

# **THE IMPACT OF COHESION POLICY AND OF MEMBER STATES EFFORT ON COMPETITIVENESS**

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**Abstract:** To meet the challenges generated by globalization and the technological progress, the European cohesion policy through its financial instruments is a source of competitiveness, as it implements anticipation strategies in terms of research-development, innovation, firms' competitiveness improvement, economic reorganization, in conditions of ensuring the social composition by creating new jobs. The paper analyzes the impact of EU financial effort combined with public and private national effort on the competitiveness of some European Union member states. Quantitative research carried out by econometric modeling confirms a correlation between the considered states score of competitiveness and the financial resources allocated for the objective Regional competitiveness and employment, the primary role exercised by the public and private sector contribution of states and the need to increase the European funds allocated to improve competitiveness and to achieve a prosperous economy based on knowledge.

**JEL classification:** M21, M29

**Key words:** competitiveness; cohesion; structural funds

## **1. INTRODUCTION**

Although the globalization process is an opportunity for economic growth stimulation and quality of life amelioration at the international level, it generates uneven gains for countries and companies. To take advantage of globalization, the Lisbon strategy aims to achieve a balance between economic performance, social equity and sustainable development, whilst ensuring a high degree of social cohesion.

The European model of regional integration attends to reconcile the sustainable economic growth and the environmental protection with the social cohesion through regulations and policies negotiated at the Community level. The EU regulations represented by the structural funds or the new actions complement the national strategies, to create a knowledge-based economy, competitive and dynamic.

To achieve the objective of competitiveness, a part of structural funds were oriented toward research, development of innovations and new technologies, existing structures modernization, development of information society infrastructure and SME

sector development. The conducted research aims to reflect the impact of structural funds on competitiveness growth of Member States of the sample analyzed.

## **2. LITERATURE REVIEW**

### **2.1. Theoretical approach on competitiveness**

Unlike the comparative advantage theory of David Ricardo's which analyzes the competitiveness through productivity and costs, Kaldor (1981) considers that technological capability is a more important explanatory factor, which can be examined through research expenditure, number of patents, researchers and specialists, and Lucas (1998), Romer (1990), Barro (2000) believes that human capital is the decisive factor together with the technology available. In turn, Michael Porter, renowned for his studies on how companies can achieve competitive advantages, proposed (1990) the concept of geographical competitiveness poles (competitive clusters) which gathers at the same geographical area and in the same specific activity sector, a critical mass of resources and expertise to ensure the area a key position in the global economic competition.

Defender of the free trade and of the economies globalization, situated in a position opposite to the theory of comparative advantage, Paul Krugman believes that it should not speak of comparative advantages, but of the benefits of competitiveness, and the competition between companies should not be assimilated with the competition between nations.

The representatives of institutionalism theory as Putnam (1993), Amin (1999) and Casey (2004) argue that all behaviors, forms and public and private institutions contribute to a favorable economic environment and to the support of the competitiveness. One of the representatives of evolutionary theory, Boschama (2004) believes that regions competitiveness depends on their ability to renew their economic basis to meet the creative destruction processes, and public policies have to guide companies to meet changes in market structure, whereas the State has the power to act on companies' expectations related to the structural changes.

If initially the specialists were concerned about the competitiveness of firms, later the concerns area was extended to regional and national level. The firms' competitiveness analysis is tracking the estimation of their performance, to know the ability to produce at the given costs, according to the tax legislation and local conditions without help, in order to exist in the competitive economy.

At the regional level the competitiveness is characterized by the benefits resulting from location, human capital, innovation and the possibility of the markets access with a demand characterized by a powerful purchasing power. The competitive regions manage to attract financial and human capital to create and develop economic activities and jobs.

National economies are competitive when they have a high rate of research, a good system of human capital training, companies that manage and competitiveness poles which are appropriate. These economies provide a flexibility of the resources required, overcome the barriers related to the exchange rates or the fiscal ones handling.

