

## REGIONAL COMPETITIVENESS EVALUATION FOR ROMANIA

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**Abstract:** The paper approach one of the key concept uses in economic and social analysis of the last decades: regional competitiveness. In this methodological approach are identified a series of indicators which are considered relevant in evaluation of regional competitiveness: number of active local units, turnover of active local units, investments of active local units and staff of active local units. The analysis was made for Romanian CAEN code sections and development regions of Romania.

### 1. INTRODUCTION

Regional competitiveness is the capacity of one region to generate, in a durable manner and in conditions of competition, a level of income and a sustainable growth of the living standard. On the other hand, regional competitiveness depends on the productivity and accessibility of markets, on the level of workforces' qualification and on the institutional factors like social capital for entrepreneurial culture to encourage cooperation and initiative and contribute at efficiency for public administration [1].

So, regional competitiveness can be defined as the ability of a region and of its public authority to maintain the local base of firms and qualified workforce and to attract foreign investments.

There are nevertheless factors that affect competitiveness but which are not easily quantitatively quantized, estimated or approximated. In this category we have for example governmental policies, venture capital and risk capital indicators, firms' rate of registration, industrial conglomerates.

In consequence, to characterize competitiveness of a region it is necessary to analyze some key aspects of regional economic development level. We rely on our analysis on the following characteristics: Active Local Units/Total Population [number of units/persons]; Local Units/Total Population [RON million current prices/persons]; Investments of Active Local Units/Total Population [RON million current prices/persons]; Staff of Active Local Units/Total Population.

Therefore, we use these factors for regional competitiveness evaluation, which can be analyzed on CAEN sections and development regions to reflect the development potential of a zone.

### 2. RESEARCH METHODOLOGY

The concept of regional competitiveness tries to measure the level of economic prosperity of the regions. Thus, it is propose a methodology that correlates regional development to the development determinants. We analyzed the CAEN sections of the regions taking into account the following indicators that we consider representative for regional competitiveness:

- active local units from industry, construction, trade and other services, by development region, activity of national economy at level of CAEN section;
- turnover of active local units from industry, construction, trade and other services, by development region, activity of national economy at level of CAEN section;

- investments of active local units from industry, construction, trade and other services, by development region, activity of national economy at level of CAEN section;
- staff of active local units from industry, construction, trade and other services, by development region, activity of national economy at level of CAEN section, where staff mean average number of employed persons = total number of persons salaried and not-salaried) who worked in the enterprise during the reference period, including temporarily transferred staff (who works outside it), paid by the enterprise.

After we have taken the statistic data from Romanian Statistical Yearbook 2006 (table 1, 3, 5, 7, 9, 11, 13, 15, 17), we determine the values which can reflect more accurate the regional development potential. We were attentive to the differences concerning the area and population. Therefore the statistic data were processed with the number of population for each region (table 2, 4, 6, 8, 10, 12, 14, 16, 18) [2].

We use the utility theory to interpolate the values we obtain; in the end we get a value for utility from 0 to 1 at each section and region. Finally we distinguish a hierarchy of the Romanian development regions from the point of view of regional competitiveness.

### 3. THE PROCESSING OF THE RESULTS

#### 3.1. Mining and quarrying

Regions	Active Local Units [number of units]	Turnover of Active Local Units [RON million current prices]	Investments of Active Local Units [RON million current prices]	Staff of Active Local Units [number of persons]
N-E	89	450	62	9882
S-E	78	683	165	4650
S M	127	1953	495	32955
S-W O	92	1476	154	22107
W	129	846	74	25212
N-W	158	338	72	9349
C	121	2488	378	10853
B-I	79	380	109	1618
Total	873	8614	1509	116626

Table 1. Data on development regions for Mining and quarrying Section [3]

	$I_1$	$I_2$	$I_3$	$I_4$	$u_{i1}$	$u_{i2}$	$u_{i3}$	$u_{i4}$	$U_i$
N-E	0.023	0.120	0.016	2.646	0	0	0	0.155	0,038
S-E	0.027	0.239	0.057	1.633	0.083	0.138	0.312	0.073	0,151
S M	0.038	0.586	0.014	9.897	0.333	0.540	0.995	0.743	0,652
S-W O	0.039	0.639	0.066	9.584	0.374	0.602	0.378	0.718	0,517
W	0.066	0.438	0.038	13.06	1	0.368	0.164	1	0,633
N-W	0.057	0.123	0.026	3.415	0.788	0.003	0.073	0.218	0,270
C	0.047	0.983	0.149	4.288	0.558	1	1	0.288	0,711
B-I	0.035	0.172	0.049	0.732	0.278	0.060	0.247	0	0,146

