

Economic Potential of the Regions of the Czech Republic

P. Tuleja and K. Gajdová

Abstract—Aim of this paper is to evaluate the economic potential of the fourteen regions of the Czech Republic and based on this assessment to describe the degree of regional disparities in the Czech Republic. In addition there is the description of the economic potential of the region. In the second part of the paper there is analysis of the development of the selected indicators and the assessment of regional disparities. There is the evolution of five selected indicators and there is the description of differences of this evolution. Subsequently, during to use these indicators there is calculated average values and these are compared with the optimal values. It is by using graphical methods of magic polygons. Based on the analysis we concluded that the region which best uses its economic potential is Prague. This region has long been placed on the top of our imaginary scale in both in the assessment of individual indicators and in the total score. The contrary, the worst results are in Karlovy Vary Region, Moravian-Silesian Region and Usti Region.

Index Terms—Economic potential, regional disparities, magic polygon, Czech Republic.

I. INTRODUCTION

The professional and lay public is faced with problems in the assessment of differences in the development of territorial units. As we are aware this problem we decided to also contribute by our own view on the issue. We analyze the development of regional disparities in the economic potential of regions. We use available statistical data. We are focused on regions of the Czech Republic (NUTS3). In the end, then we will focus on graphical representation of differences, though using the magic pentagon.

II. LITERATURE REVIEW

Kutscherauer *et al.* [1] define the regional disparities as differences or inequality of characters or processes which have a definite territorial location and which are occur at least in two entities of territorial structures. We can say that the regional disparities can be seen as a phenomenon and its identification and the assessment is important only if there is view from multiple disciplines. However, this approach has one major problem. It is the need to clearly identify the contents and the range of the regional differences. For this step there are used different techniques which have both quantitative and qualitative character. Based on the analysis

there are selected specific indicators which evaluate the potential regional differences. [2] The same approach to the assessment of regional disparities is chosen by authors of this paper. Given the range of the article we can't present our comprehensive view. We are focused in this section of the text to the area of economic potential of the region. [3]

Among the indicators of the economic potential of the region we have included five of indicator [4], these are (1) the regional gross domestic product per inhabitant, (2) net available income of household per inhabitant, (3) gross fixed capital per inhabitant, (4) unemployment rate and (5) amount of compensation of employees.

III. QUANTIFICATION OF INDICATORS THAT CAPTURE THE ECONOMIC POTENTIAL OF THE REGION

The first indicator is the gross domestic product per inhabitant. It represents the monetary value of total final production which was made in the region in the specific time period per inhabitant.

TABLE I: THE GROSS DOMESTIC PRODUCTS PER INHABITANT

Region	2001	2003	2005	2007	2009	2011
Czech Republic	239487	263497	304478	354808	358288	364249
Prague	485777	552425	639470	759758	763959	768173
Central Bohemia	225171	246087	277088	330739	321140	325797
South Bohemia	218392	238535	275950	307045	307377	306576
Plzeň	223156	248697	288451	328653	310043	326513
Karlovy Vary	200404	218868	237537	262925	265793	260083
Ústí	193880	220158	250381	285765	300399	289851
Liberec	213143	212476	252791	274191	267708	279733
Hradec Králové	222603	234508	264873	301849	311307	315307
Pardubice	203456	221812	249765	297475	290687	297755
Vysočina	206220	221832	254853	297835	294647	303263
South Moravia	221410	244303	274819	325239	338928	341024
Olomouc	187090	203507	229065	262406	270526	281540
Zlín	200205	216570	245280	288497	307993	308642
Moravia-Silesia	187524	203774	258615	297281	294621	317835

In the case of GDP per inhabitant we can the individual regions of the Czech Republic split into three quality zones.

In the first zone there are all of regions in which the value of the indicator is over 300 thousand CZK in the long time. In this group there is only Region of Capital City of Prague (short only Prague), where the average gross domestic product per inhabitant was 553.959 thousand CZK. It is twice of excess of national average. [5]

The second zone is consists the South Moravian Region, Plzeň Region, Central Bohemia Region, South Bohemia Region, Hradec Kralove Region, Pardubice Region, Zlín Region, Usti Region, Moravian-Silesian Region, Region

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Vysocina and Liberec Region.