The Union through the public policies applied is interested to increase the competition, which has become a norm in political markets, and the technical progress the mainly responsible for long-term job creation, destruction of others and inequalities factor.

Commission and the Lisbon strategy define competitiveness as the ability of a state or region to ensure prosperity and to raise the living standards of its citizens. As at the States level the production factors mobility is limited, and these through the economic policy can influence them through various sectors, Camagni (2002) considers more useful to analyse the competitiveness at the regions level, as they have not the power to receive permanent comparative advantages in international division of labor. Consequently, to compete among themselves, the regions have to specialize in those activities which have an absolute advantage over others in order to attract investment, capitals and highly qualified human resources.

## **2.2. Models of analysis based on factors affecting competitiveness**

Permanently the specialists have been concerned with identifying the factors that influence the growth, performance and competitiveness which they introduced in various models such as Porter's Diamond model, Hämäläinen's model, the model Luxembourg, structural model of Lionel Fontagné and Massimiliano Marcellino, competitiveness models of the World Economic Board (WEB) and the model of World Competitiveness Yearbook (WCY) of the Institute for Management Development (IMD).

Since the content of the competitiveness concept is extremely complex to be measured, the determinants factors of competitiveness are quantified and analyzed by a highly diversified system of indicators that examine macroeconomic performances, the functioning of markets, the productivity, the employment, the education and training, the entrepreneurship institutional framework, the social cohesion, the environment, etc.. The indices of competitiveness and the states ranking based on these, call into question the methodology of calculation and the reliability, as they are based on determinants of growth and competitiveness, which are quantitatively measured by some questionable indicators.

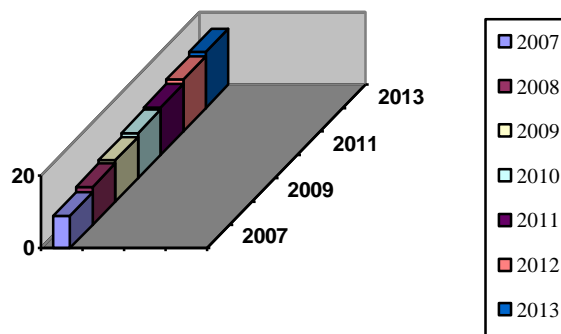
The World Competitiveness Yearbook model (WCY) considers more than 300 indicators of competitiveness regularly reviewed and updated, choused to obtain a result of extensive research using the economic literature, international, national and regional sources, feedback from the businesses community, government agencies and academics. Given the indicators taken into account to measure competitiveness in the fourth part of the paper, to work for comparative analysis through econometric modeling, we'll use the data of the WCY model as scores of competitiveness calculated at different states level.

## **3. STRUCTURAL FUNDS, INSTRUMENTS OF COMPETITIVENESS IMPROVEMENT SPECIFIC TO COHESION POLICY**

To become a competitive and dynamic knowledge economy, capable of sustainable economic growth accompanied by quantitative and qualitative improvement of use and a higher grade of social cohesion, the policies established at European and national level contain an effective combination of macroeconomic policies favorable to the support of a high rate of economic growth, strengthening of the internal market, investment in people and combating social exclusion. Through the three priority objectives, the cohesion policy aims: i) to accelerate the economic convergence of less developed regions, ii) to strengthen the competitiveness through innovation to meet the global competition and to reduce the outsourcing firms, to create and strengthen the effective regional economies and relationships between private and public sectors, to

create jobs more and better quality, iii) harmonious and balanced integration of the whole EU in economic, cultural and environmental protection by strengthening the competitiveness of regions separated by national borders, but faced common problems, cooperation in strategic areas of the Member States.