Table 2. Own calculation on development regions

Where:

$I_1$  - Active Local Units/Total Population [number of units/persons]

$I_2$  - Local Units/Total Population [RON million current prices/persons]

$I_3$  - Investments of Active Local Units/Total Population [RON million current prices/persons]

$I_4$  - Staff of Active Local Units/Total Population

The equation for utilities calculation is shown in formula 1 [4]:

$$U_i = \sum_j \gamma_j \cdot u_{ij} \quad (1)$$

### 3.2. Manufacturing

The statistic data on development regions for Manufacturing Section are presented in table 3.

Regions	Active Local Units [number of units]	Turnover of Active Local Units [RON million current prices]	Investments of Active Local Units [RON million current prices]	Staff of Active Local Units [number of persons]
N-E	7577	13821	902	199123
S-E	6165	24201	1600	180615
S M	6331	30427	2452	226763
S-W O	4010	11268	710	126226
W	6008	14774	1440	197995
N-W	9502	16849	1621	233477
C	9320	17439	2064	257105
B-I	10383	24693	2324	201874
Total	59296	153472	13113	1623178

Table 3. Data on development regions for Manufacturing Section [3]

	$l_1$	$l_2$	$l_3$	$l_4$	$u_{i1}$	$u_{i2}$	$u_{i3}$	$u_{i4}$	$U_i$
N-E	2,028	3,700	0,241	53,319	0,097	0	0	0	0,024
S-E	2,165	8,502	0,562	63,454	0,144	0,641	0,395	0,205	0,346
S M	1,901	9,137	0,736	68,101	0,055	0,726	0,610	0,300	0,423
S-W O	1,738	4,885	0,307	54,727	0	0,158	0,081	0,028	0,067
W	3,112	7,653	0,745	102,563	0,463	0,528	0,621	1	0,653
N-W	3,471	6,155	0,592	85,291	0,584	0,328	0,432	0,649	0,498
C	3,683	6,891	0,815	101,603	0,656	0,426	0,707	0,980	0,692
B-I	4,701	11,181	1,052	91,413	1	1	1	0,773	0,943

Table 4. Own calculation on development regions

### 3.3. Electric and thermal energy, gas and water

The statistic data on development regions for Electric and thermal energy, gas and water Section are presented in table 5.

Regions	Active Local Units [number of units]	Turnover of Active Local Units [RON million current prices]	Investments of Active Local Units [RON million current prices]	Staff of Active Local Units [number of persons]
N-E	72	2487	441	19112
S-E	103	3326	393	18472
S M	117	2665	255	17401
S-W O	75	4211	829	20049
W	64	2648	635	15927
N-W	83	2356	382	15364
C	120	2670	260	17708
B-I	105	12204	1149	19627
Total	739	32567	4344	143660

Table 5. Data on development regions for Electric and thermal energy, gas and water Section [3]

	$l_1$	$l_2$	$l_3$	$l_4$	$u_{i1}$	$u_{i2}$	$u_{i3}$	$u_{i4}$	$U_i$
N-E	0,019	0,665	0,118	5,117	0	0	0,094	0	0,023
S-E	0,036	1,168	0,138	6,489	0,607	0,103	0,139	0,363	0,303
S M	0,035	0,800	0,076	5,225	0,571	0,027	0	0,028	0,156
S-W O	0,032	1,825	0,359	8,692	0,464	0,238	0,637	0,948	0,572
W	0,033	1,371	0,328	8,250	0,5	0,145	0,567	0,831	0,510
N-W	0,030	0,860	0,139	5,612	0,392	0,040	0,141	0,131	0,176
C	0,047	1,055	0,102	6,997	1	0,080	0,058	0,498	0,409
B-I	0,047	5,526	0,520	8,887	1	1	1	1	1

Table 6. Own calculation on development regions

## 3.4. Construction

Regions	Active Local Units [number of units]	Turnover of Active Local Units [RON million current prices]	Investments of Active Local Units [RON million current prices]	Staff of Active Local Units [number of persons]
N-E	2834	3330	215	43423
S-E	3060	3273	1155	50832
S M	3207	3474	243	44295
S-W O	1803	2016	118	32308
W	3127	2939	302	38950
N-W	5039	3409	555	44744
C	4116	3042	221	43509
B-I	7706	10220	1459	87763
Total	30892	31703	4268	385824

Table 7. Data on development regions for Construction Section [3]

