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# EUROPEAN UNION'S COMPETITIVENESS IN TERMS OF COUNTRY RISK AND FISCAL DISCIPLINE

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**Abstract:**

*Underneath the umbrella of national competitiveness there are microeconomic and macroeconomic factors, but the recovery and the revival of a state competitiveness must be based on a strategy developed and coordinated centrally and implemented in strategic areas of the economy. In this respect, this paper aims to analyze the situation of European Union's competitiveness in terms of country risk and fiscal and budgetary discipline of the Member States, based on empirical data. Therefore, this study's analysis includes the following two steps: first, a segmentation of the European Union by determining distinct groups of countries according to national competitiveness (GCI), public debt (PD) and budget equilibrium (BD); and second, a factor analysis performed on the resulted clusters of countries based on GCI, PD, BD and CDS (credit default swap).*

**Keywords:** sovereign debt crisis, country risk, fiscal and budgetary discipline, competitiveness

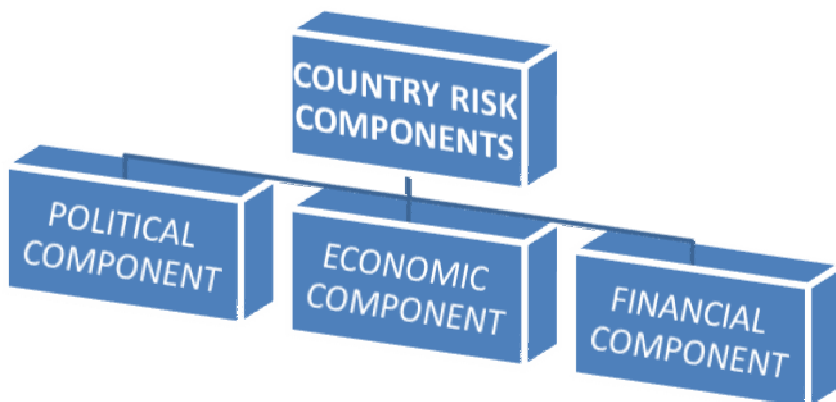
## 1. Introduction

After almost four years since the economic crisis has debuted, we are witnessing a slow recovery of national economies, and in some cases there are setbacks. Most European economies have resorted to massive public borrowing in order to finance their budget deficits, thus generating a new crisis, namely the sovereign debt crisis. This type of crisis requires special attention and a number of correlated measures of economic and fiscal policies, since its effects tend to be long term and to affect the business environment which is the engine of economic recovery. **Country risk** is a variable affected by this condition and it negatively influences not only the cost of new loans but also the attractiveness of the economy, and as a result the interest of potential foreign investors to invest in that particular country. However, the recovery

capacity of the national economy in such a situation can be found in the actual cause that generated it in the first place, namely the **budget and fiscal discipline**.

Country risk is a topic extensively pursued for decades, and during this timeframe analyses and quantification methodologies have diversified giving rise to a series of country ratings. Although they are closely considered, these country ratings are also criticized and the rating agencies are being accused of lack of objectivity and market manipulation. **Country risk** assessment is a “multidimensional problem that is of major interest to policymakers, managers of international lending institutions, multinational firms, and investors (K. Kosmidou, M. Doumpos, C. Zopounidis, 2008)”.

**Country risk analysis** “involves the research and risk calculation of investing in a country. Many factors are considered when completing a country risk analysis, such as financial factors and stability factors, as all of these or even just one can adversely impact the value of the investment. Analyzing a country's risk factor is an arduous process that involves a lot of socio-economic expertise (Buchanan, 2011).” Regardless of the number of indicators taken into consideration when quantifying country risk, it has its source in three components of an economy, namely the political, economic and financial component (Lazarescu Sorin).



**Figure 1: Country risk components**  
(Source: Authors' own computations)

Determination of the sovereign risks is made by specialized rating agencies, such as: Standard & Poor's, Fitch, Moody's, COFACE and by some financial publications, such as: The Economist, Euromoney, etc. Variables considered to measure the country risk are specific to each methodology (see Table 1).

