

COMPARATIVE ANALYSIS OF NATIONAL AND SECTORIAL LEVELS OF COMPETITIVENESS

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Abstract— This article is meant to approach national and sectorial competitiveness aspects, investigating the level of correlation between national competitiveness and industrial competitiveness. The introduction refers to the importance and the main objective of this paper. The second part presents the working methodology. The third part of the article presents the outcome and the results obtained, for Romania and other four EU reference member states. The last part of the article is meant to outline the main conclusions.

Keywords— national competitiveness, economic competitiveness, industrial competitiveness, indicators

I. INTRODUCTION

Competitiveness is the key concept of the present economic theories and in the same time, a main concern at global, national, regional and organisational level. Competitiveness is an important, usually associated with sustainable development with over 240 years of history. Its importance grew continuously, at national and industrial level, and famous researchers, economists and prestigious institutions had contributed to the theoretical and practical development of the concept [1-11]. According to the Organization for Economic Co-operation and Development (OECD), competitiveness is used as „a form of measurement for a country's advantages and disadvantages in placing their products on international markets” [12]. A certain comprehensive theory, centered on national competitiveness was outlined by Cho and Moon [13], and another theory called „Competitiveness Cube” was issued by Garelli [9]. Garelli's theory regarding national competitiveness and firm competitiveness focuses on International Institute for Management Development (IMD) competitiveness evaluations.

National competitiveness implies all important aspects, for example according to IMD procedures [11], national competitiveness evaluation is structured on four pillars: economic performance, governmental efficiency, business environment efficiency and infrastructure. The PhD thesis justifies the opportunity of applying the World Economic Forum (WEF) procedure, for evaluating the national competitiveness evaluation, according to which it uses a global competitiveness

indicator (GCI), as a result of three factors that influence competitiveness (IAC), structured on 12 indicators for all the competitiveness pillars (IPC), based on 110 primary indicators.

The PhD thesis [14] refers, studies and emphasizes the economic, industrial and energetic competitiveness, a subject with relative low reference in the economic literature compared to the subject of regional and national competitiveness. In the recent competitiveness theories, like Porter's „competitiveness diamante” [8] and the „nine-factors model” [13], one of the economic sectors – industry – figures as an important competitiveness factor. Economic sectors competitiveness is essential for the national competitiveness. All though, the structuring and evaluating approaches (WEF, IMD) of the national competitiveness does not reflect explicitly the economic sectors competitiveness. The PhD research [14], proposes a set of 14 simple indicators, 4 aggregated indicators and a global indicator for describing the sectorial competitiveness, and also sets out the evaluating model and presents the results obtained.

This article continues the author's previous concerns [14-16] regarding competitiveness, and determines to analyze the recent evolution of Romania's and other four member states competitiveness using a two-level approach: national and industrial. For the sectorial approach we include the energetic sub-sector, using four indicators that reflect the energetic competitiveness in the sustainable development conditions [14].

II. WORKING METHODOLOGY

For describing the national competitiveness we use in this article the WEF model and some of the results published by this institution. This article also uses the values of the following indicators: global competitiveness indicator (GCI), aggregated indicator for „factor based economy” (IAC-F) and the „infrastructure” pillar indicator (IPC-I). Both of the indicators were chosen because we consider that out of the IAC and IPC indicators, comprised in the GCR, were directly influenced by the industrial competitiveness. The values of indicators (GCI, IAC-F and IPC-I) are taken from the annual WEF reports (GCR), for the period

(2006/07÷2011/12). As the value of the indicator is higher, the general (GCI) competitiveness level is higher or the characteristic form (IAC-F; IPC-I) is higher.

The industrial competitiveness level will be established based on the global competitiveness indicator value in the conditions of sustainable development (IG-I), defined and evaluated in [14], for the period (2006-2011), data published by Eurostat and NSI not being sufficient for the calculus of IG-I after 2011. If the industrial competitiveness level has a direct influence on the national competitiveness level, than all the conditions are satisfied:

C_1 – as IG-I has higher values, the indicators with reference to national competitiveness (GCI, IAC-F, IPC-I) have higher values;

C_2 – the variations of the indicators that refer to the national competitiveness is the same with the variation of IG-I.

For verifying C_1 , we will proceed to the graphic representation of the time evolution for indicators IG-I and GCI, IAC-F and IPC-I and we will classify the five chosen countries. For every country and indicator we will calculate the medium value for this analysis:

$$Xm = \frac{\sum_{t=1}^n x(t)}{n} \quad (1)$$

where,

$$t = \overline{2006 \div 2011}$$

$$x = \{IG-I; GCI; IAC-F; IPC-I\}$$

For verifying condition C_2 we will calculate the relative variations percentage values for the indicators:

$$\Delta x_r = \frac{x(t) - x(t_0)}{x(t_0)} \cdot 100[\%] \quad (2)$$

where,

$x(t)$ – indicator value for the period „t”;

$x(t_0)$ – indicator value in the year of reference ($t_0=2006$).

III. RESULTS

The 4 indicators values for each of the five analysed member states, based on GCR and research [14] are presented in Table I and II.

For all the selected five member states we can notice that the national competitiveness indicators register an oscillating evolution for the analysed period. The case of Romania presents an increase for all the three indicators, respectively a slight increase of GCI and IAC-F and a strong increase of the value of IPC-I.