	$l_1$	$l_2$	$l_3$	$l_4$	$u_{i1}$	$u_{i2}$	$u_{i3}$	$u_{i4}$	$U_i$
N-E	0,758	0,891	0,057	11,627	0	0,004	0,009	0	0,003
S-E	1,075	1,149	0,405	17,858	0,116	0,073	0,581	0,221	0,248
S M	0,963	1,043	0,072	13,302	0,075	0,045	0,034	0,059	0,053
S-W O	0,781	0,874	0,051	14,007	0,008	0	0	0,084	0,023
W	1,619	0,522	0,156	20,176	0,315	0,172	0,172	0,304	0,241
N-W	1,840	1,245	0,202	16,345	0,396	0,098	0,247	0,167	0,227
C	1,626	1,202	0,087	17,193	0,317	0,087	0,059	0,197	0,165
B-I	3,489	4,627	0,660	39,741	1	1	1	1	1

Table 8. Own calculation on development regions

## 3.5. Wholesale and retail

Regions	Active Local Units [number of units]	Turnover of Active Local Units [RON million current prices]	Investments of Active Local Units [RON million current prices]	Staff of Active Local Units [number of persons]
N-E	25338	18507	892	107716
S-E	28348	20075	1065	110010
S M	25049	20224	1051	102104
S-W O	18965	11451	608	71746
W	17991	16329	904	86699
N-W	25933	22510	1061	116853
C	22863	21741	1085	113024
B-I	41309	80452	3385	213997
Total	205796	211289	10051	922149

Table 9. Data on development regions for Wholesale and retail Section [3]

	$I_1$	$I_2$	$I_3$	$I_4$	$u_{i1}$	$u_{i2}$	$u_{i3}$	$u_{i4}$	$U_i$
N-E	6,784	4,955	0,238	28,843	0	0	0	0	0
S-E	9,959	7,052	0,374	38,649	0,266	0,066	0,105	0,144	0,145
S M	7,522	6,073	0,315	30,664	0,061	0,035	0,059	0,026	0,045
S-W O	8,222	4,964	0,263	31,106	0,120	0	0,019	0,033	0,043
W	9,319	8,458	0,468	44,911	0,212	0,111	0,177	0,236	0,184
N-W	9,473	8,223	0,387	42,687	0,225	0,103	0,115	0,203	0,161
C	9,035	8,591	0,428	44,664	0,188	0,115	0,146	0,232	0,170
B-I	18,705	36,430	1,532	96,902	1	1	1	1	1

Table 10. Own calculation on development regions

## 3.6. Hotels and restaurants

Regions	Active Local Units [number of units]	Turnover of Active Local Units [RON million current prices]	Investments of Active Local Units [RON million current prices]	Staff of Active Local Units [number of persons]
N-E	2237	468	100	11532
S-E	2842	745	146	16928
S M	1862	483	81	9727
S-W O	1728	333	55	8500
W	2373	513	166	13165
N-W	2898	613	107	14371
C	3190	726	182	17287
B-I	2379	1691	391	23223
Total	19509	5572	1228	114733

Table 11. Data on development regions for Hotels and restaurants Section [3]

	$I_1$	$I_2$	$I_3$	$I_4$	$u_{i1}$	$u_{i2}$	$u_{i3}$	$u_{i4}$	$U_i$
N-E	0,599	0,125	0,026	3,087	0,059	0	0,019	0,025	0,025
S-E	0,998	0,261	0,051	5,947	0,655	0,212	0,181	0,362	0,362
S M	0,559	0,145	0,024	2,921	0	0,031	0,006	0,009	0,009
S-W O	0,749	0,144	0,023	3,685	0,283	0,029	0	0,103	0,103
W	1,229	0,265	0,085	6,819	1	0,218	0,402	0,533	0,533
N-W	1,058	0,223	0,039	5,249	0,744	0,153	0,103	0,327	0,327
C	1,260	0,286	0,071	6,831	1,046	0,251	0,311	0,531	0,531
B-I	1,077	0,765	0,177	10,515	0,773	1	1	0,943	0,943

Table 12. Own calculation on development regions

## 3.7. Transport, storage and communications

Regions	Active Local Units [number of units]	Turnover of Active Local Units [RON million current prices]	Investments of Active Local Units [RON million current prices]	Staff of Active Local Units [number of persons]
N-E	3362	2311	353	33979
S-E	4302	4143	671	56515
S M	2887	2706	337	31238
S-W O	2072	1585	221	27531
W	2739	3457	459	35691
N-W	5316	4059	648	42858
C	3727	3466	680	39846
B-I	5306	16867	2274	96224
Total	29711	38594	5643	363882