**Table 1: Variables considered in measuring country risk by various methodologies**

METHODOLOGY	VARIABLES USED
<i>STANDARD and POOR's</i>	<ol style="list-style-type: none"> <li>1. Political risk</li> <li>2. Public debt level</li> <li>3. Price stability</li> <li>4. Income economic structure</li> <li>5. Balance of external payments flexibility</li> <li>6. Prospects for economic growth</li> <li>7. Fiscal flexibility</li> <li>8. External debt and the degree of liquidity</li> </ol>
<i>COFACE</i>	<ol style="list-style-type: none"> <li>1. Growth vulnerability</li> <li>2. Sovereign financial vulnerability</li> <li>3. External over indebtedness</li> <li>4. Foreign exchange liquidity-crisis risk</li> <li>5. Banking sector's fragilities</li> <li>6. Political vulnerabilities</li> </ol>
<i>ECONOMIST INTELLIGENCE UNIT</i>	<ol style="list-style-type: none"> <li>1. Securities</li> <li>2. Political stability</li> <li>3. Government effectiveness</li> <li>4. Legal and regulatory</li> <li>5. Macroeconomic</li> <li>6. Foreign trade and payments</li> <li>7. Financial</li> <li>8. Tax policy</li> <li>9. Labor market</li> <li>10. Infrastructure</li> </ol>
<i>EUROMONEY</i>	<ol style="list-style-type: none"> <li>1. Political risk</li> <li>2. Economic performance</li> <li>3. Structural assessment</li> <li>4. Debt indicators</li> <li>5. Credit ratings</li> <li>6. Access to bank finance</li> <li>7. Access to capital markets</li> </ol>

Source: *information adapted from:*  
[http://www.coface.com/CofacePortal/ShowBinary/BEA%20Repository/countryRisk/en\\_EN/help/methodisque](http://www.coface.com/CofacePortal/ShowBinary/BEA%20Repository/countryRisk/en_EN/help/methodisque)  
[http://www.eiu.com/index.asp?layout=RKArticleVW3&article\\_id=498780834&country\\_id=1510000351&refm=rkCtry&page\\_title=Latest%20alerts&rf=0](http://www.eiu.com/index.asp?layout=RKArticleVW3&article_id=498780834&country_id=1510000351&refm=rkCtry&page_title=Latest%20alerts&rf=0) <http://www.euromoneycountryrisk.com/>  
<http://www.standardandpoors.com/ratings/articles/en/us/?articleType=HTML&assetID=1245199692885>  
 COFACE – *The Handbook of country risk. A Guide to International Business and Trade*, Coface and GMB Publishing Limited, 2008.

In terms of a country's fiscal and budgetary policies, it is obvious that these have an important role in overcoming the economic crisis, leading to economic recovery and ensuring its stability. However, an issue that arises in the present controversy is the nature of budgetary and fiscal policy during economic crisis: to adopt a pro-cyclical fiscal and budgetary policy, a neutral or a countercyclical one. We have witnessed a series of pro-cyclical measures in most EU member countries, and a series of countercyclical measures in the USA, but their results remain yet undefined. Whatever the nature of fiscal and budgetary policy in a country, it must first ensure its sustainability that is a **fiscal and budgetary discipline**. In this respect, 25 EU Member States, including Romania, have adopted the Treaty of budgetary discipline, which will take effect no later than January 1, 2013, which implies:

- The **budget deficit** to be up to 3% of GDP and **public debt** up to 60% of GDP, also these two provisions should be introduced in the Constitution;
- A **structural deficit** of 0.5%;
- Member states must inform the European Commission on their **issuance of bonds**.

However, budget deficit and public debt, fiscal and budgetary discipline, CDS, along with other macroeconomic indicators leave a mark on **national competitiveness**. It is true that underneath the umbrella of national competitiveness there are microeconomic and macroeconomic factors, but the recovery and the revival of a state competitiveness must be based on a strategy developed and coordinated centrally and implemented in strategic areas of the economy.

## 2. Methodology and Empirical Study

In this section the situation of European Union competitiveness is analyzed in terms of country risk and fiscal and budgetary discipline of the Member States, based on empirical data. In the analysis we consider the following four components as exogenous variables that characterize the economic situation in the European Union: competitiveness (expressed in the Global Competitiveness Index), public debt in GDP, budget balance (expressed by the budget deficit) and CDS (credit default swap). Thus, the indebtedness and budget equilibrium (that is BD – budget deficit) are expressed as the percentage of public debt in GDP, using Eurostat as the data source. Furthermore, the competitiveness level of countries covered in this study is given by the Competitiveness Index calculated annually by the World Economic Forum. Also, the CDS (Credit Default Swap) is expressed in basis point (bps) and the data is collected from Bloomberg.

