Dorota Wyszkowska

University of Białystok, Statistical Office in Białystok

POLAND AGAINST THE BACKGROUND OF CENTRAL AND EASTERN EUROPE. THE STATISTICAL PORTRAIT OF THE REGION

Summary: Central and Eastern Europe is a region of great diversity, both in the economic and social sphere, which stems from the fact that countries belonging to this region have different historical and cultural background, economic resources, social capital, and political systems. Ten of the states at present belong to the EU, which affects significantly both the pace of the changes that are taking place there and their development level. In the last ten years, great economic changes took place there, yet their pace was different. Countries such as Slovenia, Slovakia, and the Czech Republic stand out favourably from other Central and Eastern European countries. Among the countries of this region belonging to the EU, Poland is characterised by lower indices in almost all the fields presented in the work.

Keywords: Central and Eastern Europe, development level, diversity of the region.

1. Introduction

This work is to present Poland against the background of Central and Eastern Europe; therefore, it is necessary to define which states are included in this region. Countries such as: the Visegrad Group (Poland, the Czech Republic, Slovakia, Hungary), the Baltic states (Lithuania, Latvia, Estonia), former Yugoslavia (Slovenia, Croatia, Serbia, Montenegro, Macedonia, Bosnia and Herzegovina) as well as Belarus, Ukraine, Albania, Bulgaria, and Romania are the countries most commonly called Central and Eastern Europe.

The described region constitutes a group of significantly diversified states, ten of which belong to the EU. The countries differ in terms of area, economic and social potential, the level of development, innovation, or competition.

The aim of this work is to present Poland against the background of the region. In order to achieve it, we analyse the statistical data characterising the level and the dynamics of selected economic and social measurements.

2. Macroeconomic situation

To present the social and economic situation of Central and Eastern Europe, it is necessary to present basic data characterising the states belonging to the

aforementioned region. That is why Table 1 shows area, population, the level of gross domestic product *per capita*, national debt to GDP in %, the accumulation of capital to GDP ratio as well as activity rate.

Table 1. Central and Eastern European Countries – basic information

Countries	Area in thous. km²	Population in thous.[a]	GDP *per capita* in US dollars		Public debt to GDP ratio in %	Accumulation to GDP in %		Activity rate of population aged 15-64 in %	
	2009	2009	2000	2009	2009	2000	2009	2000	2009
Poland	312.7	38 135.9	4454	11 273	50.9	24.8	20.4	65.8	64.7
Czech Republic	78.9	10 467.5	5521	18 139	35.3	29.5	21.8	71.3	70.1
Slovakia	49	5 412.3	5326	16 176	35.4	26.0	20.6	69.9	68.4
Hungary	93	10 031.0	4690	12 868	78.4	29.4	18.5	60.1	61.6
Lithuania	65.3	3 349.9	3267	11 141	29.5	18.9	11.0	71.2	69.8
Latvia	646	2 261.3	3302	11 616	36.7	23.7	20.4	67.1	73.9
Estonia	45.2	1 340.4	4144	14 238	7.2	28.4	19.4	70.2	74.0
Slovenia	20.3	2 032.4	9999	23 726	35.4	27.3	23.5	68.1[b]	71.9
Bulgaria	111	7 606.6	1601	6 423	14.7	18.3	26.2	.	67.2
Romania	238.4	21 498.6	1651	7 500	23.9	19.4	25.1	68.4	63.1
Belarus	207.6	9 671.9	1273	5 075	32.6	25.4	36.4[c]	77.7	77.5
Ukraine	603.6	45 963.4	636	2 468	.	19.7	28.8[c]	67.0	67.1
Croatia	56,5	4 435.1	4817	14 222	35.3	18.6	30.8[c]	62.2	62.4
Bosnia and Herzegowina	51.2	3 844.0	1491	4 525	21.8	.	28.2[c]	.	53.2
Serbia	77.5	7 334.9	809	5 872	31.3	8.1	28.6[c]	68.2	60.6
Montenegro	13.8	630.1	1490	6 635	.	22.4	40.6[c]	60.4	60.3
Macedonia	25.7	2 048.6	1783	4 515	24.1	22.3	26.8[c]	59.7	64.0
Albania	28.7	3 184.7	1202	3 808	53.9[c]	34.2	37.1[c]	66.2	61.9

[a] As of 1 January; [b] Data concern 2001; [c] Data concern 2008.