Table 13. Data on development regions for Transport, storage and communications Section [3]

	$I_1$	$I_2$	$I_3$	$I_4$	$u_{i1}$	$u_{i2}$	$u_{i3}$	$u_{i4}$	$U_i$
<b>N-E</b>	0,900	0,618	0,094	9,098	0,021	0	0	0	0,005
<b>S-E</b>	1,511	1,455	0,235	19,855	0,419	0,119	0,150	0,312	0,250
<b>S M</b>	0,867	0,812	0,101	9,381	0	0,027	0,007	0,008	0,010
<b>S-W O</b>	0,893	0,687	0,095	11,936	0,016	0,009	0,001	0,082	0,027
<b>W</b>	1,418	1,790	0,237	18,488	0,358	0,166	0,152	0,272	0,237
<b>N-W</b>	1,941	1,482	0,236	15,656	0,699	0,123	0,151	0,190	0,291
<b>C</b>	1,472	1,369	0,268	15,746	0,394	0,106	0,186	0,192	0,220
<b>B-I</b>	2,402	7,637	1,029	43,572	1	1	1	1	1

Table 14. Own calculation on development regions

### 3.8. Real estate transactions, renting and service activities mainly rendered to enterprises

The statistic data on development regions for Real estate transactions, rentings and service activities mainly rendered to enterprises Section are presented in the following table 15.

Regions	Active Local Units [number of units]	Turnover of Active Local Units [RON million current prices]	Investments of Active Local Units [RON million current prices]	Staff of Active Local Units [number of persons]
<b>N-E</b>	5813	974	355	24541
<b>S-E</b>	5983	1308	254	31955
<b>S M</b>	5021	1411	289	28291
<b>S-W O</b>	3114	666	97	18238
<b>W</b>	7374	1561	718	31356
<b>N-W</b>	9620	1749	451	32234
<b>C</b>	8772	1623	724	32223
<b>B-I</b>	29366	15943	4737	171314
<b>Total</b>	75063	25235	7625	370152

Table 15. Data on development regions for Real estate transactions, renting and service activities mainly rendered to enterprises Section [3]

	$I_1$	$I_2$	$I_3$	$I_4$	$u_{i1}$	$u_{i2}$	$u_{i3}$	$u_{i4}$	$U_i$
<b>N-E</b>	1,556	0,260	0,095	6,571	0,017	0	0,025	0	0,010
<b>S-E</b>	2,101	0,459	0,089	11,226	0,062	0,028	0,022	0,065	0,044
<b>S M</b>	1,507	0,423	0,086	8,496	0,013	0,023	0,020	0,027	0,021
<b>S-W O</b>	1,350	0,288	0,042	7,907	0	0,004	0	0,018	0,005
<b>W</b>	3,819	0,808	0,371	16,242	0,206	0,078	0,156	0,136	0,144
<b>N-W</b>	3,514	0,638	0,164	11,775	0,181	0,054	0,058	0,073	0,091
<b>C</b>	3,466	0,641	0,286	12,733	0,177	0,054	0,116	0,086	0,108
<b>B-I</b>	13,297	7,219	2,145	77,574	1	1	1	1	1

Table 16. Own calculation on development regions

### 3.9. Education and Health and social assistance - Only include the local units with activities related to education or health and social assistance, organized as companies

The statistic data on development regions for Education and Health and social assistance Section are presented in table 17.

Regions	Active Local Units [number of units]	Turnover of Active Local Units [RON million current prices]	Investments of Active Local Units [RON million current prices]	Staff of Active Local Units [number of persons]
N-E	934	94	20	3086
S-E	1128	116	19	3726
S M	776	79	14	2593
S-W O	701	50	10	2035
W	1001	122	21	3382
N-W	1062	101	32	3170
C	1149	134	23	3564
B-I	2510	525	106	11372
<b>Total</b>	<b>9261</b>	<b>1221</b>	<b>245</b>	<b>32928</b>

Table 17. Data on development regions for Education and Health and social assistance Section [3]

	$I_1$	$I_2$	$I_3$	$I_4$	$U_{i1}$	$U_{i2}$	$U_{i3}$	$U_{i4}$	$U_i$
N-E	0,250	0,025	0,005	0,826	0,018	0,018	0,023	0,010	0,017
S-E	0,396	0,040	0,006	1,309	0,180	0,087	0,046	0,121	0,109
S M	0,233	0,023	0,004	0,778	0	0,009	0	0	0,002
S-W O	0,303	0,021	0,004	0,882	0,077	0	0	0,023	0,025
W	0,518	0,063	0,010	1,751	0,315	0,194	0,139	0,222	0,218
N-W	0,387	0,036	0,011	1,158	0,170	0,069	0,162	0,086	0,122
C	0,454	0,052	0,009	1,408	0,244	0,143	0,116	0,144	0,162
B-I	1,136	0,237	0,047	5,149	1	1	1	1	1

Table 18. Own calculation on development regions

The final results based on the above data are presented in table 19.

