Paper prepared for:

54th ERSA Congress

26 – 29 August 2014 - St. Petersburg, Russia

The impact of the economic crisis on the regional disparities in Croatia

Zlatan Fröhlich, PhD
The Institute of Economics, Zagreb
Trg J. F. Kennedya 7
Zagreb, Croatia
E-mail: zfrohlich@eizg.hr

Irena Đokić, PhD
The Institute of Economics, Zagreb
Trg J. F. Kennedya 7
Zagreb, Croatia
E-mai: idokic@eizg.hr

Ivana Rašić Bakarić, PhD
The Institute of Economics, Zagreb
Trg J. F. Kennedya 7
Zagreb, Croatia
E-mai: irasic@eizg.hr

Abstract

The economic crisis has affected the EU regions very differently over the last five years, depending on the region's strengths or weaknesses, its sectoral structure and the response of national and regional governments. In some countries, downturns can lead to narrower interregional disparities, while in some can trigger regional divergence. Previous empirical studies indicate that there is a tendency for regional disparities to grow during recessions, and diminish in the period of economic growth (Dunford and Parron, 1994; Evans and MacCormic, 1994, Audas and Mackay, 1997). Although the reduction of regional disparities represents one of the priorities of EU regional policy and of Croatian regional policy, regional disparities within the Croatia are still significant. The current economic crisis that has emerged in the Croatian economy has already an enormous negative effect on several national and regional development indicators like GDP per capita, unemployment, and productivity. Some areas are coping with structural changes such as de-industrialization. In line with that

the main aim of the paper is to find out if regional imbalances within Croatia have been more exposed by the current crises? This paper analyses the disparities between economic developments of Croatian counties before the crisis (before 2009) in comparison with the recession period. The analysis focuses on regional development index and other available socio-economic indicators (GDP per capita, unemployment rate). Obtained results can serve as a ground for improvements in Croatian regional economic policy.
Keywords: economic crisis, regional disparities, convergence and divergence

JEL: R11, O18, J21 1.

1. Introduction

Some researchers claim that the growth and development results territorial disparities and inequalities, while by others the growth and development results territorial equation. Namely, Solow and neoclassic economists claim that the regional differences disappear with the growth because of the diminishing returns to capital. On the other hand, by Myrdal and the post-Keynesian theory, growth results increasing inequalities (Bradley, Petrakos, Traistaru, 2005). The reduction of economic disparities is one the key policy objectives of the European Union, set in the goals of Rome Treaty in 1957 and of the Single European Act in 1986. The economic crisis is affecting regional economies in different ways. Conducted studies have shown that periods of economic growth can be connected with regional convergence, while the periods of economic downturns can trigger regional divergence (Dunford and Perron, 1994; Audas and Mackay, 1994; Evans and McCormic, 1994). Namely, the financial crisis that began in August 2007 and the subsequent severe recession had a significant negative impact on cross-country convergence in the EU (EIB, 2012). Unemployment in poorer regions increased more than that in richer regions, especially for low skilled labour, and hinted that regional convergence in the EU followed the cross-country pattern. Regional economic convergence slowed down substantially in 2008-2009 after nearly a decade of rapid convergence (EIB, 2012). The aim of this paper is to analyse the disparities between the economic development regions of Croatia at the end of the year 2008, meaning before the recession in comparison with the year 2011 (the last year for which data on regional GDP are available). In order to study the disparities among the economic development regions of Croatia, following variables have been taken into consideration: development index, GDP per capita, unemployment rate and employment rate. The analysis is based on data at NUTS2 and

NUTS3 level. Croatia is exceptionally heterogeneous country with great regional differences in economic and social development. According to the Act on the Territories of Counties, Towns and Municipalities in the Republic of Croatia (Official Gazette, No. 86/06,125/06, 46/10, 145/10, 37/13, 44/13, 45/13) the entire territory of the Republic of Croatia is divided into 556 local self-government units (127 towns and 429 municipalities) and 21 county (including Zagreb, having a dual status of a town and county). Counties (županije) represent the third level of the NUTS system, while the entire national territory represents the first level (NUTS1). As for the second level (NUTS2) there are two units, Adriatic Croatia (7 counties) and Continental Croatia (14 counties). Croatian counties are units of regional self-government that comprise of towns and municipalities. The county's self-government is in charge of education, health care, economic development, traffic and road infrastructure, scientific, social and cultural development, physical planning and a number other activities regulated by special laws. After about 20 years of transition and almost ten years of pre-accession negotiations Croatia was eventually admitted into the EU on 1st July 2013. Since Croatia as a whole is divided in two NUTS2 regions, Continental Croatia and Adriatic Croatia, analysis is presented separate for each NUTS2 region. Puljiz and Maleković (2013) in their recent work measure regional disparities in Croatia through regional income and indicators of unemployment. For inequality, various measures such as coefficient of variations, Gini coefficient and Theil index to regional (county) and local units are applied to assess the extent and dynamics of regional income and unemployment disparities in the period 2000-2005 (period preceeding to period taken for our analysis). Results of their analysis show that Croatia is faced with moderate regional income (in terms of personal income) and significant unemployment disparities (compared also to EU Member states) whereby total inequality is becoming more driven by between-regions inequality than by within-region inequality (based on Theil index). According to within-county inequalities, there are significant differences among quite homogeneous and counties faced with high internal disparities. Across the developing world the rise in within country regional disparities has accelerated sharply since the early 1990s (Rodriguez-Pose, 2014), while property rights and the rule of law have been identified as playing the most relevant role in generating sustainable growth (Rodrik et al., 2004; Acemoglu et al., 2005).

Puljiz and Maleković proposed forming of several groups of counties according to income and unemployment levels, from the geographic point of view. According to obtained figures, counties included in these groups mainly correspond to those found in grouping proposed in

our work, with the City of Zagreb as a special (successful) case (especially high income values), and the most lagging counties (with worsened relative position in income levels and unemployment) situated in eastern part of the country. Authors conclude that unemployment represents most significant regional development problem and that policy makers will have to increase efforts in order to make any substantial impact on reduction of regional unemployment disparities.

Camagni (Camagni, 2002: 2398) holds that human, social and relational capital, as sources of competitiveness of territories, are necessary pre-conditions to secure employment stability, benefits from external integration and the continuing growth of local well-being and wealth. According to Camagni, therefore, weak and lagging territories—in terms of competitiveness of the economic fabric, internal/external accessibility, quality of the human and environmental factors, internal synergy and learning capability—risk exclusion and decline to a larger extent than in the past. In a broader sense, in our work we actually tackle an issue of resilience of the region.

Christopherson et al. (2010) find that in economics, resilience has been defined in terms of return to a fixed and narrowly defined equilibrium (as measured by employment, for example) or, in the more liberal version, multiple equilibria. They also state that fashionable use of the concept of resilience may originate both from an increased sense of risk (economic and political as well as environmental) and from the perception that processes associated with globalization have made places and regions more permeable to the effects of what were once thought to be external processes (e.g. the crisis and its effects on regional development as presented in our work). The intersection of an economic crisis and an environmental crisis has enhanced the perceived sense of vulnerability and, hence, stimulated the search for new paths to 'resilience' (Hudson, 2010; Pike et al., 2010). The question of regional resilience and ability of some regions to ovecome short-term or long-term negative economic impacts is fraught with both methodological and philosophical difficulties but remains a subject of interest because of its significance and because of the multiple variables at play in the region, as desrcibed by Hassink (2010). Most of the authors contributing to the issue of regional resilience hold that space is constructed via human action and social relations whereby regions are manifestations of those actions and in a constant process of transition (Christopherson et al., 2010). Political and economic processes, leading to investment in one neighbourhood or region and disinvestment in another, are at the core of regional resilience, as mentioned by these authors.