The objective of Competitiveness funded by European Regional Development Fund (ERDF) help the anticipation of economic and social changes by funding of research, innovation, environment and risk prevention, access to transport and telecommunication services of general interest regional operational programs. The competitiveness increasing is subordinated to the development of the knowledge economy by developing of the research and innovation processes simultaneous with investments in human capital. In turn, the European Social Fund (ESF) is funding the training, integration and use increase in order to increase the competitiveness and use according to the Lisbon strategy. In addition to structural interventions designed to the achievement the objective of regional competitiveness and use, funded by ERDF and ESF from the European budget, the actions are financed up to 50% of public expenditure. The current financial framework provides an upward trend of the commitment appropriations for Objective "Competitiveness for growth and employment". They are almost doubled at the end, with a growth at a level of 8.918 million Euros in 2007 to a level of 15.433 million Euros in 2013.



*Source: Financial framework 2007-2013 adapted for 2010*

**Figure no. 1 Commitment appropriation for Objective Competitiveness for growth and employment at the European Union Level**

In 2009 through the EU budget was allocated 62.2 billion Euros for sustainable growth of which 13.8 billion Euros for competitiveness and 48.4 billion Euros for cohesion, as structural operations since 2007 are included in the cohesion Chapter. However, the funds allocated in 2010 to increase competitiveness have increased by 24.3% over the previous year, while those allocated to the cohesion strengthen increased by only 2.5%, reflecting the EU future priorities.

Since productivity and growth factors are found in different combinations, there is required a differentiated approach aimed at innovation and entrepreneurship for the regions in processing, strategies of excellence for education and technological research for performance areas in the world and actions oriented to infrastructures and productive device upgrade for the less developed regions.

#### 4. METHODOLOGY AND RESULTS - IMPACT OF STRUCTURAL FUNDS AND NATIONAL FINANCIAL EFFORT ON THE CONSIDERED STATES' COMPETITIVE SCORE

Given the expenditure of structural funds included in the EU budget during 2000-2008 and the score of national competitiveness indices presented in The World Competitiveness Scoreboard 2000-2008, the study examines the impact of structural funds, but also the national public and private expenditure on competitiveness of EU countries taken in the analysis.

For the application of research methodology, it has gone from a representative sample of EU states, for the period of analysis 2000 - 2006, i.e. 2007-2008 (Table no. 1.) The sample consists of data sets with different pattern, because the EU states have received structural funds on different periods, according to their accession, and impact of restructuring of the structural funds on objectives has changed since 2007.

For analysis there were selected ERDF and ESF for the period 2000-2006, as among their objectives are found both regional competitiveness and employment, and for the period 2007-2008 there were taken into analysis the allocations grant designed to support through the two mentioned funds the objective 2. "Competitiveness and employment".

**Table no. 1 Sample of selected countries**

Sample 1.	Belgium	Denmark	Germany	Ireland
Period 2000-2006	Greece	Spain	France	Italy
Period 2007-2008	Luxembourg	Nederland	Austria	Portugal
	Finland	Sweden	United Kingdom	
Sample 2.	Czech Republic	Estonia	Hungary	Poland
Period 2004-2006				
Period 2007-2008	Slovenia	Slovakia		

In order to quantify and analyze the impact on competitiveness, the main independent variables considered are: EU budget expenditures regarding the ERDF and ESF for the period 2000-2006, respectively the objective 2. Regional competitiveness and employment for the period 2007-2008 - RC as well as R & D budget appropriations allocated by the governments of the analyzed states - H2 and the research funded by the private sector - H3. The analysis method is the econometric modeling using the software package E-Views 5.0.

