

Model for Evaluating Regional Competitiveness Regarding Foreign Investment Attraction

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Abstract. With the implementation of global and regional strategies by multinational corporations, the choice of location is becoming increasingly important, hence requiring a better understanding of the internationalization process and of the factors influencing the spatial distribution of FDI. There are substantial differences in economic performance across regions in virtually every nation.

In this paper we intend to design a model for evaluating regional competitiveness with the final purpose to identify the potential of each region and to increase regional performance regarding foreign investment attraction.

The model we suggest is constituted from indicators based on statistical data regularly available at regional level and offers a complete image of the potential of a region in attracting foreign direct investments. A number of 18 structural indicators, relevant for regional competitiveness and measurable with available regional data, were selected. These 18 indicators were grouped using weighting, into five indexes – economic, social, technological, infrastructure and agglomeration. In turn, these indexes were aggregated into an index of regional competitiveness.

Keywords: Regional competitiveness, regional development, foreign direct investments, spatial distribution of FDI, index of regional competitiveness

1. Regional Competitiveness – Conceptual Framework

Although there is no universally accepted definition for regional competitiveness, this concept is an attempt to measure the prosperity level of the regions. In order to realise that, a set of indicators is usually built and then, the results of each region are compared with the view to quantify the success obtained by each individual region. Although both theoretical and empirical studies generated a series of indexes for evaluating regional competitiveness, to begin with, the answer to a few questions is important. The questions are:

- What are the determinants of regional development?
- What are the most appropriate indicators for describing regional development level?
- To what extent does the availability of data make possible regional analyses in comparable terms?

The literature indicates the existence of a diversity of general factors that influence competitiveness. For example, the neoclassical theory highlights the importance of physical and human capital, assuming that technology influence is exogenous. In order to remediate the ad hoc hypothesis of the exogenous influences, the growth economic theory included technology as an endogenous factor, suggesting that knowledge accumulation may generate increasing performance – such as the ones generate by accumulation of human capital, for instance. Another branch of economic theory tried to explain regional competitiveness using a different approach, that of geographic concentration.

2. Model for Evaluating Regional Competitiveness

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The model we suggest is constituted from indicators based on statistical data regularly available at regional level and offers a complete image of the potential of a region in attracting foreign direct investments.

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Table 1

Structural indicators		
Indicator	Meaning	Source
Economic indicators		
GDP/capita	- measures the living standard in a certain region - frequently used as a measure of productivity in a certain region	Territorial Statistics
GDP growth rate	Measures the evolution of the economy of a region	National Forecasting Commission
Labour productivity	Measures how competitive a region is relative to other regions by evaluating the share of human capital in the regional GDP	Territorial Statistics
Net Exports	Shows the competitiveness of a region	National Forecasting Commission
Gross fixed capital formation as part of GDP	Shows the amenity of a region for investments	Territorial Statistics
Net income per capita	Shows the actual purchasing power of the population, so it measures the regional welfare level	Territorial Statistics, in section Population Income
Social indicators		
Dispersion of regional employment rates	Shows regional differences in employment	
Employment (total)	Economic activity is sustained by a better extensive use of the production factor "labour"	Territorial Statistics
Employment (women)		
Index of average life expectancy *	- expresses the relative performance of a region regarding life expectancy at birth, that is, of the quality of life - synthesises the quality of the working environment	Territorial Statistics
Technological indicators		
Total Research&Development expenditure	Shows the developing potential of the knowledge-based economy	National Forecasting Commission Eurostat
Occupied population in high technology sectors	Shows the intensity of an economy in creating technology; this indicators relates the labour market to competitiveness.	Eurostat and Territorial Statistics
Tertiary education with advanced training in research	- indicates the existence of qualified human capital that may contribute to the activity of research-development-innovation - it is an important factor of competitiveness on the supply side	Eurostat and Territorial Statistics
Infrastructure-related indicators		
Length of public roads		Statistic Yearbook 2010
Length of railways		Statistic Yearbook 2010
Number of telephone lines		Statistic Yearbook 2010
Agglomeration-related indicators		
Number of companies		National Office of Commerce Register
Population density		Statistic Yearbook 2010