According to Simmie and Martin (2010: 28) a regional economy that is hardly affected by a shock is much more likely to recover, and more quickly, than a regional economy that is severely weakened or disrupted by the shock. Therefore, it is necessary to learn lessons from succesfull regions on how to maintain economic growth and stay resilient during economic recession or when faced with other challenge. If previous growth path disappears for whatever reason, through industrial restructuring and repositioning there may be generated another alternative growth path(s) that the region may achieve. Viewing the concept of resilience through regional competitiveness perspective leads to a narrow and perhaps limited view of what resilience may have to offer, as a way of understanding the forces shaping regional change and in guiding the formulation of policy Bristow (2010). Regional and local economic development is subject to all sorts of interruptions and disruptions. How regional and local economies respond and adjust to such disturbances and disruptions may well exert a formative influence on how they develop and evolve (Simmie, J., Martin, R. L., 2010: 27). Foster (2007: 14) defines ‘‘regional resilience as the ability of a region to anticipate, prepare for, respond to, and recover from a disturbance’’, while, Hill et al. (2008: 4) see resilience as ‘‘the ability of a region to recover successfully from shocks to its economy that either throw it off its growth path or have the potential to throw it off its growth path’’. The influence of institutions on regional development patterns was fundamentally neglected by mainstream economic theory (Silva-Ochoa, 2009). Regional development intervention over the last thirty years aimed at delivery of development strategies that have frequently tended to mimic one another from Andalusia to Attica, from Alentejo to Saxony, or from Chihuahua to Oaxaca (Silva-Ochoa, 2009). This is what Chien (2008) has called an isomorphic approach to development.Croatia is at the moment in the course of adoption of Law on Regional Development and preparation of the National Regional Development Strategies, documents which implementation determines an overall quality of Croatian regional policy, and consequently developmental effects in different Croatian regions, with intention to decrease/balance regional disparities and achieve stable growth.

2. The impact of the crisis on regional disparities

The aim of this section is to analyse the regional impact of the economic crisis in Croatian NUTS 3 regions. This section analyses changes in regional variability of the regional composite development index (CDI), of GDP per capita, unemployment rate and GDP per employee (productivity) resulting from the global crisis, at NUTS3 level in Croatia. Variability is measured using the basic measures including the standard deviation, the interquartile ratio, and the ratio of the 90th to 10th percentile, and the highest/lowest value ratio.

Composite development index. In terms of development level, Croatian counties are officially ranked according to the composite development index (CDI), that is based on five indicators: personal income per capita; county budget revenues per capita; unemployment rate; change in number of population (change between the censuses) and educational structure of the population (educational attainment rate). This categorization was introduced by the Law on Regional Development in 2009 (Official Gazette, No. 153/09, 63/10 158/2013). CDI is calculated as a weighted average deviation from the national average of the five indicators. Unemployment rate has 30% weight, incomes per capita 25% and other three indicators 15% weight each. County units have been divided in four different categories in accordance with their relative positions when compared to the national average. Categorization thresholds are presented in Table 1.

Table 1 Categorization of county units on the basis of the composite development index

First group	counties with development index below value below 75%
Second group	counties with index value between 75% and 100% of
Third group	counties with index value between gg100% and 125% of
Fourth group	counties with index value above 125% of national average

The 2010 composite development indices are calculated on the basis of data measured in the pre-crisis period (2006 – 2008). On the other hand, the 2013 CDI is calculated on the basis of indicators measured in 2010 – 2012, and therefore reflects the state of economy during the crisis. In 2013 the City of Zagreb, and the counties of Istria and Primorje-Gorski Kotar were ranked highest (ranks 1, 2 and 3), thus being the most developed Croatian regions (category IV - see table 2). The same rank was in

2010. At the same time, the counties of Virovitica-Podravina, Vukovar-Srijem and Brod-Posavina were at the bottom of the list ranking with the values of CDI of 18.7, 18.4 and 5.6 respectively. Even 12 out of 21 counties were ranked below 75% of the national average.

Table 2 Composite development index, 21 counties (NUTS 3), 2010 and 2013

County	2010	Development Category	2013	Development Category	Development index change 2013-2010
City of Zagreb	187.5	IV	186.4	IV	-1,1
County of Istria	156.1	IV	156.8	IV	0,7
County of Primorje-Gorski Kotar	142.3	IV	139.2	IV	-3,1
County of Zagreb	123.2	III	124.2	III	1,0
County of Dubrovnik-Neretva	107.9	III	120.8	III	12,9
County of Zadar	75.6	II	106.4	III	30,8
County of Split-Dalmatia	89.1	II	93.8	II	4,7
County of Varazdin	96.3	II	86.3	II	-10,0
County of Šibenik-Knin	63.3	I	80.9	II	17,6
County of Krapina-Zagorje	87.7	II	73.2	I	-14,5
County of Medimurje	75.1	II	69.7	I	-5,5
County of Lika-Senj	55.5	I	64.8	I	9,3
County of Koprivnica-Krizevci	64.3	I	59.2	I	-5,1
County of Karlovac	54.5	I	56.3	I	1,8
County of Osijek-Baranja	52.9	I	46.1	I	-6,8
County of Sisak-Moslavina	48.5	I	38.7	I	-9,8
County of Pozega-Slavonia	44.0	I	33.8	I	-10,1
County of Bjelovar-Bilogora	35.2	I	23.3	I	-11,9
County of Vukovar-Srijem	33.4	I	18.7	I	-14,6
County of Brod-Posavina	20.6	I	18.4	I	-2,1
County of Virovitica-Podravina	20.5	I	5.6	I	-15,0
Range	167.0		180.9		13,9
Standard deviation	44.87		48.81		
90^{th} /10^{th} percentile	4.26		7.44		
75^{th} /25^{th} percentile	1.99		2.75		
Highest/lowest ratio	9.1		33.1		