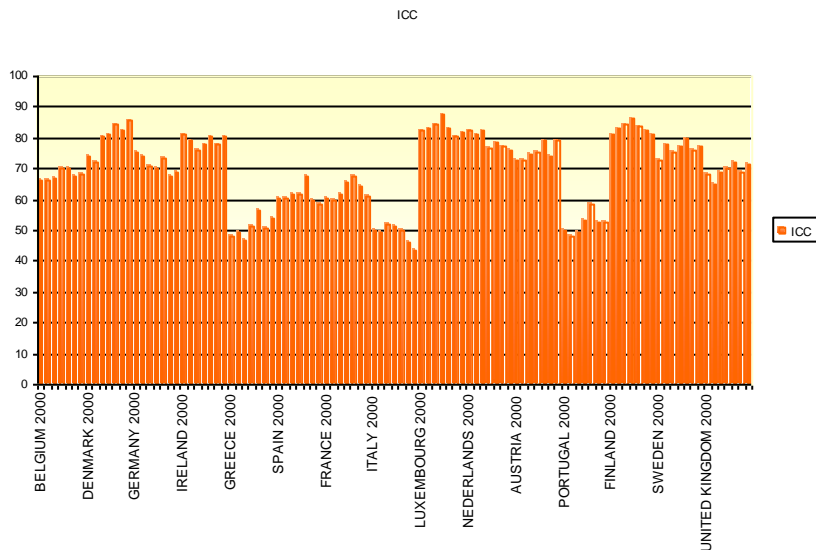
Accordingly, four multi-factorial regressive models were built as following:

$$Y_t = \alpha + \beta_i x X_{it} + \varepsilon_t \quad (1)$$

where: is the dependent variable; -free term coefficient; -independent variable coefficients; -independent variables; -random variable; i- number of variables on which the regression is made; t -time. Specifically, it is aiming to quantify the link which exists, on the one hand, between the competitiveness score ICC (economically dependent or outcome variable) and EU budget's expenditures, in respect of ERDF, ESF, respectively RC and H2 and H3 (considered as independent variables).

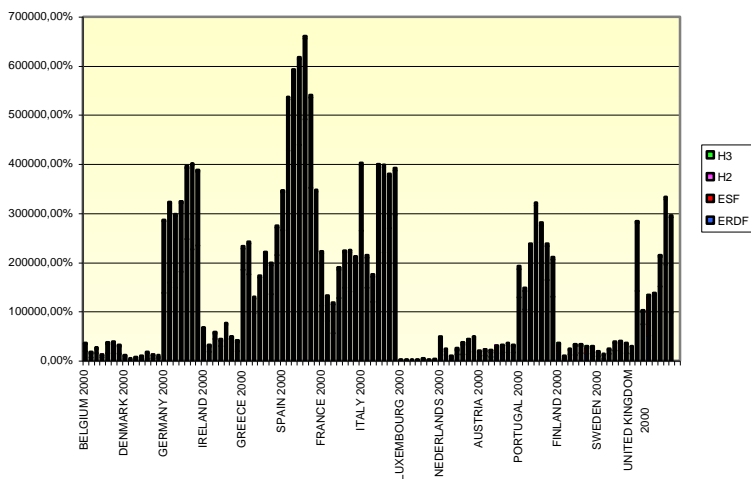
1. While in the states analyzed (sample 1) there are differences in competitiveness during the reported period 2000-2006 (Figure no. 2) and EU budget expenditures in respect of ERDF and ESF were different from one state to another (Figure no. 3), we want to analyze if the following hypothesis is confirmed:

Hypothesis1. The impact of ERDF and ESF, respectively of the national public and private effort, during 2000-2006 on the competitiveness of the sample 1 states (old Member States: EU 15)



Source: Data processed by The World Competitiveness Scoreboard 2000-2006

Figure no. 2 Analysis of competitiveness score at the EU 15 level during 2000-2006, scale 1:7:1



Source: Data processed by EU budget, 2000-2008.