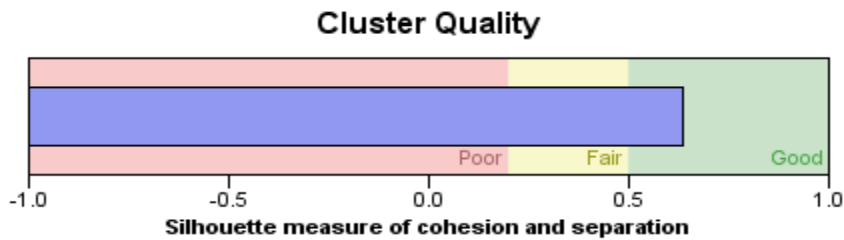
The analysis covered by this study includes the following two steps:

1. A segmentation of the European Union by determining distinct groups of countries according to GCI, PD, and BD;
2. A factor analysis performed on the resulted clusters of countries based on CDS, GCI, PD, and BD.

### 2.1. European Union Segmentation

The first stage of the analysis was intended to obtain relevant clusters of countries characterized by similar results of the three variables considered (GCI, PD and BD). To achieve this objective, we used the Two-Step Cluster method which led to the following situation regarding the clusters' relevance:

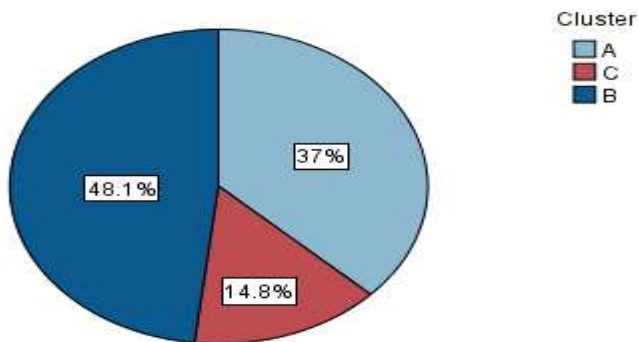
<b>Algorithm</b>	TwoStep
<b>Input Features</b>	3
<b>Clusters</b>	3



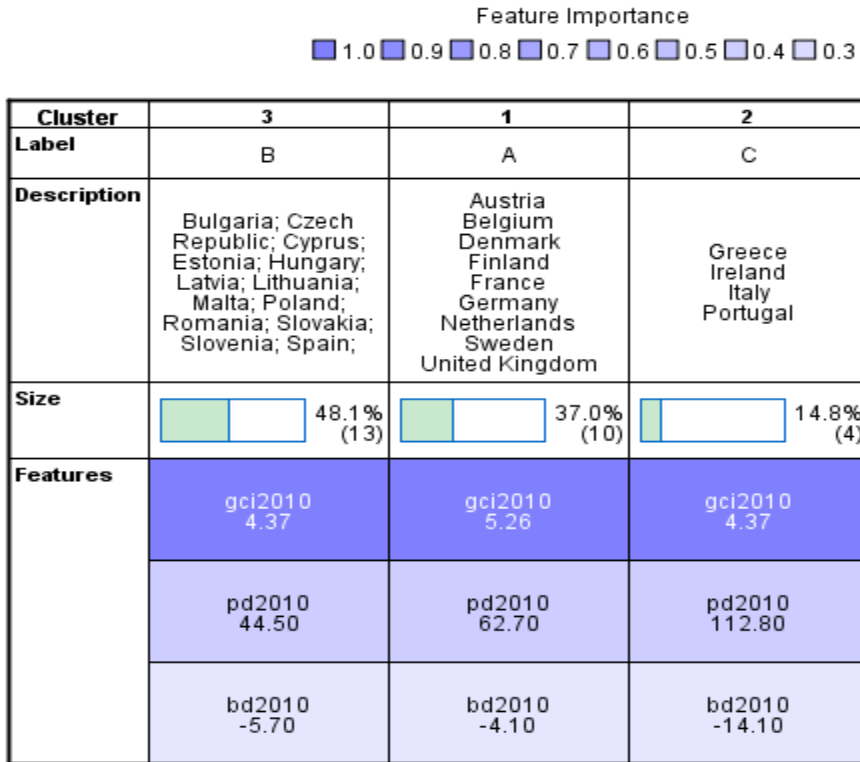
**Figure 2: Segmentation Model Summary**  
(Source: Authors' own computations)

Using the Two-Step Cluster method (Figure 2) on three variables, 3 clusters were developed which have a high relevance in terms of their quality.

In the figure below (Figure 3), each segment is characterized through their relative and absolute proportions, the countries which formed each cluster, and the score for each variable used in the Two-Step Cluster method.



