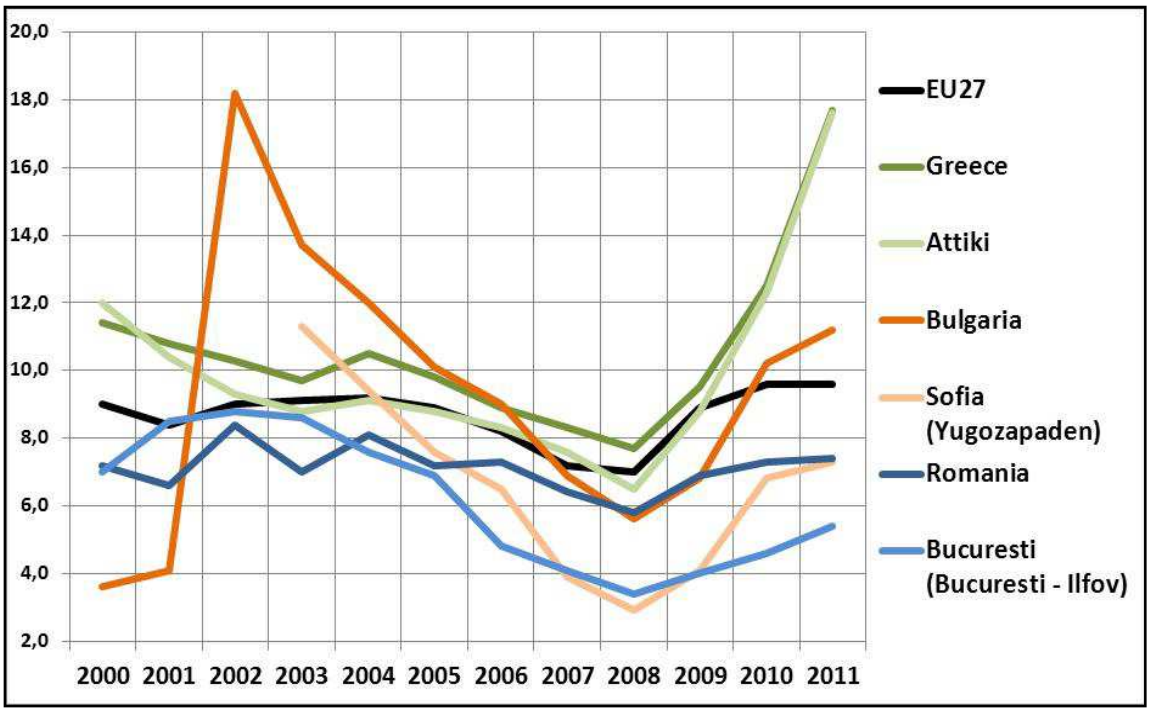

Figure 7: Unemployment rate % in EU-27 and the three countries and capitals 2000-2011. Own elaboration, based on Eurostat and ESPON data

Unemployment rates in Sofia and Bucharest also increased, but with clearly lower rates than in EU27 and Attiki.

Female employment rates in 2003 in all three countries and capitals were considerably lower than the males' ones, particularly in Greece and Attiki. During the **crisis** period 2008-2010, decreases in female employment rates were in general lower than the respective ones for males.

The **female unemployment rates** in 2011 were lower than the male in Bulgaria and Romania, as well as in Sofia and Bucharest, while they were higher in Greece and Attiki. This rate in Greece increased considerably and reached 30.4% in October 2012. It is also of great importance that the **unemployment rate for young people aged 15-24** has increased dramatically in Greece during the crisis and reached 59.3% in January 2013.

During the **crisis** period 2008-2011, **the decrease in employment rates was more significant in specific sectors**; primarily, in the **construction sector**, **this is mainly linked to domestic demand;** EU-27 experienced a high percentage of employment decrease in construction (13%), but the decrease in Attiki and Sofia was considerably higher (37% and 32% respectively), while in Bucharest it was significantly lower (11%). High percentages of employment decrease for the three capitals were also recorded in the industry sector.

Labour productivity is a very important factor of competitiveness. There are different measures of labour productivity which correspond to different simple indicators (for example: GDP, GVA etc.) or combinations of indicators and therefore to different aspects of competitiveness.

The **labour productivity index of Eurostat corresponding to GDP as PPP per person employed as for the EU27 average** (=100) is of particular interest to our subject. The value of this index was very high for Greece in 2001- 98 against 100 for EU, while it was much lower in Bulgaria -32- and Romania -26. During 2001-2008 it remained stable in Greece and increased very considerably in Bulgaria and Romania. During the **crisis** period 2008-2011, the value of the index

decreased in Greece (90 in 2011) and increased slightly in Bulgaria and Romania (44 and 51 respectively).