Note: Coastal Counties are marked

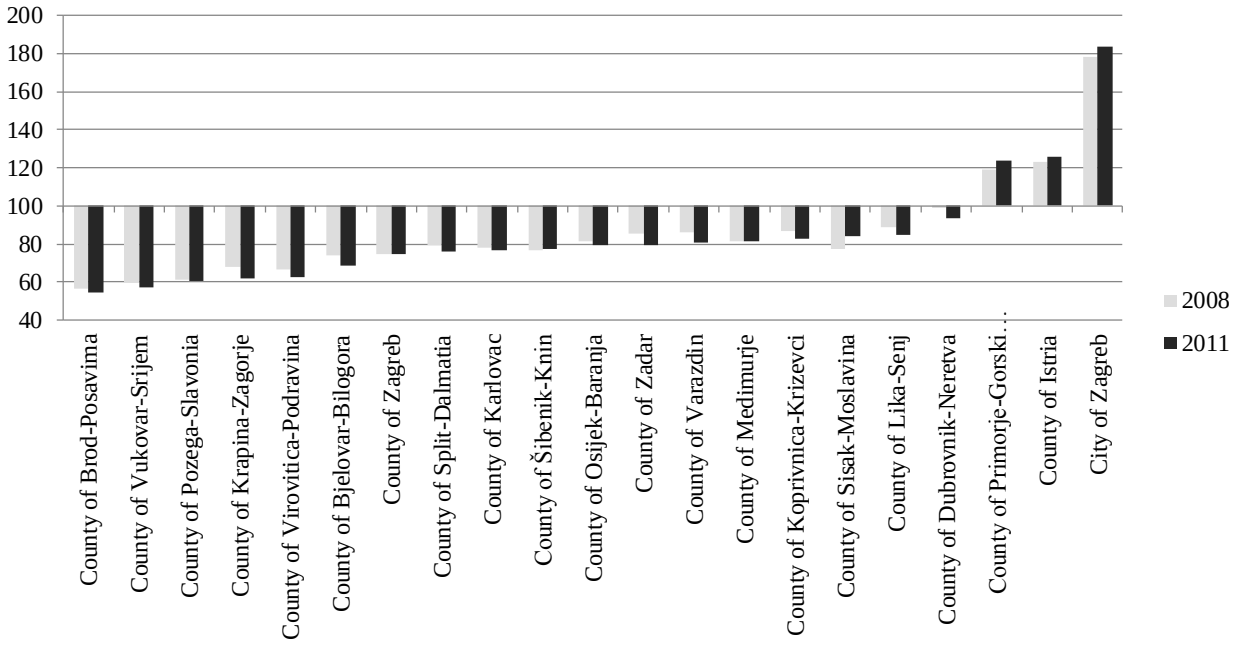
Source: MRDEUF

Compared with the period before recession, it can be noted that development gap is widening. Table 2 contents quotients of CDI values of the most and least

developed counties in 2010 and 2013. Both values, 2010 CDI and 2013 CDI indicate high rates of polarisation, whereby in 2013 the most developed county (The City of Zagreb) had 33 times higher value of CDI than the least developed one (the county of Virovitica-Podravina). For comparison the ratio in 2010 was lower, 9.1. Additionally, standard deviation of CDI has increased from 44.87 in 2010 to 48.81 in 2013, also indicating that the dispersion of regional development has widened. The poorest 25% of the counties noted the CDI below 48.5 while the richest 25% of the counties have CDI above 96.3. From Table 2 it can be seen that six out of seven coastal counties have increased its relative advantage along the examined period (2010 to 2013). Such developments can be linked to the impact of tourism, since Croatia was one of the few destinations, registering growth in the international tourist arrivals despite the 2008 crisis. All the other counties (even including the City of Zagreb), were getting backward.

GDP per capita. This section analyses the extent of convergence or divergence in regional GDP per capita since the onset of the 2008 economic crisis. For each county (NUTS3 region) the GDP per capita is normalised relative to the national level GDP per capita (EUR per inhabitant) for 2000-2011 period. The most recent regional GDP data available across NUTS3 region are for 2011. GDP per inhabitant (EUR) in 2011 measured for NUTS3 regions ranged from 5,424 euro (54.4 percent of the national average) in the County of Brod-Slavonia to 18,414 euro (183.4 percent of the national average) in the City of Zagreb. Figure 1 indicates the scale of these disparities in 2008 and in 2011 by plotting regional GDP per capita relative to the national average for NUTS3 regions (counties) in Croatia. GDP per capita above national level was recorded in only three NUTS3 regions: City of Zagreb, and western coastal counties the County of Istria and the County of Primorje-Gorski Kotar. The basic pattern of disparities, with high-income regions in the central and western part of the country (around City of Zagreb) and lower income regions in the East, combined with other forms of urban—rural divide is evident in Croatia. There is a marked disparity between the capital city region and the remainder of the country.

Figure 1 GDP per capita, counties, (Croatia = 100), 2008 and 2011



Source: Author's calculation based on Central Bureau of Statistics data.

The main developments in regional GDP (2008 –2011). Regional GDP per capita (EUR) has declined relative to the national level between 2008 and 2011 in fifteen out of 21 counties (see Figure 1). At the same time, an increase of GDP per capita relative to the national level was recorded in the three counties with the highest GDP per capita: the City of Zagreb, the County of Primorje-Gorski Kotar and the County of Istria. Besides, an increase of GDP per capita relative to the national level was also recorded in the County of Šibenik-Knin (from 76,8 to 77,2) and the County of Sisak-Moslavina (from 72,8 to 84,2 of national average), which are among less developed counties. However we should take into account the fact that these counties have less than 38 inhabitants per square kilometre. Although these two counties improved their relative position when compared to the national average, such regions have particular needs for public intervention. Such developments resulted in more disperse GDP per capita across Croatian NUTS 3 regions in 2011 relative to 2008.

The impact of the financial crisis and economic downturn on the dispersion of regional GDP per capita is shown in Table 3 which compares the dispersion of regional GDP per capita over the periods 2008 and 2011. The analysis shows an increase in the level of disparity in GDP per capita in the post crisis period. Standard deviation of

GDP per capita for Croatian counties has increased 7.4 per cent, between 2008 and 2011, which implies an average annual increase of 2.4 per cent. For comparison the average annual increase in standard deviation of regional GDP per capita between 2000 and 2008 was about 0.8 per cent. As a standard deviation gives little information about the shape of distribution, taking the ratios of the 90^{th} to the 10^{th} and the 75^{th} to the 25^{th} percentiles gives additional insights into the distribution of GDP per capita across NUTS3 regions. These ratios give information about inter-regional inequalities after substracting the regions at the very top and bottom of the ranking. The $90^{th}/10^{th}$ percentile ratio for 21 NUTS3 regions in 2011 means that the level GDP per capita above which were the three richest region was more than 2.04 times higher than the level of GDP per capita below which lay the three poorest regions. For comparison that ratio in 2008 was lower, 1.96. The annual average rate of increase for the $90^{th}/10^{th}$ ratio and $75^{th}/25^{th}$ ratio between 2008 and 2011 were 1.30 and 1.22 per cent, respectively. On the other hand, the annual average rates of decline for these ratios during the period 2000-2008 were about 0.008 (for the $90^{th}/10^{th}$ ratio) and 0.9 per cent (the $75^{th}/25^{th}$ ratio). In addition, taking one simple measure as the ratio between the highest and lowest GDP per capita of NUTS3 region there is a little increase in the ratio between 2008 and 2011 (from 3.16 to 3.37).

Table 3 Regional disparities in GDP per capita (HR=100) in 2008 and 2011

	2008	2011
Standard deviation	27.10	29.11
$90^{th}/10^{th}$ percentile	1.96	2.04
$75^{th}/25^{th}$ percentile	1.18	1.22
Highest/lowest ratio	3.16	3.37

Source: Author's calculation based on Central Bureau of Statistics data.