The last zone is characterized by the lowest long-term standard of living. In this zone there is Karlovy Vary Region and Olomouc Region. The significant decline is in Karlovy Vary Region. It is region with the largest problems in the standard of living of the population.

This analysis is in Table I. These values are in CZK. There is analyzed the period 1995-2011, but in table, there is showed only the period 2001-2011 (only odd years).

Other indicator which we proposed for the assessment of the economic potential of region is the net available income of household per inhabitant. It shows the total amount of money. The households can use this money for the purchase of goods and services which are for to satisfy their individual needs. Or they can save it in the form of pensions which can then be used for the purchase of financial and non-financial assets or for to repay. It shows Table II:

TABLE II: THE NET AVAILABLE INCOME OF HOUSEHOLD PER INHABITANT

Region	2001	2003	2005	2007	2009	2011
Czech Republic	127632	138442	153834	174360	190437	190389
Prague	168441	188162	204004	230578	244408	250121
Central Bohemia	131887	149701	164264	187150	205028	206669
South Bohemia	123222	134401	148869	168100	183022	181215
Plzeň	128746	137298	153548	172868	186959	187924
Karlovy Vary	122063	130535	140396	156050	172411	171785
Ústí	117291	124125	136523	152960	171272	170925
Liberec	124268	131640	145709	162996	177985	178750
Hradec Králové	128194	133919	150288	168919	187499	179715
Pardubice	117486	127543	146826	165325	180680	177064
Vysočina	116024	128892	144331	165652	180818	180102
South Moravia	125244	132893	150727	171168	187503	184823
Olomouc	118051	128043	139681	160623	175568	172415
Zlín	120938	130605	144962	168523	178621	178580
Moravia-Silesia	115894	122680	139628	157100	174505	176135

Like in the previous case also with this indicator there is the first zone formed by Region Prague. Now we can assign also the Central Bohemia Region. So here the value exceeded one hundred percent of average value of net available income in the Czech Republic. In addition there was also an extension of third zone where there is the Karlovy Vary Region and Olomouc Region and also Zlin Region, Pardubice Region, Vysocina Region, Moravian-Silesian Region and Usti Region. These are regions which in the long term perspective are below 95 percent of average value of net available income in the Czech Republic. The region in this area which is the worst score we can mark the Usti Region. There is the average value of real indicator is lower about ten percentage points than the average of the Czech Republic.

Also in the case of this indicator we can say the highest values are in Region Prague where the average value of this indicator was at about 129.66% of the national average.

The contrary Usti Region and Karlovy Vary region are regions with the worst results. The share of this indicator on the national average is decreasing. It suggests divergence process by which these regions through. Their share of the national average decreased from the 97.06 and the 97.48 percentage to the 89.78 and 90.23 percent.

The third of the indicators is an indicator of gross fixed capital per inhabitant which shows the value of tangible and intangible fixed assets and net acquisitions of non-produced non-financial assets, which economic subjects to obtain purchase, transfer without consideration or production for own account. All of this is calculated per inhabitant of the region. This indicator means is an expression of the investment potential of the region. It shows Table III:

TABLE III: THE GROSS FIXED CAPITAL PER INHABITANT

Region	2001	2003	2005	2007	2009	2011
Czech Republic	67983	70641	78619	95867	88270	87897
Prague	152770	154020	183267	267932	227035	214496
Central Bohemia	64900	67195	82639	79332	65544	79132
South Bohemia	71332	69827	76469	66577	73460	67015
Plzeň	55594	60341	62134	93182	96541	69020
Karlovy Vary	62962	68375	66369	61899	62177	74111
Ústí	64028	68101	56620	86112	84236	96928
Liberec	43841	63320	56439	56168	52761	58889
Hradec Králové	43458	52564	48438	53444	58010	50356
Pardubice	52153	48474	48778	63503	54894	61984
Vysočina	52614	50907	65075	73810	64281	63121
South Moravia	53769	78924	92268	94007	80235	79499
Olomouc	67877	48696	53451	62290	76556	61210
Zlín	50764	50779	47658	58664	50039	55535
Moravia-Silesia	52527	44374	55864	68684	66736	72225

In the case of the first zone of regions we reach the same conclusion as the gross domestic product per inhabitant. Also in this case, the first zone of regions is formed by only Region Prague. There the average value of the indicator analyzed exceeded one hundred percent of the value of the national average (226.71%).