*The index dimension = (Current value – minimal value)/(maximal value – minimal value)

The index takes values from 0 to 1, where 1 is a level similar to the one observed for the best of the existent cases, and closeness to 0 reflects a precarious social situation

A number of 18 structural indicators, relevant for regional competitiveness and measurable with available regional data, were selected. These 18 indicators were grouped using weighting, into five indexes – economic, social, technological, infrastructure and agglomeration. In turn, these indexes were aggregated into an index of regional competitiveness.

2.1. Regional Competitiveness Index

The computation of the regional competitiveness index – CI, is done with the help of the weighted average of the five indicators, economic, social, technological, infrastructure and agglomeration. In turn, these indicators are weighted averages of the variables selected from each area of interest (economic, social, technological, infrastructure and agglomeration).

The weights used for each of the five indicators (the sum of weights for each index is 100) are presented below:

- Economic Indicator (EI)
 - E1 - GDP/capita 10
 - E2 - GDP growth rate 10
 - E3 - Labour productivity 30
 - E4 - Net Exports 10
 - E5 - Gross fixed capital formation as part of GDP 20
 - E6 - Net income per capita 20
- Social Indicator (SI)
 - S1 - Dispersion of regional employment rates 30
 - S2 - Employment (total) 40
 - S3 - Employment (women) 10
 - S4 - Index of average life expectancy 20
- Technological Indicator (TI)
 - T1 - Research&Development expenditure as part of the GDP 40
 - T2 - Occupied population in high technology sectors 30
 - T3 - Tertiary education with advanced training in research 30
- Infrastructure Indicator (II)
 - I1 – Length of public roads 40
 - I2 – Length of railways 40
 - I3 – Number of telephone posts 20
- Agglomeration Indicator (AI)
 - A1- Population density 50
 - A2- Number of companies 50

Thus, the computation method of the five indicators is the following:

$$\text{Economic Indicator EI} = (10 \cdot E1 + 10 \cdot E2 + 30 \cdot E3 + 10 \cdot E4 + 20 \cdot E5 + 20 \cdot E6) / 100$$

$$\text{Social Indicator SI} = (30 \cdot S1 + 40 \cdot S2 + 10 \cdot S3 + 20 \cdot S4) / 100$$

$$\text{Technological Indicator TI} = (40 \cdot T1 + 30 \cdot T2 + 30 \cdot T3) / 100$$

$$\text{Infrastructure Indicator II} = (40 \cdot I1 + 40 \cdot I2 + 20 \cdot I3) / 100$$

$$\text{Agglomeration Indicator AI} = (50 \cdot A1 + 50 \cdot A2) / 100$$

Finally, the value of the regional competitiveness index, CI, is obtained with the help of the weighted average of the five indicators, that is:

$$\text{IC} = (40 \cdot \text{EI} + 20 \cdot \text{SI} + 20 \cdot \text{TI} + 10 \cdot \text{II} + 10 \cdot \text{AI}) / 100$$

Each individual indicator is computed, standardizing the regional statistical data by dividing them by the national average. Thus, the national average will be 1, and the regional indicators will vary around this value (larger than 1 means above national average, smaller than 1 means below national average).

Then we aggregate each indicator by weighting the sub-indicators with the aforementioned weights.

3. The Regional Competitiveness Index – case Study for Romanian Regions

3.1. Territorial and Administrative Organization of Romania (NUTS II)

As the other East-European states, Romania began the transition process having a low level of regional disparities, compared to the economies of the Western markets. The disparities emerged in a short period of time, due to the fast development of the capital city and of the other urban areas. The NUTS II regions (Nomenclature of Units for Territorial Statistics) allow for a limited understanding of the regional development trends in the country, which are influenced by the urban dimension and the access to Western markets.