Divergence within Croatia reflects growth of capital city as a growth pole where GDP per capita, due to concentration of economic activities, grew much faster than the rest parts of Croatia. There is an important gap between the economic developments (measured by GDP per capita) of the capital and its surroundings regions, a few other counties and the rest of the country.

Unemployment rate. The objective of this section is to analyse, at fine spatial scale (NUTS3) regional disparities in unemployment rate resulting from the global

crisis. The labour market reacted negatively to the persistent difficulties of the crisis, with the national unemployment rate emerging from 14.4% (2008) to 19.2% (2011). Among the Croatian counties (NUTS3 regions), the lowest unemployment rates in 2011 were recorded in the City of Zagreb (9.4%) and in the County of Istria (11.5%). On the other hand, the highest unemployment rates were recorded in the County of Brod-Posavina (33.8%) and in the County of Virovitica-Podravina (32.5%). Figures 2 and 3 provide an overview in regional unemployment rate development from 2000 till 2011 at NUTS3 level (separate for each NUTS2 region). Compared with the period before recession (before 2008), the unemployment rate increased in all counties. A particularly dramatic increase occurred in the County of Krapina-Zagorje (9.6% in 2008 to 18.2% in 2011), in the County of Istria (from 6.7 in 2008 to 11.5%), in the County of Varazdin (from 9.8% in 2008 to 15.0% in 2011) and in the City of Zagreb (form 6.2% in 2008 to 9.5% in 2011). An emerging question is whether the deteriorating performance of labour markets during the crisis was accompanied by an increase in disparities between regions. Calculation of the standard deviation of normalised regional unemployment rates (as shown in Figure), gives negative result. The standard deviation is smaller in 2011 (36.6) than it was in 2008 (45.8), indicating that the dispersion of regional unemployment rate has narrowed. The $90^{th}/10^{th}$ percentile ratio for 21 NUTS3 regions in 2011 means that the unemployment rate above which were the three regions with highest unemployment was more than 2.15 times higher than the unemployment rate below which lay the three regions with lowest level of unemployment. For comparison that ratio in 2008 was higher, 2.59. Taking the ratio between the highest and lowest unemployment rate of NUTS 3 region there is also a little decrease in the ratio between 2008 (4.44) and 2011 (3.59) .

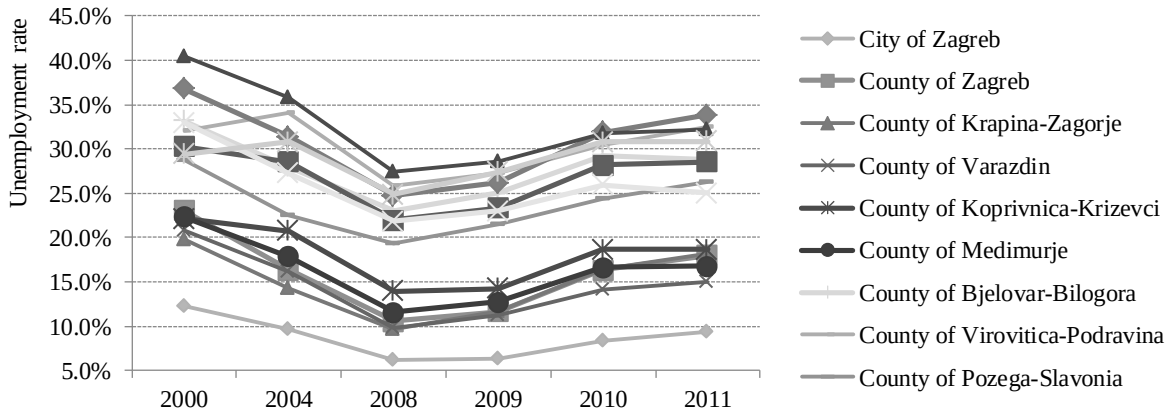
Table 4 Regional disparities in unemployment rate (HR=100) in 2008 and 2011

Measure of dispersion	2008	2011
Standard	45.8	36.6
$90^{th}/10^{th}$	2.59	2.15
$75^{th}/25^{th}$	2.03	1.58
Highest/lowest	4.44	3.59

Source: Author's calculation based on Central Bureau of Statistics data

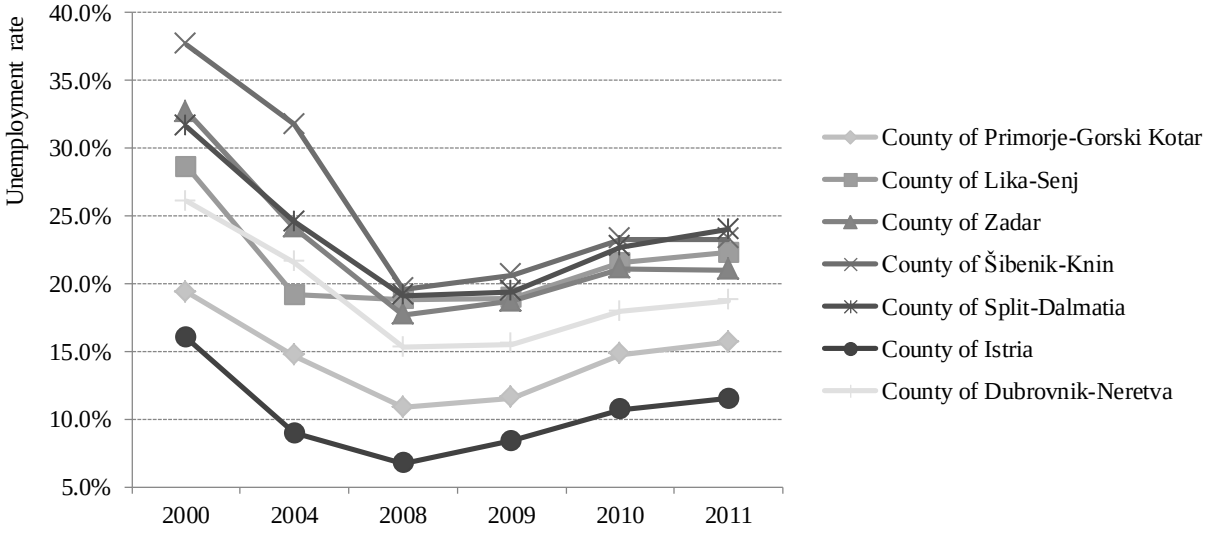
However, it can be assumed that unemployment rate may not fully reflect the extent of problems in some structurally weaker regions, some companies and regions have been slow to lay off workers despite the recession.