The second zone of regions is consists of Plzen Region, South Moravia Region, South Bohemia Region, Usti Region, Central Bohemia Region, Karlovy Vary Region and Moravia-Silesian Region. In the Moravian-Silesian Region there the share of The gross fixed capital per inhabitant on the national average significantly closer to the 75%.

The last zone where we belong to the regions with the gross fixed capital per inhabitant was below three quarters of the national average. There is Vysocina Region, Pardubice Region, Liberec Region, Hradec Kralove Region and Zlin Region.

General unemployment rate is the fourth indicator of economic potential. It expresses the % proportion of the unemployed (who are detected based on the Labour Force Survey) in the total economically active population. We can mark it as an indicator, which inherently expresses unmet offer of the labor.

If we use again the classification into three separate zones we find the following. In the first zone, highest rated, we capture all of the regions for which the unemployment rate will be below five percent. This group includes Region Prague, South Bohemia Region, Central Bohemia Region and Plzen Region. The average general unemployment rate amounted to 4.98%. The first group consists of such regions for which the unemployment rate exceeded 75% of the

national average.

The second zone consists of Hradec Kralove Region, Vysocina Region, Pardubice Region, Liberec Region and South Moravian Region. The South Moravian Region is also the last region where the average general rate of unemployment does not reach an average of national.

The last zone is characterized by the largest proportion of long-term unemployed in the total number of economically active population in the region. It is composed of the Zlín Region, Karlovy Vary Region, Olomouc Region, Moravian-Silesian Region and Ústí Region. In these regions there is the average value of the indicator above the national average, which was exceeded by at least 1.16 percentage points in the case of Zlín Region and by a maximum of 78.01 percentage points in the case of the Ústí Region. Ústí Region we can consider the region with the largest problems in the unemployment rate. It shows Table IV. [6]

TABLE IV: THE UNEMPLOYMENT RATE (%)

Region	2001	2003	2005	2007	2009	2011
Czech Republic	8.13	7.78	7.93	5.32	6.66	6.71
Prague	3.86	4.19	3.51	2.44	3.06	3.60
Central Bohemia	6.73	5.16	5.22	3.38	4.42	5.08
South Bohemia	5.60	5.17	5.02	3.29	4.28	5.52
Plzeň	5.78	5.31	5.08	3.68	6.29	5.15
Karlovy Vary	7.37	6.39	10.91	8.24	10.91	8.52
Ústí	13.32	13.00	14.53	9.95	10.07	9.85
Liberec	6.21	6.11	6.48	6.05	7.83	7.22
Hradec Králové	6.10	5.85	4.77	4.16	7.70	7.10
Pardubice	6.37	7.60	5.64	4.44	6.43	5.57
Vysočina	6.08	5.32	6.77	4.65	5.67	6.45
South Moravia	8.55	8.05	8.09	5.43	6.83	7.50
Olomouc	10.41	9.57	9.99	6.35	7.64	7.58
Zlín	8.50	7.53	9.44	5.53	7.28	7.64
Moravia-Silesia	14.29	14.75	13.89	8.49	9.68	9.31

TABLE V: THE AMOUNT OF COMPENSATION OF EMPLOYEE (MONTHLY AVERAGE)