**Figure 3: Cluster Dimensions**  
(Source: Authors' own computations)



**Figure 4: Clusters of EU countries**  
(Source: Authors' own computations)

Thus, we identified three segments, with the following features:

**Table 2: Clusters of EU Countries**

Cluster	Characterization	Features	Countries
A	High competitiveness	5.26 High national competitiveness 62.70 Medium public debt 4.18 High level of fiscal and budgetary discipline	Austria Belgium Denmark Finland France Germany Netherlands Sweden United Kingdom
B	Moderate competitiveness	4.37 Medium national competitiveness 44.50 Low public debt 5.70 Medium level of fiscal and budgetary discipline	Bulgaria Czech Republic Cyprus

			Estonia Hungary Latvia Lithuania Malta Poland Romania Slovakia Slovenia Spain
<b>C</b>	Low competitiveness	4.37 Medium national competitiveness 112.80 Medium public debt 14.10 Low level of fiscal and budgetary discipline	Greece Ireland Italy Portugal

*(Source: Authors' own computations)*

Table 3 represents a descriptive analysis of the three clusters, as an intermediate phase transitioning to the second stage of the overall analysis.

**Table 3: Descriptive Statistics**

Two Step Cluster Number		N	Minimum	Maximum	Mean	Std. Deviation
<b>A</b>	pd2010	10	18.4	96.8	62.690	24.4761
	gci2010	10	5.05	5.56	5.2560	0.16781
	cds2010	9	22.43	222.09	80.9056	60.00883
	bd2010	10	-10.3	0.2	-4.130	2.9974
	Valid N	9				
<b>B</b>	pd2010	13	6.6	80.2	44.469	20.4150
	gci2010	13	4.13	4.61	4.3715	0.16395
	cds2010	11	76.74	378.22	205.1527	112.08149
	bd2010	13	-9.3	0.2	-5.662	2.5893
	Valid N	11				
<b>C</b>	pd2010	4	93.0	142.8	112.750	23.1375
	gci2010	4	3.99	4.74	4.3700	0.30627
	cds2010	4	500.97	1010.00	682.0675	224.43729
	bd2010	4	-31.3	-4.6	-14.075	11.7874
	Valid N	4				

*(Source: Authors' own computations)*

**2.2. Factor Analysis**

Further, the study aims to achieve a factor analysis using the Principal Component Analysis as the extraction method, and the Varimax method as the rotation method, while performing a Kaiser normalization for each of the three clusters previously resulted.

**Factor Analysis of Cluster A**

The results obtained from performing factor analysis on cluster A are presented in the following tables (4 and 5):

**Table 4: Total Variance Explained for Cluster A**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.917	72.927	72.927	2.917	72.927	72.927	2.302	57.547	57.547
2	0.750	18.753	91.680	0.750	18.753	91.680	1.365	34.133	91.680
3	0.271	6.779	98.458						
4	0.062	1.542	100.000						

(Source: Authors' own computations)

**Table 5: Rotated Component Matrix for Cluster A**

	Component	
	$\rho$	$\phi$
pd2010	0.765	-0.531
gci2010	-0.846	0.360
cds2010	0.981	-0.073
bd2010	-0.200	0.974

(Source: Authors' own computations)

It can be noticed that cluster A is influenced by two main factors: country risk and budgetary and fiscal discipline. In the current economic situation, a country risk rate of 57.47% influences the competitiveness of segment, while the fiscal discipline influences at a rate of 34.13%.

$$F_A = -0.57547 \times \rho_A(\text{pd,gci,cds}) + 0.34133 \times \phi_A(\text{bd}) + \varepsilon_A$$

where F – Cluster Competitiveness,  $\rho$  – Country Risk,  $\phi$  – Budgetary and Fiscal Discipline.



Factor Analysis of Cluster B

**Table 6: Total Variance Explained for Cluster B**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.999	49.977	49.977	1.999	49.977	49.977	1.759	43.982	43.982
2	1.056	26.405	76.382	1.056	26.405	76.382	1.296	32.401	76.382
3	0.713	17.816	94.199						
4	0.232	5.801	100.000						

(Source: Authors' own computations)

**Table 7: Rotated Component Matrix for Cluster B**

	Component	
	$\rho$	$\phi$
pd2010	0.939	0.054
gci2010	0.008	0.958
cds2010	0.553	-0.581
bd2010	-0.757	0.195

(Source: Authors' own computations)

Tables 5 and 6 show that cluster B is influenced by two main factors: country risk and fiscal and budgetary discipline. In the current economic situation, a country risk rate of 43.98% influences the competitiveness of segment, while the fiscal discipline influences at of 32.40%.

$$F_B = 0.43982 \times \rho_B(\text{gci}, \text{cgs}) - 0.32401 \times \phi_B(\text{pd}, \text{bd}) + \varepsilon_B$$

where F – Cluster Competitiveness,  $\rho$  – Country Risk,  $\phi$  – Fiscal and Budgetary Discipline.