Figure 2 Developments in the unemployment rate in Continental Croatia NUTS 3 regions, 2000-2011



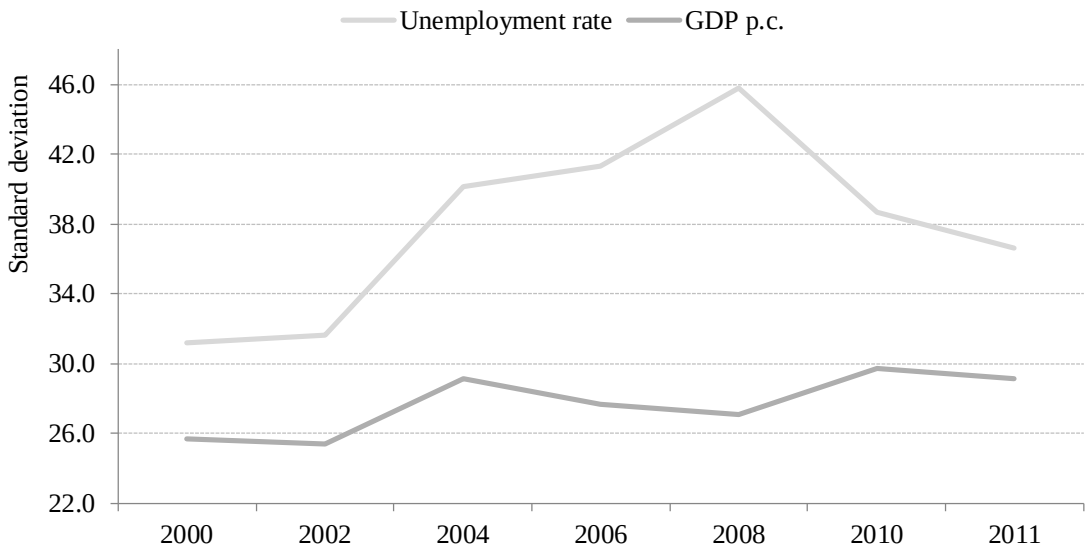
Source: CBS, Croatian Employment Office (CEO)

Figure 3 Developments in the unemployment rate in Adriatic Croatia NUTS3 regions, 2000-2011



Source: CBS, CEO

Figure 4 Dispersion of regional GDP and regional unemployment rate, 2000-2011



Source: CBS, CEO

Figure 4 illustrates regional GDP per capita and regional unemployment dispersion, i.e. the deviation of regional GDP per capita and unemployment rate from the national average, whereby a higher value denotes greater inequality. Regarding GDP per capita figures were rising from 2000 to 2004, and then falling until 2008. From 2008 onwards this trend has reversed. On the other hand, there was a continuous increase in the standard deviation of unemployment rate for counties from 2000-2008, then the top standard deviation was achieved in 2008, after which there was a continuous decrease in the standard deviation of unemployment rate during the crisis period (2008 to 2011). The financial crisis and ensuing global recession have pushed up unemployment in all 21 NUTS3 regions and contributed to a change in trend for regional dispersion. The fall in the measure of unemployment dispersion was caused by unemployment in high-performing counties rising disproportionately to converge with low-employment areas. For example, unemployment rate in the City of Zagreb and the County of Istria, which, at 6.2% and 6.7% were the lowest in Croatia in 2008, have risen to 9.4% and 10.9% respectively, indicating a proportional rise of 52.4% and 70.9%. By contrast, Croatian region of highest unemployment in 2007, the County of Vukovar-Srijem has seen a slightly modest rise of 17.4%. It could be concluded that high employment regions have moved towards low employment ones, rather than vice versa. Figures 5 and 6 portray the varying intensity of the crisis in the counties by

showing the position and change for each county, in terms of unemployment rate and GDP per capita, between 2008 and 2011. Counties of Adriatic Croatia are plotted on Figure 5 and Counties of Continental Croatia on Figure 6. Figure 5 documents extraordinary intensity of the impact of the crisis on five out of seven counties in Adriatic Croatia. The crisis affected the County of Primorje-Gorski kotar and the County of Istria least, in terms of two indicators in question.

Figure 5 Change in unemployment rate and change in GDP per capita, counties, Adriatic Croatia, 2008 and 2011