Sources: area [*Rocznik Statystyczny…* 2010]; population [Eurostat 1]; GDP *per capita* [World Bank 1], public debt to GDP: a) EU countries [Eurostat 2], b) candidate countries and potential candidates [Eurostat 3], c) Belarus and Ukraine [Eurostat 4]; accumulation to GDP [*Rocznik Statystyczny...* 2010] (excluding former Yugoslavia, where data come from [Eurostat 5]); activity rate: a) EU countries [Eurostat 6], b) candidate countries and potential candidates [Eurostat 7], c) Belarus and Ukraine [Eurostat 8].

Central and Eastern Europe in total covers 2,143,000 km², which constitutes 9.3% of the area of Europe. At the end of 2009, the countries of this region were

inhabited by the population of 179,249,000 people, i.e. 24.5% of the population of the continent. The biggest countries, and with the highest number of population at the same time, are: Ukraine, Poland, and Romania; whereas the smallest are: Montenegro, Slovenia, and Macedonia.

The analysis of the GDP ratio *per capita* shows that it almost quadrupled in 2009 in comparison to 2000. The ratio was the highest both in 2009 and 2000 in Slovenia, the Czech Republic, and Slovakia, while the lowest in Ukraine and Albania. Poland, in comparison to other countries, was in 6th and 8th place respectively, at the level slightly higher (by 13%) than the arithmetic average in 2009. In terms of the growth rate, in Poland it did not even reach an average level and it was more than three times lower than in Serbia – the country with the highest growth rate. A synthetic indicator, which is GDP *per capita*, is often used to evaluate the development level of countries and regions so an analysis of its absolute values and relations makes it possible to divide the countries of Central and Eastern Europe into the ones of higher and lower development level. Slovenia, the Czech Republic, and Slovakia belong nowadays to the first group. Ukraine, Albania, Macedonia as well as Bosnia and Herzegovina are in the other. Among countries belonging to the EU, the worst situation is in Romania and Bulgaria.

As we examine public debt to GDP ratio, it is justifiable to state that countries of Central and Eastern European region – except for Hungary, Poland, and Albania – are characterised by its low values. Yet, if we analyse the accumulation to GDP ratio, which describes the investment possibilities of economies, they differ greatly – from 7.2% in Estonia to 78.4% in Hungary. Moreover, when we compare absolute values, the situation is even more complex – in 2009, the difference of GDP in each country was substantial – from 4.1 billion USD in Montenegro to 430.1 billion USD in Poland [World Bank 2].

In order to describe the general situation of countries, the activity ratio is also used. Its level depicts the use of the demographic potential of a country. The highest number reflecting this ratio exceeded 70% in 2009 in the countries in question and it was recorded in Belarus, Estonia, Latvia, as well as Slovenia and the Czech Republic. The lowest, below 62%, was recorded in Bosnia and Herzegovina, Montenegro, Serbia, Hungary, and Albania. Poland does not belong to the former group in accordance to the results of this ratio, while Hungary and Romania, among EU countries, belong to the latter.

Interestingly, there is quite a strong positive correlation between the GDP *per capita* level to the level of accumulation and between the GDP *per capita* level to the activity ratio. Pearson correlation coefficient, for Central and Eastern Countries of the EU, was respectively:
– for capital accumulation and GDP *per capita* – 0.66 (in 2000), 0.56 (in 2009);
– for activity ratio – 0.16 (in 2000), 0.42 (in 2008).

The numbers signify the following: the higher activity ratio, the higher GDP *per capita*, which, in turn, leads to the increase in the level of capital accumulation.