Figure no. 3 Analysis of EU budget expenditures regarding ERDF, ESF and H2, H3 at the EU 15 level during 2000-2006, scale 1:7:1

The results obtained from the statistical series modeling RC 3, H2 and H3 on ICC during 2007-2008 are presented in the following table:

**Table no. 2 Statistical tests related to the impact modeling of ERDF, ESF, H2 and H3 on ICC (sample 1 during the period 2000-2006)**

Dependent Variable: ICC			Method: Least Squares	
Sample: 2000:2006			Included obs.: 105	
White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable	Coeff.	Std. Error	t-Statistic	Prob.
$\alpha$	90.61897	2.002184	45.26006	0.0000
ERDF	0.002658	0.001153	2.305245	0.0232
ESF	0.000339	0.001697	0.199515	0.0423
H2	0.637984	0.053811	11.85600	0.0000
H3	0.406190	0.127284	3.191204	0.0019
R-squared	0.739912	Mean dependent var		69.42269
Durbin-Watson stat	1.495868	Prob(F-statistic)		0.000000

From the statistical tests illustrated in Table 2 the following conclusions come off: Standard error values of the coefficients Std. Error of the regression function are lower, in module, than coefficient values of variables Coeff., which strengthens the reliability of their estimation; Correlation coefficient with a value of 73.99%, shows that the statistical relationship between the outcome variable - the ICC and the endogenous - ERDF, ESF, H2 and H3 is strong, having the analyzed expenditures having influence on the competitiveness; Durbin-Watson test, with a value slightly below the critical value 2 indicate a positive serial correlation. Through the processed model:  $ICC=90.61897+0.002658*ERDF+0.000339*ESF+0.637984*H2+0.406190*H3$  (2), hypothesis 1 is confirmed.

2. While in the analyzed states (sample 1) there are differences in competitiveness during 2007-2008 (Figure no. 4), and the national effort as well the structural funds allocated from EU budget by ERDF and ESF were different from one state to another (Figure no. 5), we want to prove the following hypothesis:

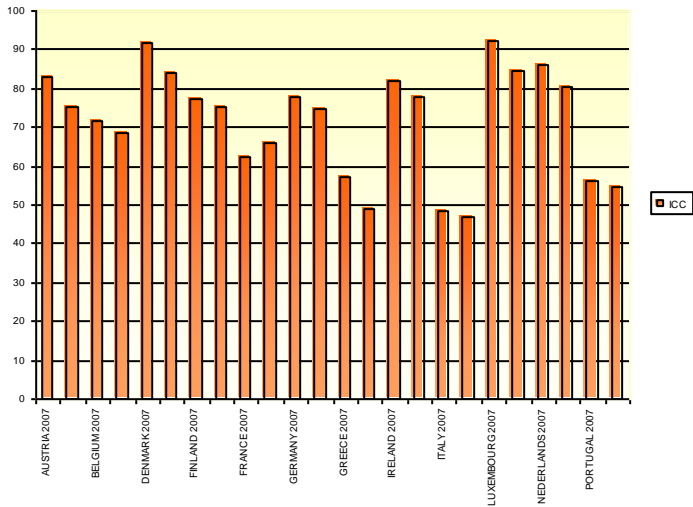
Hypothesis 2. The impact of ERDF and ESF, respectively the national public and private effort during 2007-2008 on the competitiveness of states from sample 1 (old Member States: EU 15)

The results obtained from the statistical series modeling RC 3, H2 and H3 on ICC during 2007-2008 are presented in the following table:

**Table no. 3 Statistical tests for the modeling of the impact of RC, H2 and H3 on ICC (sample 1, period 2007-2008)**

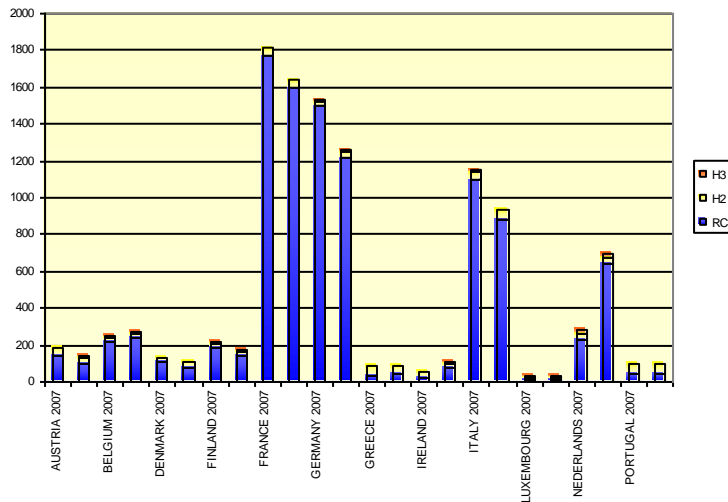
Dependent Variable: ICC			Method: Least Squares	
Sample: 2007:2008			Included obs.: 24	
White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable	Coeff.	Std. Error	t-Statistic	Prob.
$\alpha$	102.6712	7.353645	13.96195	0.0000
RC	0.004817	0.002344	2.055140	0.0532
H2	0.907580	0.149486	6.071322	0.0000
H3	0.339573	0.217495	0.656187	0.0192
R-squared	0.676393	Mean dependent var		71.76854
Durbin-Watson stat	1.708693	Prob(F-statistic)		0.000039

From the statistical tests illustrated in Table 3 the following conclusions come off: Standard error values of the Std. Error coefficients of the regression function are lower in module, Coeff coefficient values of variables, which strengthens the reliability of their estimate, conclusion supported also by the low levels of probability; The correlation coefficient, with a value of 67.63%, shows that the statistical relationship between the outcome variable - ICC and the endogenous variables - RC, H2 and H3 is strong, having influence on competitiveness; Durbin-Watson test, with a value slightly below the critical level 2, indicates a positive serial correlation.



Source: Data processed from the World Competitiveness Scoreboard 2007-2008.

Figure no. 4 Analysis of ICC at the EU 15 level during 2007-2008, scale 1:1:1



Source: Data processed from the EU budget, 2007-2008.

Figure no. 5 Analysis of RC, H2 and H3 in the EU 15, during 2007-2008, scale 1:1:1



Through the processed model:  
 $ICC=102.6712+0.004817*RC+0.907580*H2+0.339573*H3$  (3),  
hypothesis 2 is confirmed.

3. While in the analyzed countries (sample 2) there are differences in competitiveness during 2004-2006 (Figure no. 6), and 6 EU budget expenditures in respect of ERDF, ESF, H2 and H3 was different from one state to another (Figure no. 7), we want to prove the following hypothesis:

Hypothesis 3. The impact of ERDF, ESF, H2 and H3 during 2004-2006 on competitiveness of states from sample 2 (6 new Member States).

The results obtained from modeling of the 4 statistical series ERDF, ESF, H2 and H3 on ICC during 2004-2006 are presented in the following table:

**Table no. 4 Statistical tests related to the impact modeling of ERDF, ESF, H2 and H3 on ICC (sample 1, period 2004-2006)**

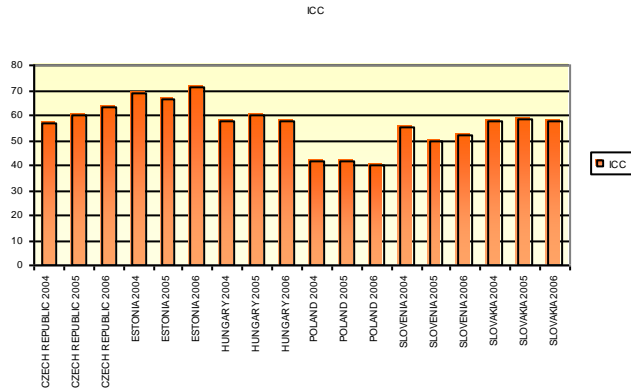
Dependent Variable: ICC			Method: Least Squares	
Sample: 2004:2006			Included obs.: 18	
White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable	Coeff.	Std. Error	t-Statistic	Prob.
$\alpha$	48.78449	4.719697	10.33636	0.0000
ERDF	0.051531	0.012320	4.182829	0.0011
ESF	0.290598	0.043616	6.662698	0.0000
H2	0.034841	0.130850	0.266268	0.0942
H3	1.582307	0.419524	3.771672	0.0023
R-squared	0.876281	Mean dependent var		56.32661
Durbin-Watson stat	2.105942	Prob(F-statistic)		0.000008