Region	2001	2003	2005	2007	2009	2011
Czech Republic	20215	23505	26387	29733	30784	32492
Prague	29900	34507	39533	45273	45740	49842
Central Bohemia	18772	22499	25438	26751	27278	29618
South Bohemia	18340	21536	23751	25705	26093	27645
Plzeň	19181	21885	24390	27066	28213	29797
Karlovy Vary	16011	18185	19455	22543	24182	23931
Ústí	18210	20991	23411	26118	26658	26977
Liberec	17781	20739	23163	33373	26843	28160
Hradec Králové	18179	22097	23748	26648	30169	29449
Pardubice	17785	20878	22307	25578	26243	27201
Vysočina	18437	21029	23519	24831	25375	28095
South Moravia	18623	22506	25226	28696	31292	32386
Olomouc	17954	19826	22873	24881	26056	28509
Zlín	17695	19741	22854	24355	26257	27158
Moravia-Silesia	19623	22229	24286	27631	29047	30093

The last of the indicators showing economic potential of

the region is the compensation of employees for one month. This indicator shows the income of households resulting from dependent work and which includes wages and salaries and employers' social contributions in the course of one month. It shows Table V.

Also here we have one region, which far exceeds all of other regions of the Czech Republic. [7] This region is again Region Prague, whose share of the national average amounts to 146.83%. It means it is also the only one region that is above the average of national.

Also in the third worst rated zone, in this case there is only one region (it is the Karlovy Vary Region), in where the average monthly value of this indicator stood at CZK 18,126. It is equivalent to about 78 percent of the national average. We can describe this region like region that has long characterized the lowest employee compensation. The remaining twelve regions are in the second zone. In their case the percentage amount ranges from 86.43 to 96.54%.

IV. THE ASSESSMENT OF THE DEVELOPMENT OF THE REGIONAL DISPARITIES OF THE REGIONS OF THE CZECH REPUBLIC

To assessment of the economic potential of the region we prefer magic polygons, where the number of vertices with the same number of indicators used for the description of the economic potential of the region. [8] We have defined the economic potential of the country by five key indicators. The individual peaks of magic polygon are shown on the axes to form a five-pointed star. Thus created magic polygon takes the form of a pentagon. The rate of economic potential is then expressed as the ratio of the area expressing the real level indicators describing the economic potential of the optimal area - equilateral pentagon.[9] For our analysis we need for optimal considered average for the entire period, so that the top of our pentagon consists of the following values: the growth rate of gross domestic product per inhabitant of 5.33% (peak g), the growth rate of net available household income per inhabitant 5.37 % (peak d), the growth rate of gross fixed capital 3.26% (peak f), the general unemployment rate of 6.63% (peak u) and growth in compensation of employees 6.29% (peak w). These values were compared with the average value of the parameters of each region for the period 1995-2011 as a whole (see Fig. 1 and Fig. 2).

Comparing the magic pentagons captured in Fig. 1 and Fig. 2, then we conclude that the only region that substantially exceeds the optimum value and the actual surface area of pentagons significantly exceeds the optimal pentagons is Region Prague. This conclusion is not surprising given and it was expected. [10] The best results are reached in indicators of gross fixed capital formation per inhabitant. The growth rate exceeded the national average by 4.22 percentage points. Other the best results are reached in indicators of the general unemployment rate, which has been compared to national average of 3.40 percentage points lower. Another region that exceeded optimal values is Central Bohemia Region. Regions with good economic potential we include there Region Vysocina and South Moravian Region. In the Region Vysocina there is slightly problematic development of labor costs. The long-term average growth rate lags behind the

national average by 0.29 percentage points. In the South Moravian Region is this "critical" point of net available income of households, whose growth rate is 0.01 percentage points lower than the national average.