$U_i \backslash C_j$	$C_1$	$C_2$	$C_3$	$C_4$	$C_5$	$C_6$	$C_7$	$C_8$	$C_9$
$U_1$	0,038	0,024	0,023	0,003	0	0,025	0,005	0,010	0,017
$U_2$	0,151	0,346	0,303	0,248	0,145	0,362	0,250	0,044	0,109
$U_3$	0,652	0,423	0,156	0,053	0,045	0,009	0,010	0,021	0,002
$U_4$	0,517	0,067	0,572	0,023	0,043	0,103	0,027	0,005	0,025
$U_5$	0,633	0,653	0,510	0,241	0,184	0,533	0,237	0,144	0,218
$U_6$	0,270	0,498	0,176	0,227	0,161	0,327	0,291	0,091	0,122
$U_7$	0,711	0,692	0,409	0,165	0,170	0,531	0,220	0,108	0,162
$U_8$	0,146	0,943	1	1	1	0,943	1	1	1
$\gamma_j$	0,2	0,2	0,15	0,05	0,05	0,2	0,05	0,05	0,05

Table 19. Final results

The values for global utility are the following:

$$U_1(N-E) = 0.022; \quad U_2(S-E) = 0.257; \quad U_3(SM) = 0.246; \quad U_4(S-WO) = 0.229; \\ U_5(W) = 0.491; \quad U_6(N-W) = 0.290; \quad U_7(C) = 0.489; \quad U_8(BI) = 0.806$$

The following figure (figure 1) presents the hierarchy of Romanian development regions based on above values.

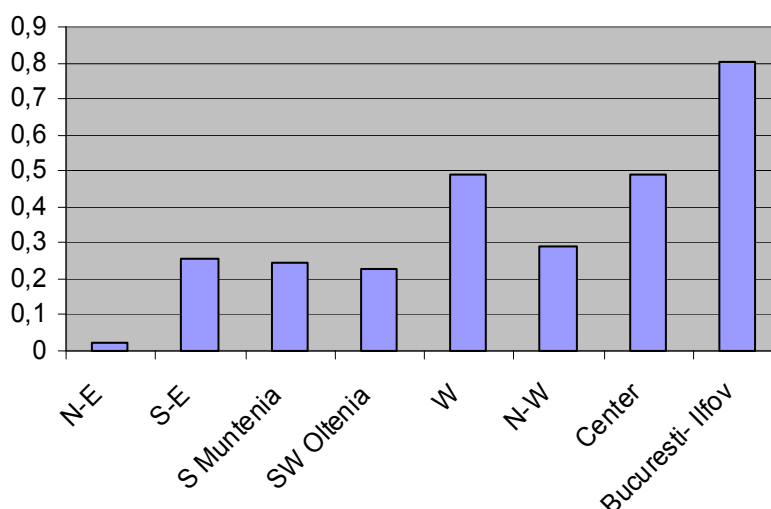


Fig. 1. Clasificarea regiunilor de dezvoltare ale României

#### 4. CONCLUSIONS

Based on the results we have obtained, we can appreciate which are the development regions with high entrepreneurial spirit. Also we can determine which regions have potential and who are in a critical situation from this point of view. We can also highlight the discrepancy between regions, classic comparison between west region and east region.

First we must observe that the data we processed bring out the following conclusions concerning regional entrepreneurial development:

- Bucharest-Ilfov region is by far in front of the classification with best results for all CAEN section. For other groups there is a combination of favorable and unfavorable characteristics which need an interpretation from case to case.

- The West and Centre region with entrepreneurial potential hold some advantages that should be exploited further, but in the same time should be created favorable conditions for diversification of the regional entrepreneurial initiative.

- Through this method we can make the classification of the Romanian development region.

We can conclude that regional development must be seen from the point of view of different business practices that favor some mentalities, some better conditions in certain regions. This study recognizes the existing of different practices concerning regional business initiatives, but the capacity of starting up of prosperous business can be use with success in any region. The variety of conditions and the local abilities represent the "gross material" for development that must generate value through public policies and business strategies.

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