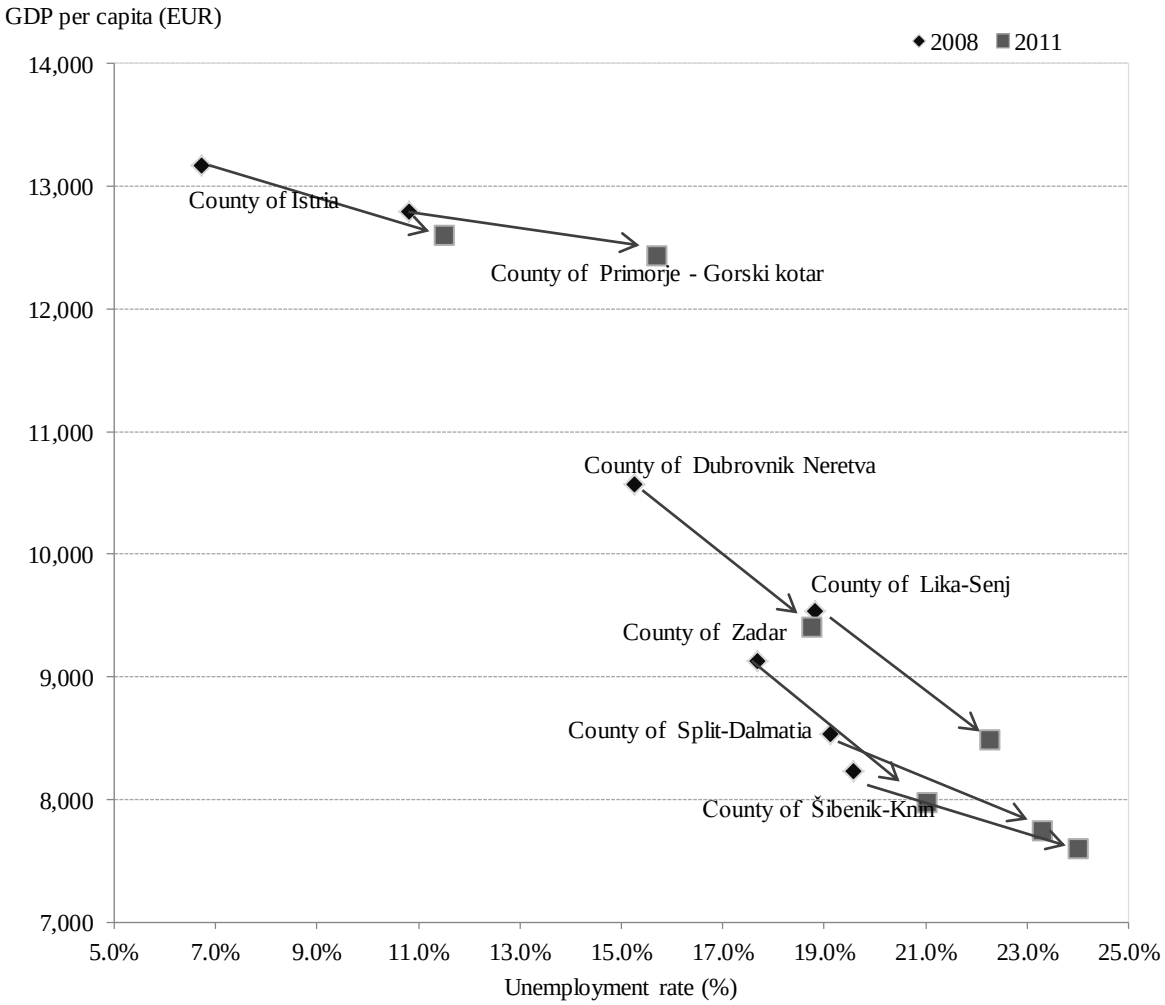
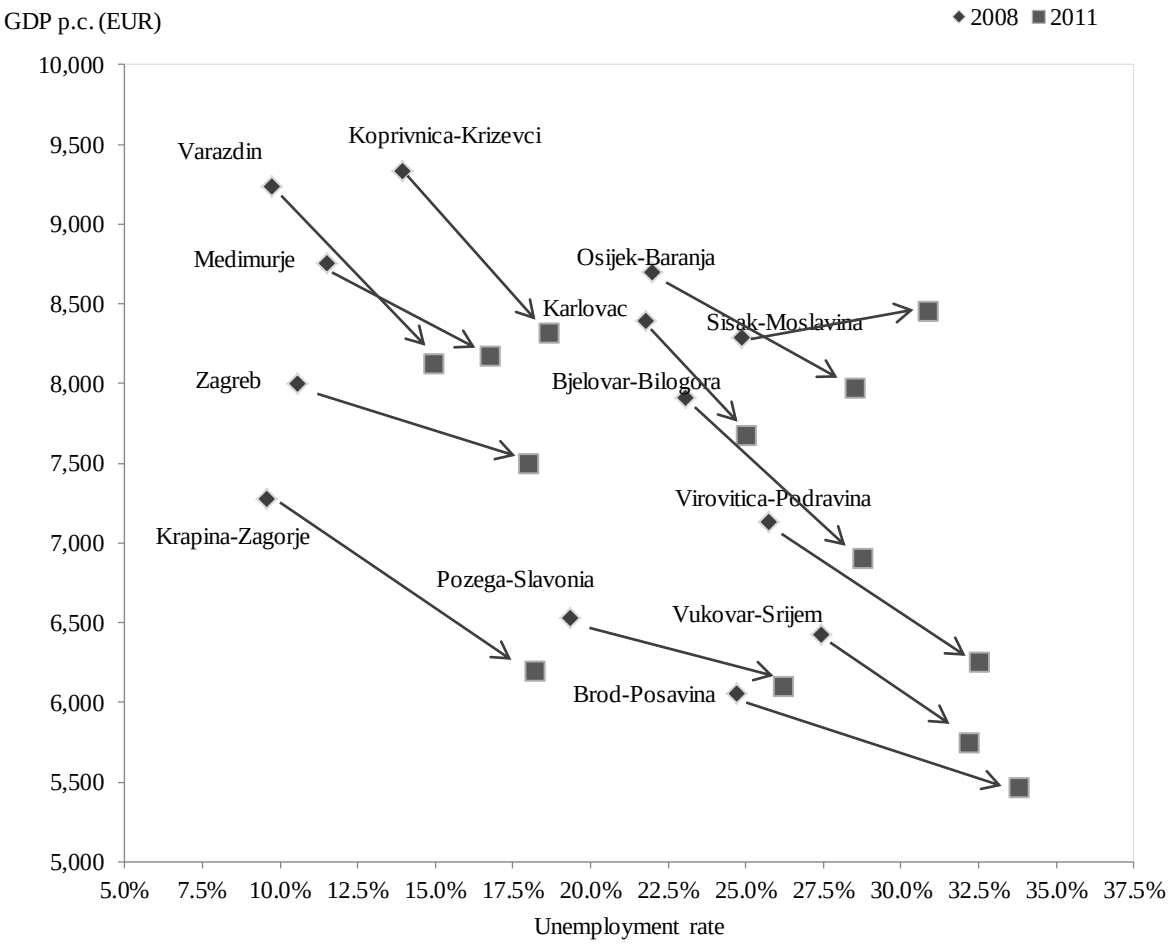


Figure 6 Change in unemployment rate and change in GDP per capita, counties, Continental Croatia, 2008 and 2011



The County of Sisak-Moslavina was affected by the crisis only in term of unemployment rate which increased by 6.01 percentage points, while GDP per capita increased by 2.0 percentage between 2008 and 2011. In all the other counties of Continental Croatia fall in GDP per capita was accompanied by increase in unemployment rate. However GDP in current prices in the County Sisak-Moslavima declined by 2.2 percentage (in nominal terms), so the increase in GDP per capita can be attributed to the population decline (174,178 inhabitants in 2008 vs 171,817 inhabitants in 2011).

Productivity. Trends in productivity between 2008 and 2011 are presented in Table 5 and Figure 7. The analysis shows a little increase in the level of disparity in GDP per employee in the post crisis period. Standard deviation of GDP per employee for Croatian counties has increased from in 2008 to in 2011 (5,1 to 10,5). The $90^{th}/10^{th}$ percentile ratio for 21 NUTS3 regions in 2011 was 1.42 times, while that ratio in 2008 was lower, 1.34) In addition, taking the ratio between the highest and lowest productivity (GDP per employee) of NUTS3 region there is also a little increase in the ratio between 2008 and 2011 (from 1.42 to 1.51).

There is no evidence of an overall increase in both productivity and employment. Namely, all counties experienced employment decline. There is strong evidence in the 12 out of 21 Croatian counties of a trade-off between productivity and employment rates in which gains in productivity are achieved at the expense of employment (two determinants of output are moving in different directions over time) and production, whereby employment fell faster than the production (GDP in current prices) (see Figure 7). The fall in employment has been translated in part in mass unemployment. On the other side, within 9 counties there has been a combined decline in productivity and employment, whereby the production has tended to drop at a faster rate than employment. These changes have been dramatic underpinned by the widespread collapse of formal economic activity.

Figure 8 Nominal change of GDP and change of number of employed persons by counties, 2011 (2008=100)