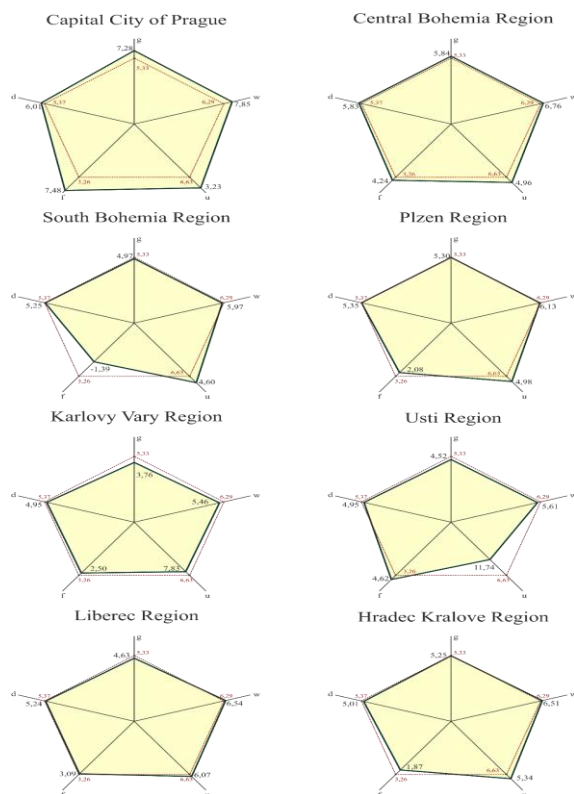


Fig. 1. The Magic pentagons of each regions of the Czech Republic (The average from period 1995-2011).

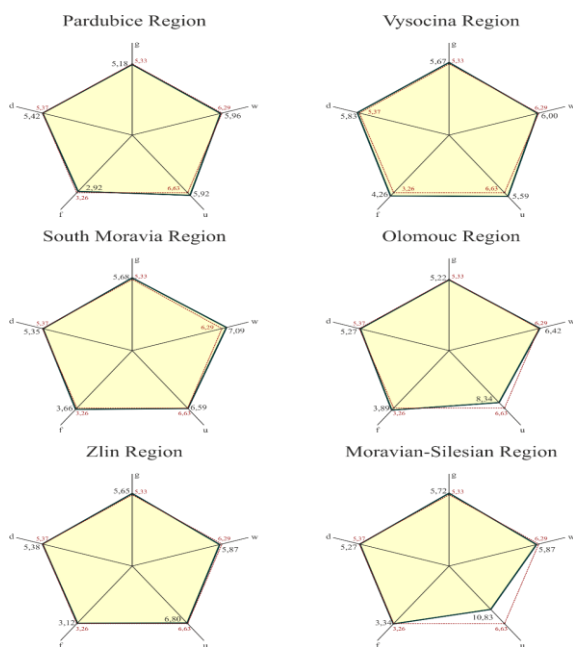


Fig. 2. The Magic pentagons of each regions of the Czech Republic (The average from period 1995-2011) – continue.

Among the regions that have the use of its economic potential long-term problems, then we classify particular region South Bohemia, Moravian-Silesian Region, Karlovy

Vary Region and Ústí Region. For the most critical could be called development of the Karlovy Vary Region. It is region of all which has the peaks of his magic pentagon below the peaks of optimal pentagon.

In the case of Ústí Region and the Moravian-Silesian Region we can identify particularly critical as the labor market situation. [11] In the Ústí Region there the unemployment rate exceeds the national average by 5.11 percentage points. In the Moravian-Silesian Region it is by 4.20 percentage points.

The last region, which has long-term problems in the use of its economic potential, is South Bohemia Region. It is the only one which has a negative growth rate of gross fixed capital per inhabitant. This indicator reached in the region value -1.39% and the optimum is the value of 4.03 percent.

In the remaining six regions then the real magic pentagon shape corresponds to the optimum magical pentagon.

V. CONCLUSION

The aim of this study was to evaluate the economic potential of the fourteen regions of the Czech Republic and on the basis of this assessment to describe the degree of regional disparities in the country. In line with this aim, we are so in the introductory part of the paper focused on the short description of the economic potential of the region. This description was as general characteristics and a list of supporting indicators through which we can determine this potential.

The analysis is in the second part of this paper. In the first we reviewed the development of five selected indicators and described differences in this development. Then we by using these indicators calculated the average values and compared with the optimal values and we used graphical methods magical polygons.

We conclude that the region that best uses its economic potential in the long term is Region Prague. On the contrary, the worst results are in the Karlovy Vary Region, Moravia-Silesian Region and Ústí Region.

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