As the above indicator corresponds only to national and not regional level, we elaborated data from Eurostat on GDP and employment in order to calculate the values in regional level of another commonly used index: **labour productivity as GDP** (in millions of PPS) / **employment** (in thousands, people 15 years or over). The index values analysis for 2011 indicates that only the FMA of Attiki (with 76) surpassed the EU-27 average (59) while Bucharest (with 56) presented a lower value and Sofia a much lower one.

Also, the Eurostat **index of labour productivity in industry and services (**measured as Gross Value Added (GVA) per person employed in industry and services as for the EU27 average (=100)), was in 2007 –in the pre-crisis period- in Attiki clearly higher than the EU27 average (126 against 100), while it was significantly lower in Bucharest (84) and Sofia (45).

The index of European Commission's Directorate General for Regional and Urban Policy (DG REGIO) regarding the **productivity growth through employment shifts between economic sectors** (increase in average productivity due to employment shifts to more productive sectors – calculations based on Eurostat data) is also interesting. During the period 2000-2007, while the productivity growth due to the above factor, amounted to 0,40 for the entire EU-27, it was much higher in Sofia (0,82) and much lower in Attiki (0,23), while in Bucharest there was a small decrease (-0,02).

In summary, the improvement in employment and unemployment rates before the crisis in all three countries and capitals was followed by an extreme deterioration, particularly in Athens and Sofia, with emphasis on the construction sector, but also in industry and specific branches of services. Labour productivity was relatively high in Greece and Athens, but decreased in the period of crisis, while it was quite lower in the other two countries and capitals. Therefore, this aspect of the competitiveness pattern of the three capitals was also improving before the crisis, but declined in the period of crisis.

6.4. Technological and innovation readiness and economic branches of crucial importance

Technological and innovation readiness is generally lower in the three countries than in the more competitive EU countries. However, this weakness regards more the expenditure and investment in Research and Development (R&D) and much less the available human potential for R&D. More specifically, regarding the **total expenditure in R&D as % share of regional GDP** in 2007 the values for the three capitals were much distant from both the EU27 average and the Europe 2020 target; the value for Bucharest was higher than those for Attiki and Sofia. However, all three capitals record high percentages regarding **Human Resources in Science and Technology**as share of the active population in 2011, with Bucharest surpassing significantly the respective percentage of EU27. Regarding the change in percentage points during the period 2003-2011, Bucharest exceeded by far the EU27 average change (10.1 and 6.4 points respectively). Attiki recorded a change marginally lower than EU27 (6.2 points), while the change for Sofia was significantly lower (2.5 points).High percentages were also observed in **employment in Knowledge - intensive sectors** for Attiki and Bucharest in 2011, which exceeded the EU27 average, while the percentage for Sofia was lower. It is noteworthy that during the **crisis** period (2008-2011) employment rates in the above sectors presented an increase in the three capitals, which in the case of Bucharest and Attiki was higher comparing to EU27.

The **share of enterprises with innovation activities** in 2006 was in Greece marginally higher than the EU27 average and by far higher than in Bulgaria and Romania. Comparing to 2004, the share of Greece increased, more than in Bulgaria and Romania, while the EU27 average recorded a slight decrease. Regarding the number of **patent applications** (to the European Patent

Office) **per million of inhabitants,** the value of the index for Greece exceeded significantly in 2010 the respective values for Bulgaria and Romania, although it was much lower than the EU27 average.

Access to internet constitutes today an important factor of competitiveness. The shares of households with broadband access for the three capitals are similar, lower than the EU27 average. The percentage of households with access to the internet at home was higher in Bucharest in 2011, approaching the EU27 average, while the percentages for Attiki and Sofia were lower.

As we have already mentioned in Methodology, it is particularly important to examine the contribution of the **Advanced Producer Services (APS)** and **High Technology (HT) branches** in the competitiveness of the three capitals and countries, as well as whether relevant firms' clusters are formed among the three capitals. We limit ourselves here to mention the conclusions of a relevant analysis for Attiki, Bucharest and Sofia, which was implementedin the frame of ESPON FOCI project's (2010) section on polycentricity by a research team of NTUA (scientific responsible of the team: M. Angelidis)-see also in Angelidis et al 2011. The preliminary update of this analysis in the context of ESPON GROSEE basically confirmed these findings.

Generally, the location and the degree of spatial integration of these crucial branches are considerably unequal in the EU space. APS and HT are well developed and accompanied by a high level of spatial integration in the "pentagon" of the EU, while in Southern Europe and, even more, in Eastern Europe, these activities, as well as the spatial links among them remain weak.