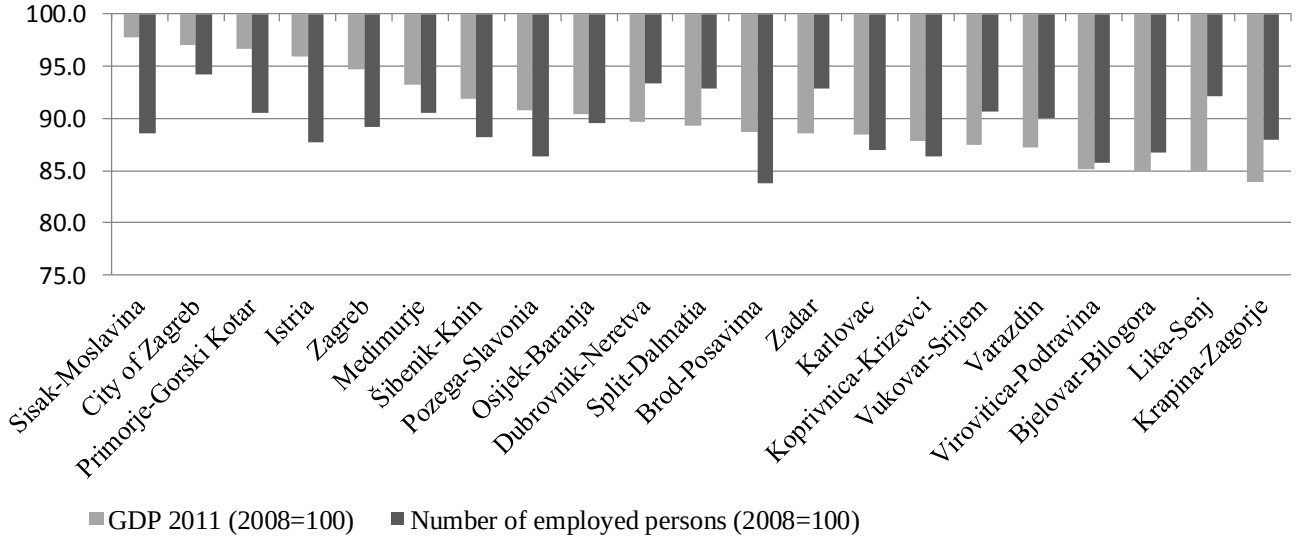


Table 5 Changes in productivity and employment, NUTS3, 2008-2011

County	GDP per employee (EUR)			GDP per employee (Croatia=100)	
	2008	2011	2011/2008	2008	2011
City of Zagreb	35.771	36.827	103,0	115,6	116,2
County of Zagreb	30.413	32.292	106,2	98,3	101,9
County of Krapina-Zagorje	25.628	24.454	95,4	82,8	77,2
County of Varazdin	25.263	24.489	96,9	81,6	77,3
County of Koprivnica-Krizevci	28.945	29.441	101,7	93,5	92,9
County of Medimurje	25.648	26.425	103,0	82,9	83,4
County of Bjelovar-Bilogora	27.250	26.679	97,9	88,0	84,2
County of Virovitica-Podravina	25.964	25.791	99,3	83,9	81,4
County of Pozega-Slavonia	25.693	26.995	105,1	83,0	85,2
County of Brod-Posavima	25.347	26.808	105,8	81,9	84,6
County of Osijek-Baranja	28.688	28.955	100,9	92,7	91,4
County of Vukovar-Srijem	27.268	26.297	96,4	88,1	83,0
County of Karlovac	27.210	27.680	101,7	87,9	87,4
County of Sisak-Moslavina	30.120	33.229	110,3	97,3	104,9
County of Primorje-Gorski Kotar	33.009	35.223	106,7	106,7	111,2
County of Lika-Senj	34.193	31.513	92,2	110,5	99,5
County of Zadar	33.134	31.612	95,4	107,1	99,8
County of Šibenik-Knin	30.086	31.324	104,1	97,2	98,9
County of Split-Dalmatia	28.078	26.995	96,1	90,7	85,2
County of Istria	31.599	34.563	109,4	102,1	109,1
County of Dubrovnik-Neretva	32.541	31.239	96,0	105,1	98,6
Standard deviation	*3.237,3*	*3.633,5*	*5,1*	*10,5*	*11,5*
90th /10th percentile	*1,34*	*1,42*	*1,14*	*1,34*	*1,42*
75th /25th percentile	*1,24*	*1,20*	*1,09*	*1,24*	*1,20*
Highest/lowest ratio	*1,42*	*1,51*	*1,20*	*1,42*	*1,51*

Author's calculation based on Central Bureau of Statistics data

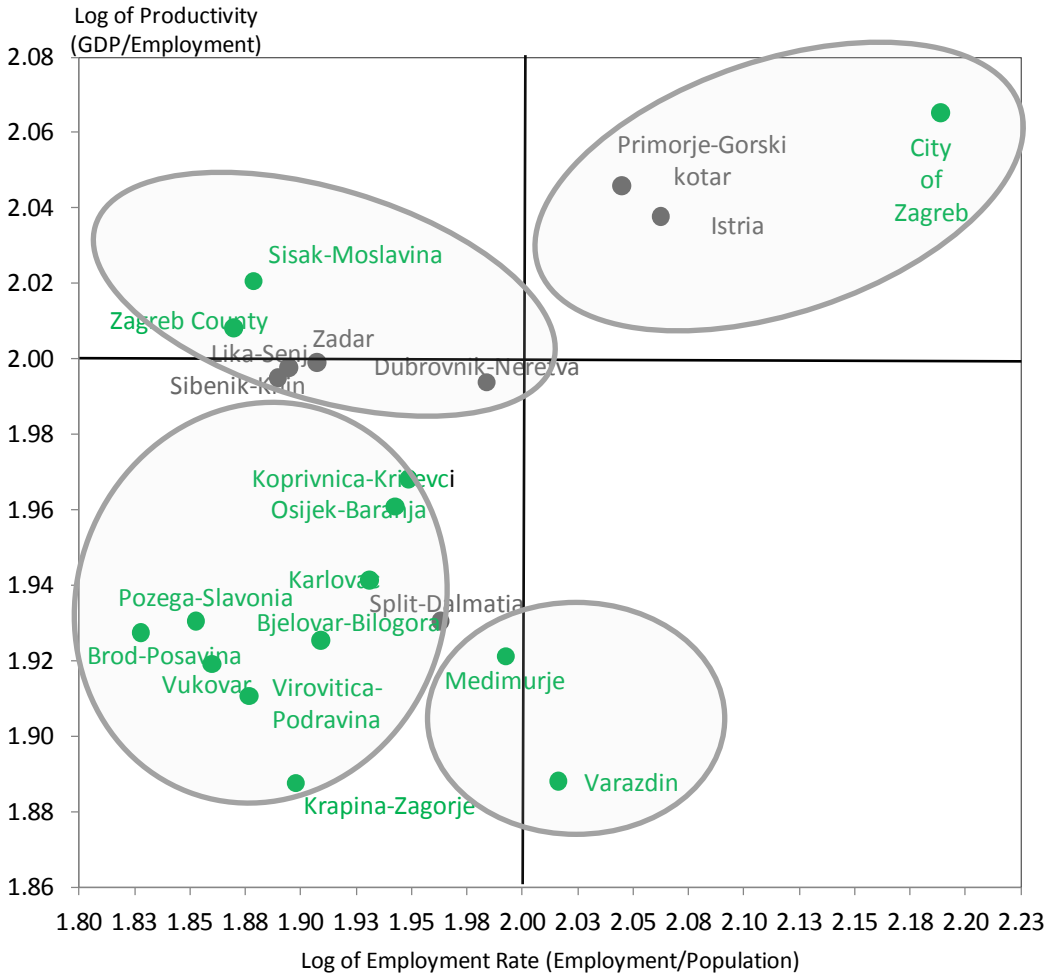
3. Components of Territorial Disparities

In order to identify causes of uneven economic development and disparities differential in development can be divided in two parts: one part that depends on productivity and the other part that depends on employment rate (the percentage of population employed). An examination of these elements can be helpful in identifying the factors that underpin uneven development in Croatia.