Factor Analysis of Cluster C

**Table 8: Total Variance Explained for Cluster C**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.944	73.600	73.600	2.944	73.600	73.600	2.377	59.425	59.425
2	0.951	23.783	97.383	0.951	23.783	97.383	1.518	37.959	97.383
3	0.105	2.617	100.000						
4	-1.884E-16	-4.710E-15	100.000						

(Source: Authors' own computations)

**Table 9: Rotated Component Matrix for Cluster C**

	Component	
	ρ	φ
pd2010	0.917	0.334
gci2010	-0.726	-0.651
cds2010	0.999	0.014
bd2010	0.107	0.992

(Source: Authors' own computations)

Regarding cluster C, tables 7 and 8 present as two main influencers country risk and fiscal and budgetary discipline. In the current economic situation, a country risk rate of 59.43% influences the competitiveness of the segment, while the fiscal discipline influences at of 37.96%.

$$F_C = -0.59425 \times \rho_C(\text{pd, gci, cds}) + 0.37959 \times \varphi_C(\text{bd}) + \varepsilon_C$$

where F – Cluster Competitiveness, ρ – Country Risk, φ – Fiscal Discipline.

**3. Results and Conclusions**

In the present study, the following methods were used: Two-Step Cluster (for the EU segmentation), and Factor Analysis for each of the segments resulted, with Principal Component Analysis as the extraction method and Varimax as the rotation method.

Thus, in the process of segmentation using Two-Step Cluster, the following situation has been identified at EU level:

**Table 10: Clusters of EU countries**

<b>Country</b>	<b>gci2010</b>	<b>pd2010</b>	<b>bd2010</b>	<b>Characterization</b>
Sweden	5.56	39.8	0.2	<b>A - High competitiveness</b>
Finland	5.37	48.4	-2.5	
Netherlands	5.33	62.7	-5.1	
Denmark	5.32	43.6	-2.6	
Germany	5.39	83.2	-4.3	
United Kingdom	5.25	80.0	-10.3	
France	5.13	81.7	-7.1	
Austria	5.09	72.3	-4.4	
	<b>5.26</b>	<b>62.7</b>	<b>-4.10</b>	
Belgium	5.07	96.8	-4.1	
Luxembourg	5.05	18.4	-1.1	
Estonia	4.61	6.6	0.2	
Czech Republic	4.57	38.5	-4.8	
Poland	4.51	55.0	-7.8	
Cyprus	4.50	60.8	-5.3	
Spain	4.49	60.1	-9.3	
Slovenia	4.42	38.0	-5.8	
Lithuania	4.38	38.2	-7.0	
Malta	4.34	68.0	-3.6	
Hungary	4.33	80.2	-4.2	
Slovakia	4.25	41.0	-7.7	
Romania	4.16	30.8	-6.9	
Latvia	4.14	44.7	-8.3	
Bulgaria	4.13	16.2	-3.1	
	<b>4.37</b>	<b>44.50</b>	<b>-5.70</b>	
Ireland	4.74	96.2	-31.3	<b>C - Low competitiveness</b>
Portugal	4.38	93.0	-9.8	
Italy	4.37	119.0	-4.6	
Greece	3.99	142.8	-10.6	
	<b>4.37</b>	<b>112.8</b>	<b>-14.10</b>	

*(Source: Eurostat, World Economic Forum)*

Using factor analysis for each of three clusters resulted (A, B, and C), we obtained the following situation:

$$F_A = -0.57547 \times \rho_A(pd, gci, cds) + 0.34133 \times \phi_A(bd) + \epsilon_A$$

$$F_B = 0.43982 \times p_B(\text{gci}, \text{cds}) - 0.32401 \times \varphi_B(\text{pd}, \text{bd}) + \varepsilon_B$$

$$F_C = -0.59425 \times p_C(\text{pd}, \text{gci}, \text{cds}) + 0.37959 \times \varphi_C(\text{bd}) + \varepsilon_C$$

where F – Cluster Competitiveness, p – Country Risk,  $\varphi$  – Fiscal Discipline.

The current level of competitiveness of the European community is presents distinct characteristics for clusters A and C compared with segment B. Thus, the moderate level of competitiveness that characterizes segment B is a direct relationship with country risk and an inverse relationship with fiscal discipline (influenced by public debt and budget deficit). In contrast, the competitiveness of segments A and C presents itself in an inverse relationship with country risk and in a direct relationship with fiscal discipline.

Cluster's A high competitiveness is determined by a lower level of country risk and a greater level of fiscal discipline. Also, the reduced competitiveness of this segment is due to a higher country risk (mainly influenced by a high share of debt public in GDP) and a lower degree of fiscal discipline, as a result of a poor policy of balancing the budget.

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