Furthermore, due to the progressive integration of these activities in EU level clusters, while their "strong points" remain particularly in the "North" EU, the corresponding integration at national or regional level is encumbered in the rest EU space. This is obvious in the case of SEE and in the three capitals which are examined. Attiki includes comparatively more of these strategic activities, but they are largely "dependent" on the similar activities of the major cities of the "North". The corresponding integration among Athens - Sofia - Bucharest is growing, but still remains limited.

6.5. The quality ofthe available human potential

The quality of human potential can be assessed on the basis of a set of appropriate indicators.

At first **the share of tertiary educated people (30–34 years) to the total (corresponding)population** in 2012in all three capitals exceeded the EU-27 average (35,5%); the rate of Bucharest (46,1%) surpassed the target of Europe 2020 (40%), while the rate of Attiki (93,5%) approached the target and the one of Sofia was slightly lower. The rates for the three countries were clearly lower: 30% for Greece, 27% for Bulgaria and only 22% for Romania.

In addition, the low share of **early school leavers** in the three capitals shows that the local school systems succeed to integrate a big share of young people. Therefore, the three capitals have also a populous human potential with lower but still adequate education, which can contribute in achieving high competitiveness. Specifically, the rates of Sofia and Attiki were lower than the EU-27 average in 2011 (in the case of Bucharest the available data correspond to the NUTS1 region RO3, a much larger area than the FMR).

Healthy life expectancy, measured by the number of years of healthy life expected, is a good index for the potential labour productivity. This index amounted in 2007 to 62 in EU-27, 66 in Attikiand 62 in Bucharest and Sofia (Eurostat data, DG Regio calculations).

The main conclusion of the two last sections is that the integration of technology and innovation in SEE, spearheaded by the three capitals, lags behind compared to the more developed regions of the EU space, mainly due to the lack of required investment, while there is adequate human potential and partly sufficient technical infrastructure. The limited degree of incorporation

of these factors within the SEE and, especially regarding the links among the three capitals, has actually a negative impact. From this scope, the progress of spatial integration in SEE with the three capitals as a catalyst can significantly contribute to the improvement of their competitiveness.

Before going to the general conclusion, it is worth mentioning the differences within the three Metropolitan Regions (MRs)[11].The main finding is that the "Core Cities" / CC of Bucharest and Sofia presented before the crisis, higher competitiveness dynamic, there by acting a scores which spread growth and enhance the competitiveness of the rest corresponding MRs, especially the suburban areas included in the respective Functional Metropolitan Areas (FMAs). Such a dynamic has been also developed regarding the FMA of Attiki (as defined herein), except that it occurred much earlier.

General conclusion - Epilogue

As we have seen, the changes in the three capitals and in the entire SEE during the crisis period are of such importance that the different components of their competitiveness should be addressed mainly in terms of their resilience to the crisis. Generally, the basic hypothesis of the paper that enhancing the development axis Athens - Sofia - Bucharest, as a catalyst for spatial integration in SEE, can improve the competitiveness of the three countries, needs to be seen under this light.

We observed that the three capitals have been developed faster than their countries, Athens formerly, Sofia and Bucharest more recently. Despite this fact, the three capitals are not differentiated today from the development patterns of the “South” EU, in the case of Attiki, and the “East” EU for Sofia and Bucharest. Thus, their "weaknesses" have deteriorated, while their "strengths" lose their importance during a period when Communitypolicy options of unilateral budgetary adjustment are applied in the "South" (mostly) and the "East" at the expense of the pre-crisis prevailed policy forcohesion and balanced competitiveness among countries and regions of the EU.

In particular, regarding the strictly economic aspect of competitiveness, the recent decreases in GDP in the three capitals and the three countries go with a decrease in investments, both foreign (FDI) and total (GFCF), as well as reduction of the added-value and the turnover of enterprises. The sect oral structure of their economy seems to be improved, as the participation of mainly introvert sectors has been limited, such as construction and a range of services, but this is not a "positive impact", since nor investments in extrovert sectors increase or the diffusion of technology and innovation in the economy is radically improved, or the economic sectors of strategic importance are developed.

The specialization of the three countries in the frame of EU and the world in goods of low competitiveness, which also applies to the three capitals, albeit to a lower extent, does not seem to change.

The human potential of the three countries and, even more of the three capitals, constituted a comparative “strength”; the labour productivity was quite high, compared with their overall economic performance, while, during the crisis, even in short term tends to decrease.

Despite the negative impact of the regional disparities increase in the pre-crisis period of rapid economic growth in the three countries with the capitals as engines of development-especially in the cases of Sofia and Bucharest- the three capitals accumulated, even fragmentary,

[11]See in Section 2 the division of the three MRs in zones

driving forces of potential competitiveness at European and international level. Such driving forces are the financial sector developed in Athens (and Greece)as well as tourism and specific branches of services developed in all three capitals and countries, in association with the improvement of transport (not discussed here) and communications infrastructure.