3. Economy and labour market

In terms of a more detailed analysis concerning the indices on economy and labour market, countries of the described region, belonging to the EU, differ greatly. Basic data referring to industrial production, capital expenditures, and foreign trade turnover balance are presented in Table 2.

Table 2. Industrial production, capital expenditures, and foreign trade turnover balance in selected countries belonging to Central and Eastern Europe

Countries	Turnover by industry in million EUR		Total investment % of GBP[a]		Foreign trade turnover balance in million USD[b]			Exports of high technology products as a share of total exports in %[c]
					2000	2009		
	2000[d]	2008[e]	2000	2009	net importers	net exporters	net importers	2009
Poland	142 206.0	314 750.3	23.74	21.23	17 289	x	12 929	5.7
Czech Republic	64 244.6	183 270.6	27.98	22.45	3 123	8034	x	15.2
Slovakia	20 256.5	66 097.0	25.79	20.60	1 524	742	x	5.9
Hungary	51 509.3	126 865.8	23.39	20.89	3 939	6552	x	22.3
Lithuania	6 788.3	20 230.3	18.75	17.12	1 671	x	1 780	5.8
Latvia	3 906.1	9 834.5	24.24	21.45	1 320	x	2 069	5.3
Estonia	4 169.5	10 570.0	25.99	21.58	1 110	x	1 138	6.9
Slovenia	17 990.2	30 599.6	26.09	23.94	1 384	x	1 436	5.5
Bulgary	11 155.7	34 966.8	.	.	1 696	x	6 840	4.6
Romania	29 525.0	87 194.0	.	.	2 688	x	13 635	8.2

Sources: *a* [Eurostat 9], *b* on the basis of [*Rocznik Statystyczny…* 2010], *c* [Eurostat 10], *d* [Eurostat 11], *e* [Eurostat 12].

The analysis of the amount of industrial production shows that Polish share in 2008 amounted to 35.6% and, in comparison to 2000, it was lower by 4.8 percentage points. The dynamics of the increase in industrial production recorded then was also meaningful. The pace of changes in each country ranged from 161 in Slovenia to 284 in Slovakia. Poland, against the background of the remaining countries, does not stand out significantly with its 196, which resulted in aforementioned decrease in share in total production.

While comparing the data on capital expenditures, Slovenia and the Czech Republic were countries using most means in relation to GDP in 2009, whereas Lithuania and Slovakia – the least. When it comes to the values, it is necessary to

understand the fact that the amount of GDP of each country also plays an important role here. There is a strong correlation between the level of expenditures and the level of accumulation. Pearson correlation coefficient was set in 2000 at 0.82 and in 2009 at 0.91, which means that accumulated GDP was designated for investment in economy, which as it seems, leads to further enhancement of the development.

The analysis of export and import values of each EU country also provides interesting information. All the states were net importers in 2000, but as much as 48.4% of the net export of the countries belonged to Poland, which was the biggest net importer then. In 2009 the situation changed as a result of three countries, i.e. the Czech Republic, Slovakia, and Hungary, becoming net exporters. Other countries remained net importers, reaching 111 of dynamics increase. Poland lowered its share in the balance of market turnover by 15.9 percentage points. Interestingly, the countries where export dominated import are also the countries with the greatest share in high technology products in total export.

To give a full view of the situation of the countries, it is necessary to discuss the labour market in terms of unemployment and the structure of employed by economic sectors as well. The first is used to show the amount of labour resources not providing for the GDP,[1] and the other may be the basis for evaluating the level of development of each country according to the theory of three-sector economic structure, which states that the structure of employment in three sectors (namely agriculture, industry, and services) results in a certain level of economic development. The lower the employment in agriculture and industry and the higher in services, the higher the economic development of a country. The undergoing civilisation-related changes are a result of several interdependent processes. The first one is that these civilisation changes are strongly connected with the increasing importance of the services sector. The second, the importance of the services sector is a result of continuous yet unstable growth in labour efficiency in different economic sectors. The third, labour efficiency depends on technological progress, which is nowadays accelerated by globalisation tendencies [Cyrcek 2007]. In order to shed some light on the situation, changes in the structure of employed persons by sections in the analysed countries are presented in Table 3, where data on the level of unemployment are also included.