After 1990, Romania shifted its spatial policy from a central-based policy to a regional-based policy, in compliance with EU-standards. According to four criteria (number of inhabitants, surface, cultural identity and functional-spatial relations;) Romania was divided 1998 into eight Development Regions. The eight regions serve as NUTS-II units and as a framework for development policies while the counties serve as NUTS-III units. The NUTS-II units are: North-East development region (Bacau County, Botosani County, Iasi County, Neamt County, Suceava County, Vaslui County), South-East development region (Braila County, Buzau County, Constanta County, Galati County, Tulcea County, Vrancea County), South development region (Arges County, Calarasi County, Dambovita County, Giurgiu County, Ialomita County, Prahova County, Teleorman County), South-West development region (Dolj County, Gorj County, Mehedinti County, Olt County, Valcea County), West development region (Arad County, Caras Severin County, Hunedoara County, Timis County), North-West development region (Bihor County, Bistrita County, Cluj County, Maramures County, Satu Mare County, Salaj County), Center development region (Alba County, Brasov County, Covasna County, Harghita County, Mures County, Sibiu County), Bucharest-Ilfov development region (Ilfov County, Bucharest).



All the original statistical data refer to the year 2009.

Table 2. Regional Competitiveness Index

Region	EI	Coeff. wight	TI	Coeff. wight	SI	Coeff. wight	II	Coeff. wight	AI	Coeff. wight	CI
North - East	0,64	0,4	0,71	0,2	0,96	0,2	0.721	0,1	0.470	0,1	0.709
South - East	0,79		0,29		1,01		1.128		0.454		0.734
South Muntenia	0,98		0,63		0,98		0.982		0.518		0.864
South - West	0,97		0,33		0,97		0.801		0.396		0.768
West	0,99		0,88		0,99		1.102		0.727		0.953
North - West	1,01		0,99		1,01		1.135		0.765		0.994
West											
Centre	1,04		0,65		1,04		0.980		0.670		0.919
Bucharest - Ilfov	1,03		3,01		1,03		1.151		4.000		1.735

As may be seen,, Bucharest-Ilfov is the only region with a value above 1. The differences between this region and all the others are large, but vary across indicators: the technological indicator is the one that makes the most difference, while the social indicator is relatively balanced for all regions, with a low inter-regional variation.

Except for the Bucharest-Ilfov region, whose situation in the economic landscape of the country is special, regional competitiveness had a west-east direction, the proximity of western markets acting as a diffusing factor for competitiveness.

Underdevelopment seems to be highly correlated with unemployment and preponderance of rural activities, as well as with the incapacity to attract foreign direct investments. The North-East region is market both by its dependency on agriculture, and by its proximity to Moldova and Ukraine. The same thing is valid to a certain extent for the South region, also dependent on agriculture and where the Danube acts like a barrier in trans-border commerce.

Benefiting from their location closer to the western markets and from their reduced dependency on the primary sector, the West, North-West and Centre regions attracted more foreign investors, fact that has significantly contributed to the development of these regions.

4. Conclusion

Among the major causes that led and lead to the increase of disparities, one may mention: location and amplitude of the foreign investments in the development regions, loss of competitive capacity of companies, both on internal and on external markets, accentuated moral and physical depreciation of the technologies and equipments used (especially in the regions located on the eastern side of the country) and limited access to financing of the SME. Foreign investments in Romania were oriented according to the accessibility and potential of the areas, as well as according to people's business mentality and tradition in the respective domain. Thus, after 2000, the foreign capital concentrated mainly in the Bucharest-Ilfov, West, North-West and Centre regions, which had a positive effect on the labour markets of these regions, contributing to the continuous training of qualified labour force and the development of business services. The regions with a high income per capita are the counties with big cities, with international airports or areas located close to the western border. On the opposite side, other counties situated along the Danube or close to Ukraine and Moldova face severe problems of underdevelopment.

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