Productivity and employment rates play quite different roles in different counties. Figure 7 plots productivity and employment ratesin 2011 for both the Continental Croatia counties and the Adriatic Croatia counties. From Figure 7 it is evident that clear productivity and employment rate divides exist in Croatia. First, there is a profound divide in employment rates between all counties. Employment rates ranged from 19.7% in the County of Brod-Posavina to 51.0% in the City of Zagreb (the national average is 31%). Productivity rates in Croatia ranged from 77.2 percent of the

national average in the County of Krapina-Zagorje to 116.2 in the City of Zagreb. In 16 out of 21 counties productivity rates were below the national average. Within 21 counties plotted in Figure 7 four main groups can be identified: **First group** comprises three most developed counties: the City of Zagreb, the County of Primorje-Gorski Kotar and the County of Istria. These counties are characterised by relatively higher productivity (109 to 116% of the national average) and higher employment rates (35-51%). **Second group** comprises only two counties, both in Continental Croatia (northern part of the country), the County of Varazdin and the County of Medimurje. This group is characterised by relatively lower productivity (77 and 83% of the national average), while employment tended to be equivalent to the national average (31% and 32%). **Third group** comprises two counties located in Continental Croatia (the County of County of Sisak-Moslavina and the County of Zagreb), and four in Adriatic Croatia (The County of Lika-Senj, the, the County of Zadar, the County of Sibenik-Knin, the County of Dubrovnik-Neretva). They are characterised by relatively higher productivity (around national average 90-102%) and by lower employment (from 25-27%). Higher productivity rates are achieved on the basis of lower degree of mobilization of human potential. The **Fourth group** comprises even 10 counties characterized by lower productivity (from 77 to 91% of the national level) and lower employment (from 20 to 29%). Only one county out of 9 counties in that group is located in Adriatic Croatia, the County of Split-Dalmatia. Poor economic performance in this group could be in part the result of a lower employment rate. The counties are: the county of Brod-Posavina, the County of Krapina-Zagorje, the County of Pozega-Slavonia, the County of Virovitica-Podravina, the County of Karlovac, the County of Bjelovar-Bilogora, the County of Vukovar-Srijem, the County of Koprivnica-Križevci, the County of Split-Dalmatia, the County of Osijek-Baranja.

Figure 7 Productivity and employment rates in Croatian counties, 2011



4. Conclusion

The conducted analysis shows that the recession that began in 2008 has had a significant negative impact on the dispersion of regional development index, regional GDP per capita and regional productivity (GDP per employee) in Croatia. The analysis shows an increase in the level of disparity in GDP per capita, GDP per employee and in regional development index in the post crisis period. On the other side, unemployment rate across Croatian counties become less disperse in 2011 relative to 2008. Namely there was an increase in the standard deviation of unemployment rate during the period before the recession crisis (2000 to 2008), then the highest value was achieved in 2008, and then it started decreasing after which there was a continuously decrease. The primary cause for decline in interregional disparities in unemployment rate lies in the fact that crisis lead to convergence in poverty. Regarding productivity changes it has been found out that there is evidence of an increase in productivity, but at the expense of employment. Generally, compared with the period before recession, it can be noted that the productivity gap is widening. Tendencies toward increased uneven development are to some extent the result of a trade-off in which gains of productivity are achieved at the expense of both employment and production, whereby in even 12 counties increased productivity was result of faster decline in employment than in production (GDP in current prices). On the other side, within 9 counties there has been a combined decline in productivity and employment rates (and in production), whereby the production has tended to drop at a faster rate than employment. In line with that it could be claimed that the economically weaker counties are at the same time comparatively unsuccessful in their attempt to redeploy unemployed persons or to provide alternative employment possibilities.

REFERENCES

Acemoglu, D., Johnsons, S., Robinskon, J. A., 2005, Institutions as a fundamental cause of long-run growth, in Aghion, P. and Durlauf, S. N. (Eds) Handbook of Economic Growth, pp. 385–472. North Holland, Amsterdam.

Audas R. and Mackay R., 1997, A tale of two recessions. Regional Studies, 31, 867-874.

Bristow, G., 2010, Resilient regions: re-'place'ing regional competitiveness. Cambridge Journal of Regions, Economy and Society, 3: 153–167.

Camagni, Roberto, 2002, *On the Concept of Territorial Competitiveness: Sound or Misleading?*Urban Studies 2002: 39 2395, http://usj.sagepub.com/content/39/13/2395

Chien, S.-S., 2008, The isomorphism of local development policy: a case study of the formation and transformation of national development zones in post-Mao Jiangsu, China, Urban Studies 45, 273–294.

Christopherson, S., Michie, J., Tyler, P., 2010, *Regional resilience: theoretical and empirical perspectives*, Cambridge Journal of Regions, Economy and Society, 3 3-10, doi:10.1093/cjres/rsq004

Dunford M. and Perrons D., 1994, Regional inequality, regimes of accumulation and economic development in contemporary Europe. Transactions, 19, 163-182.

Dunford, M. and Smith, A., 2009, Catching Up or Falling Behind? Economic Performance and Regional Trajectories in the "New Europe", Economic Geography vol. 76, Issue 2, 169–195.

EIB, 2012, ECON NOTE – „The impact of the recession in 2008-2009 on EU regional convergence", 2012, http://www.eib.org/attachments/efs/econ_note_2012_regional_convergence_en.pdf

Evans P. and McCormic B., 1994, The new pattern of regional unemployment: causes and policy significance. Economic journal, 104, 633-647.

Foster, K. A., 2007, A Case Study Approach to Understanding Regional Resilience. Working Paper 2007– 08, Institute of Urban and Regional Development, University of California, Berkeley.

Hassink, R., 2010, Regional resilience: a promising concept to explain differences in regional economic adaptability? Cambridge Journal of Regions, Economy and Society, 3: 45–58.

Hill, E. W., Wial, H., Wolman, H., 2008, Exploring Regional Economic Resilience. Working Paper 2008–04, Institute of Urban and Regional Development, University of California, Berkeley.

Hudson, R., 2010, Resilient regions in an uncertain world: wishful thinking or a practical reality? Cambridge Journal of Regions, Economy and Society, 3: 11–25.

Kangasharju, A. and Pekkala, S., 2004, Increasing Regional Disparities in the 1990s: The Finnish Experience, Regional Studies, 2004, vol. 38, issue 3, pages 255-267

Official Gazette, No. 86/06,125/06, 46/10, 145/10, 37/13, 44/13, 45/13

Pike, A., Dawley, S. and Tomaney, J. (2010) Resilience, adaptation and adaptability. Cambridge Journal of Regions, Economy and Society, 3: 59–70.

Puljiz, J., Maleković, S., 2013, *Regional Income and Unemployment Disparities in Croatia*, Seventh International Conference on "Enterprise in Transition", Split: University of Split – Faculty of Economics.

Rodriguez-Pose, Andres, 2014, Do Institutions Matter for Regional Development?, Regional Studies, 47:7, 1034-1047, DOI: 10.1080/00343404.2012.748978

Rodrik, D., 2004, Getting Institutions Right. CESifo DICE Report Number 2/2004. Ifo Institute for Economic Research, Munich.

Silva-Ochoa, E., 2009, Institutions and the provision of local services in Mexico, nvironment and Planning C: Government and Policy 27, 141–158.

Simmie, J., Martin, R. L., 2010, The economic resilience of regions: towards an evolutionary approach. Cambridge Journal of Regions, Economy and Society, 3: 27–43.

Smith, A., 2012, Europe and an inter-dependent world: Uneven geo-economic and geo-political developments, European Urban and Regional Studies, 20(1) 3–13.