It is visible that over the given period the number of persons employed in agriculture and industry decreased, only to increase in the commonly understood services sector in the region. The countries which stand out from the selected group are Romania and Poland, where the decrease of employed in agriculture (by 15.2 and 11 percentage points respectively), a slight increase in industry (by approx. 2.5 percentage points) together with a significant increase in services (by 12.8 and 8.2 percentage points respectively) were recorded. The tendencies are in compliance

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[1] According to Okun's law, each percentage point exceeding the Natural Rate of Unemployment results in lowering the GDP by 2-3 percentage points. Therefore, unemployment exceeding a certain limit has a negative effect on the value of GDP and diminishes it proportionately below potential output.

with the changes in structural tendencies taking place in the process of economic development of EU countries [Puzio-Wacławik].

Table 3. The structure of employed persons by sections in selected Central and Western European countries

Countries	Structure of employed persons in %[a]						Unemployment rate in %[b]	
	2000			2009			2000	2009
	A	I	S	A	I	S	2000	2009
Poland	21.4	32.4	46.2	10.4	35.2	54.4	16.1	8.2
Czech Republic	3.4	42.9	53.7	2.6	41.8	55.6	8.7	6.7
Slovakia	4.2	41.9	53.9	2.2	33.4	64.4	18.8	12.0
Hungary	9.2	38.1	52.6	5.5	36.0	58.5	6.4	10.0
Lihuania	14.6	32.4	53.0	7.3	28.8	63.9	16.4	13.7
Latvia	10.7	28.7	60.5	6.7	23.3	70.0	13.7	17.1
Estonia	5.0	37.4	57.6	3.2	35.2	61.6	13.6	13.8
Slovenia	8.6	44.3	47.1	7.0	38.4	54.6	6.7	5.9
Bulgaria	17.9	34.5	47.6	14.4	29.7	55.9	16.4	6.8
Romania	35.8	32.2	32.0	20.6	34.5	44.8	7.3	6.9
UE (27 countries)	6.0	32.8	61.2	4.8	29.1	66.1	8.7	8.9

Caption: A – agriculture, I – industry, S – services.

Sources: *a* [Eurostat 13], *b* [Eurostat 14].

Judging by the three-sector economic structure, it is possible to state that the countries of the highest development level are Slovakia and Estonia, and the lowest – Romania and Bulgaria, which is also supported by other values presented here.

While comparing the level of unemployment, a clear-cut division is possible. The 10% limit recorded in 2009 divides the countries into the ones below and over the value. Poland, next to the Czech Republic, Slovenia, Bulgaria, and Romania, belongs to the first group. The group is also characterised by high employment in agriculture (the Czech Republic being an exception), which may possibly, in turn, denote the existence of hidden employment in agriculture. Economists stress that in such situations it would be possible to lower the number of some employed in this sector without a decrease in the results of agricultural activity. Such persons meeting a lack of alternative work places would join the ranks of the unemployed (the so-called "Agrarian Problem").

4. Economy's innovation

Innovation and the scale of its use in particular is a vital factor affecting growth and economic development of certain states in the era of knowledge-based economy. Innovation can be understood as the growth of the importance of innovation in economic process, the use of new products and improvement of already existing ones, and the introduction of more efficient production technologies. The measure of economy's innovation can be the amount of expenditure on research and development activity, the number of patents or the level of computerisation, and availability and access to the internet. The data characterising these factors are included in Table 4.