From the statistical tests illustrated in Table 4 the following conclusions come off: Standard error values of the Std. Error coefficients of the regression function are lower in module, Coeff coefficient values of variables, which strengthens the reliability of their estimate, conclusion supported also by the low levels of probability; The correlation coefficient, with a value of 87,62%, shows that the statistical relationship between the outcome variable - ICC and the endogenous variables - FEADR, FSE, H2 și H3 is strong, having influence on competitiveness; Durbin-Watson test, with a value slightly below the critical level 2, indicates a positive serial correlation.

Through the processed model:  
 $ICC=48.78449+0.051531*ERDF+0.290598*ESF+0.034841*H2+1.582307*H3$ . (4),  
hypothesis 3 is confirmed.

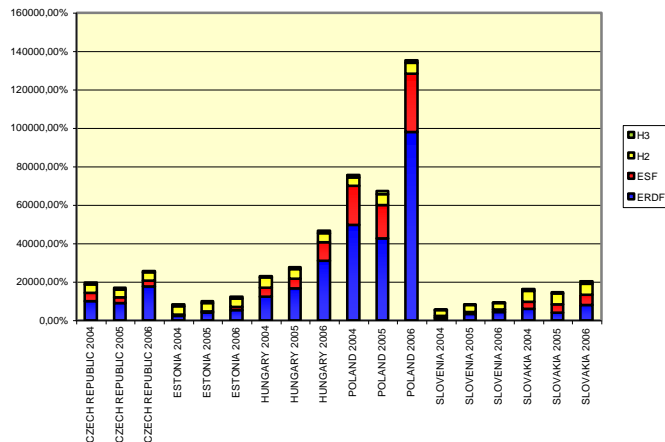
4. While in the analyzed states (sample 2) there are differences in competitiveness during 2007-2008 (Figure no. 8.), and EU 6 budget expenditures in respect of RC, H2 and H3 were different from one state to another (Figure no. 9), we want to prove the following hypothesis:

Hypothesis 4. Impact of RC, H2 and H3 during 2007-2008 on states' competitiveness from the sample 2 (6 new Member States).



Source: Data processed, using The World Competitiveness Scoreboard 2004-2006.

Figure no. 6 Analysis of ICC at the EU 6 level during 2004 -2006, scale 1:1:1



Source: Data processed by the EU budget 2004-2006

Figure no. 7 Analysis of the ERDF, ESF, H2 and H3 at EU 6 level during 2004 -2006, scale 1:1:1

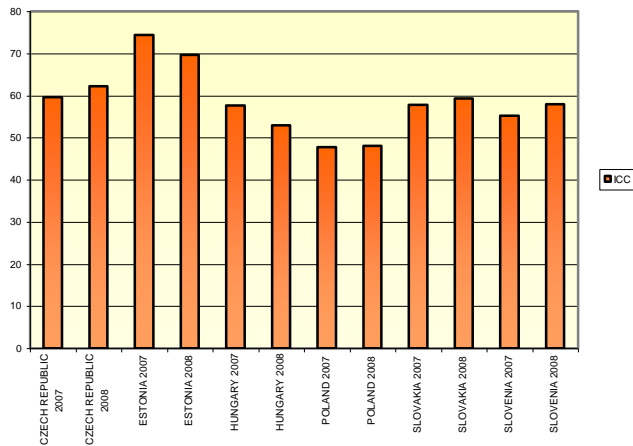
Table no. 5 Statistical tests regarding the impact modeling of RC, H2 and H3 on ICC (sample 2 period 2007-2008)