Under these conditions, spatial integration at the SEE level through fostering the development axis of Athens - Sofia - Bucharest seems to present the same if not greater advantages compared to the period before the crisis. It can contribute to the improvement of competitiveness and in the general development pattern of the three countries through the strengthening of their extroversion, which will also be less dependent on the EU "North" and therefore less unstable in times of crisis, thus more resilient in the case that any doubt as to whether the "North" will support the real convergence of the "South" is maintained.

References

- Angelidis M., (2004), "European Union's spatial development policies: A threat to Europe and Greece (in Greek), N.T.U.A. (National Technical University of Athens) Press
- Angelidis et al (NTUA research team and experts), (2011), "Polycentric development in Europe - based on the results of ESPON FOCI project", NTUA, Athens
- Backé P. – Gardó S., (2012), "Spillovers of the Greek Crisis to Southeastern Europe: Manageable or a Cause for Concern?" in Focus on European economic integration Vol. 1 / 2012, pp. 31-48, OesterreichischeNationalbank, Austria
- Bartlett W., PricaI., (2012), "The Variable Impact of the Global Economic Crisis in South East Europe", LSEE - Research on South Eastern Europe, April 2012, LSE,
- Bozhilova D., (2010), "When Foreign Direct Investment is Good for Development: Bulgaria's accession, industrial restructuring and regional FDI", Hellenic Observatory Papers on Greece and Southeast Europe / GreeSE Paper No 33, The Hellenic Observatory or the LSE, LSE, London
- EC / DG Economic and Financial Affairs, 2012, "European Economic Forecast: EUROPEAN ECONOMY 1|2012", Spring 2012, Brussels
- ESPON 2006 Programme / TPG, (2005), "Project 1.1.1: Potentials for polycentric development in Europe", Final Report
- ESPON 2006 Programme / TPG, (2006), "Project 1.1.3: Enlargement of the EU and its polycentric spatial structure", Final Report
- ESPON 2006Programme/ TPG, (2006), "Project 3.4.2: Territorial impacts of EU economic policies and location of economic activities", Final Report.
- ESPON 2006Programme/ TPG, (2006),"Project 3.2: Spatial Scenarios and Orientations in relation to the ESDP and Cohesion Policy, Final Report.
- ESPON 2006Programme / TPG, (2007), "Project 1.4.3: Study on Urban Functions", Final Report
- ESPON 2013 Programme, (2010), "METROBORDER / Cross-border Polycentric Metropolitan Regions", Final Report;
- ESPON 2013 Programme / TPG, (2010), "FOCI / Future Orientations for Cities", Final Report
- ESPON 2013 Programme/ TPG, (2011), "ATTREG / Attractiveness of European Regions and Cities for Residents and Visitors", Final Report
- ESPON 2013 Programme / TPG, (2011), "POLYCE / Metropolisation and Polycentric Development in Central Europe: Evidence Based Strategic Options", Inception Report
- ESPON 2013 Programme / TPG, (2011), "SIESTA / Spatial indicators for a Europe 2020 Strategy Territorial Analysis", Inception Report

- ESPON 2013 Programme / TPG, (2012), "INTERCO / Indicators of Territorial Cohesion", Final Report;
- ESPON 2013 Programme / TPG, (2012), "TIGER / Territorial Impact of Globalization for Europe and its Regions", Final Report
- ESPON 2013 Programme / TPG, (2012), "GROSEE / Emergence of growth poles network in South-East of Europe", Inception Report
- ESPON 2013 Programme / TPG, (2012), "ECR2 / Economic Crisis: Resilience of Regions", Inception Report
- Lisbon European Council, (2000), "Presidency Conclusions, 23-24 March 2000"
- European Commission, 2010, "Investing in Europe's future: Fifth report on economic, social and territorial cohesion", Luxembourg: Publications Office of the European Union.
- European Commission, (2010), "Europe 2020: A European strategy for smart, sustainable and inclusive growth, COM (2010) 2020", Brussels.
- EU / URBACT, (2010), "URBACT Cities facing the crisis: impact and responses (results of the respective specific survey)", URBACT
- Goebel V., Thierstein A., Lüthi S., (2007), "Functional polycentricity in the Mega-City Region of Munich", Paper presented at the AESOP conference, July 2007, Napoli.
- Iammarino S., Pitelis Ch., (2000), "Foreign Direct Investment and "less favoured regions": Greek FDI in Bulgaria and Romania" in Global Business Review August 2000 vol. 1 no. 2 155-171, International Management Institute, SAGE Publications
- Thierstein A., Droß M., (2008), "Airport Region of Munich – show-case for a lack of territorial governance" in AESOP Conference.