Table 4. Selected indices of economy's innovation

Countries	Gross domestic expenditure on R&D in % of GDP[a]		Number of applications per 1 million population[b]		Personal computers per 1000 population[c]		Internet users per 1000 population[c]	
	2000	2009	2000	2007	2000	2007	2000	2009
Poland	0.64	0.59	1.12	3.82	69	169	73	590
Czech Republic	1.21	1.53	6.48	15.78	122	.	98	644
Slovakia	0.65	0.48	2.08	7.83	137	514	94	752
Hungary	0.79	1.15	11.8	17.15	85	256	70	618
Lithuania	0.59	0.84	1.34	2.41	69	211	64	598
Latvia	0.44	0.46	3.33	8.40	143	327	63	668
Estonia	0.6	1.42	4.07	17.42	161	240	286	724
Slovenia	1.39	1.86	25.47	51.47	276	425	151	643
Bulgaria	0.51	0.53	0.91	3.78	45	89	54	450
Romania	0.37	0.48	0.27	0.98	32	192	36	366
UE (27 countries)	1.86	2.01	106.41	116.54	.	.	.	.

Sources: *a* [Eurostat 15], *b* [Eurostat 16], *c* [*Rocznik Statystyczny…* 2010].

In 2009 the share of expenditure on research and development in GDP in the majority of countries was more or less the same as in 2000, with the exception of Estonia, where the level almost doubled. The increase of GDP resulted in the nominal expenditure increase in this area. Estonia together with Slovenia, the Czech Republic, and Hungary spent the most of their GDP in percent on R&D expenditure – it constituted over 1% of the GDP. In Poland, however, there was a downward trend in this ratio, being in 2009 three times lower than an average of all EU countries and twice as low as the average of all Central and Eastern European countries.

The research and development activity results in the number of patent application filings to the European Patent Organisation. It reached the highest level within seven

years in Estonia. At the same period, the same index tripled in Poland, which resulted in Poland occupying the 7th position among Central and Eastern European countries, with the values thirteen times lower than the Slovenian one.

In terms of computerisation and access to the Internet, the best situation is observed in Slovakia, Slovenia, and Latvia, while in Bulgaria, Romania, and Poland, it is the worst.

Summing up, certain trends can be deductible on the basis of the analysis of certain indices, the innovation level of each national economy to the pace of the increase of economic activity, and the export level, including high technology. All these factors make it possible to increase the pace of favourable changes in economic and social spheres of life.

5. Conclusion

The countries of Central and Eastern Europe definitely constitute a region of great diversity. Presented statistical data allow for a statement that countries belonging to the EU are the countries of higher level of development, in the light of GDP *per capita*, in comparison to remaining countries. Croatia is an exception, with its GDP *per capita* ratio exceeding the Bulgarian and Romanian ones (which are by far the least developed Member States). The strongest economy, and trade at the same time, is built by countries such as Poland, Ukraine, and Romania. The most modern economy structures are found in Slovakia, Estonia, and the Czech Republic, which resulted in quite a high rate of changes in GDP *per capita*. These countries are the countries with the highest expenditures on R&D as well as computerisation ratios.

Poland, against the background of other EU Member States belonging to Central and Eastern Europe, is in the group of the countries of lower economic and social indices in almost all of the presented fields. The measures concerning the innovation of Polish economy are definitely the least favourable and they are vital for the possibilities of development in the era of knowledge based economy.

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POLSKA NA TLE EUROPY ŚRODKOWEJ I WSCHODNIEJ. PORTRET STATYSTYCZNY REGIONU

Streszczenie: Europa Środkowo-Wschodnia jest regionem silnie zróżnicowanym pod względem gospodarczym i społecznym. Wynika to głównie z faktu, iż kraje tworzące ten region charakteryzują się odmiennymi uwarunkowaniami historycznymi, kulturowymi, zasobami gospodarczymi, kapitałem społecznym, czy systemami politycznymi. Dziesięć spośród nich należy obecnie do Unii Europejskiej, co wpływa na tempo zmian i poziom ich rozwoju. W ostatnim dziesięcioleciu nastąpiły istotne zmiany w gospodarce całego regionu. Tempo zmian było jednak dość zróżnicowane. Na tle pozostałych krajów Europy Środkowo-Wschodniej korzystnie wyróżniają się Słowenia, Słowacja i Czechy. Biorąc pod uwagę tylko państwa regionu należące do UE, Polskę należy zaliczyć do krajów charakteryzujących się słabszymi wskaźnikami, w zasadzie we wszystkich zaprezentowanych obszarach.