Dependent Variable: ICC			Method: Least Squares	
Sample: 2007:2008			Included obs.: 12	
White Heteroskedasticity-Consistent Standard Errors & Covariance				
Variable	Coeff.	Std. Error	t-Statistic	Prob.
$\alpha$	74.51426	8.988281	8.290157	0.0000
RC	-0.178332	0.055213	-3.229919	0.0121
H2	0.559181	0.308811	1.810759	0.0078
H3	-3.019181	0.984135	-3.067852	0.0154
R-squared	0.721092	Mean dependent var		58.52200
Durbin-Watson stat	1.451671	Prob(F-statistic)		0.013120

From the statistical tests illustrated in Table 5 the following conclusions come off: Standard error values of the Std. Error coefficients of the regression function are lower in module, Coeff coefficient values of variables, which strengthens the reliability of their estimate, conclusion supported also by the low levels of probability; The correlation coefficient, with a value of 72,10%, shows that the statistical relationship between the outcome variable - ICC and the endogenous variables - RC, H2 și H3 is strong, having influence on competitiveness; Durbin-Watson test, with a value slightly below the critical level 2, indicates a positive serial correlation. Through the processed model:

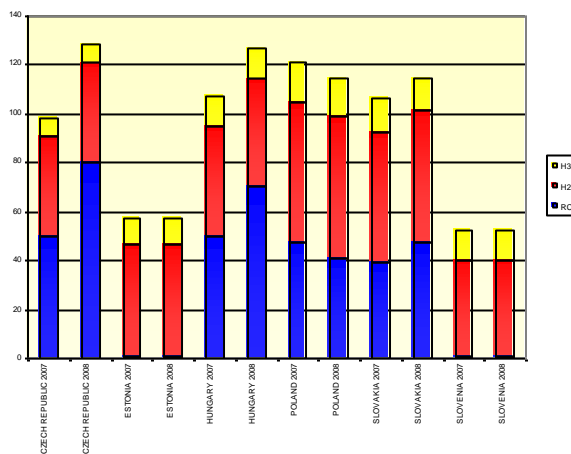
$$ICC = 74.51426 - 0.178332 * RC + 0.559181 * H2 - 3.019181 * H3. \quad (5)$$

hypothesis 4 is confirmed.



Source: Data processed by The World Competitiveness Scoreboard 2007-2008

Figure no. 8 Analysis of ICC at the EU 6 level during 2007-2008, scale 1:1:1



Source: Data processed by the EU budget 2007-2008.

Figure no. 9 Analysis of RC, H2 and H3 at the EU 6 level during 2007-2008, scale 1:1:1

## 5. CONCLUSIONS

From the research developed it can be concluded that in the states examined all the tested hypotheses were confirmed, the competitiveness score ICC and EU expenditures in respect of ERDF, ESF, and RC, together with public and private national effort are correlated. The econometric test reflects different effects in each model examined. Thus in the case of:

- EU15 model 1 during the period 2000-2006, the correlation coefficient with a value of 73.99% reflects a statistical link between the outcome variable ICC and the endogenous variables, the impact of ERDF by a factor of 0.002658 and ESF by a factor of 0.000339 with a positive influence less than H2 and H3, with coefficients of 0.637984, respectively 0.406190, while their contribution value is smaller;

- EU15 model 2 during the period 2007-2008, the correlation coefficient with a value of 67.63% reflects a statistical link between the outcome variable ICC and the endogenous variables, the impact of RC, with a coefficient of 0.004817 is a positive, lower than H2 and H3, with coefficients of 0.907580, respectively of 0.339573 despite their smaller valuable contribution;

- EU6 model 3 during 2000-2006, the correlation coefficient with a value of 87.62% reflects a statistical link between the outcome variable ICC and the endogenous variables, the greatest influence is of ESF with a factor of 0.290598 and H2 with a factor of 1.582307.

- EU6 model 4 during 2007-2008, the correlation coefficient with a value of 72.10% reflects a statistical link between the outcome variable ICC and the endogenous variables, H2 having a positive influence by a factor of 0.559181, while RC and H3 have a negative influence.

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