The values of competitiveness indicators for three of the analysed member states – Germany (D), France (FR) and Hungary (HU) – indicate a decrease of GCI, IPC-I for Germany and of the other two indicators (IPC-I, IAC-F) for France.

TABLE I
NATIONAL COMPETITIVENESS INDICATORS VALUES

M	IN	2006/	2007/	2008/	2009/	2010/	2011/	[vm]
S	D	2007	2008	2009	2010	2011	2012	
		[1]	[2]	[3]	[4]	[5]	[6]	
R	GCI	4,02	3,97	4,10	4,11	4,16	4,08	4,07
	IAC	4,19	4,07	4,15	4,10	4,36	4,28	4,19
	-F							
	IPC	3,05	2,57	2,56	2,67	3,44	3,37	2,94
O	-I							
	GCI	5,58	5,51	5,46	5,37	5,39	5,41	5,45
	IAC	5,75	5,82	5,96	5,85	5,89	5,83	5,85
	-F							
D	IPC	6,51	6,65	6,65	6,59	6,43	6,35	6,53
	-I							
	GCI	5,31	5,18	5,22	5,13	5,13	5,14	5,19
	IAC	5,66	5,70	5,76	5,60	5,67	5,57	5,66
F	-F							
	IPC	6,25	6,46	6,54	6,52	6,24	6,30	6,39
	-I							
	GCI	4,52	4,35	4,22	4,22	4,33	4,36	4,33
H	IAC	4,64	4,54	4,69	4,48	4,65	4,72	4,62
	-F							
	IPC	4,05	3,93	3,85	4,04	4,36	4,52	4,12
	-I							
U	GCI	3,96	3,93	4,03	4,02	4,13	4,19	4,04
	IAC	4,50	4,22	4,20	4,13	4,43	4,46	4,32
	-F							
	IPC	3,41	2,91	2,79	2,88	3,57	3,62	3,63
B	-I							
	GCI	3,96	3,93	4,03	4,02	4,13	4,19	4,04
	IAC	4,50	4,22	4,20	4,13	4,43	4,46	4,32
	-F							
G	IPC	3,41	2,91	2,79	2,88	3,57	3,62	3,63
	-I							

Source: Author's calculations based on data available in GCR, WEF for the period (2006/2007÷2011/2012).

The other indicators register an increase in the analysed period for Germany and Hungary. In the case of Bulgaria (BG), the analysed indicators register increasing values for GCI and IPC-I and decreasing values for IAC-F.

TABLE II
IG-I VALUES FOR THE SELECTED MEMBER STATES

MS	2006	2007	2008	2009	2010	2011	V
	[1]	[2]	[3]	[4]	[5]	[6]	M
RO	0,16	0,16	0,17	0,16	0,15	0,15	0,1
D	0,88	0,88	0,87	0,85	0,87	0,86	0,8
FR	0,79	0,79	0,7	0,78	0,77	0,77	0,7
HU	0,3	0,3	0,28	0,29	0,31	0,3	0,3
BU	0,08	0,14	0,14	0,11	0,18	0,12	0,1

Source: Author's calculations based on data available in [17-21].

The recent evolution of IG-I reflects Romania's (RO) position compared to the the other member states. Romania is obviously outran by Germany and France at a considerable difference. Compared to Hungary, Romania is at a relatively small difference, that could be easily recovered throughout implementing measures for increasing the global value of our economy. Compared to Bulgaria, Romania has a better position for the entire analysed period, except 2010. For Germany and France, IG-I registers a slight decreasing trend, and for Romania and Hungary the value of the indicator is constant.

The above tables present the medium values of the indicators. The figures 1÷4 consist in the graphic representation of the evolution of three indicators that make reference to the national, and the evolution of the global indicator of industrial competitiveness

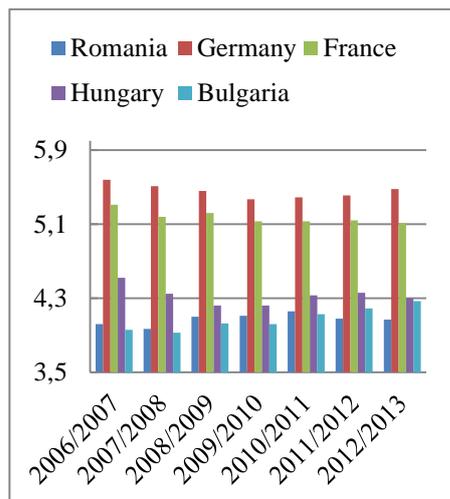


Fig 1. GCI Evolution of the selected member states, for the period analysed

Source: Author's representation, based on data available in GCR, WEF, for the period (2006/2007÷2012/2013)

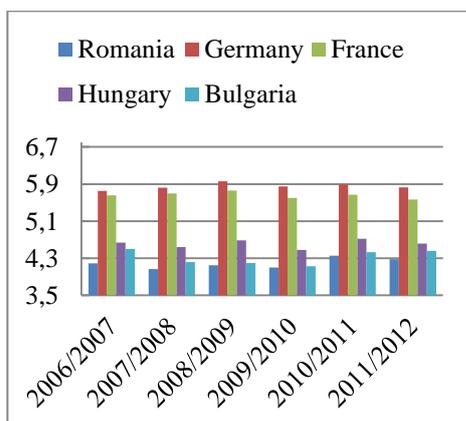


Fig 2. IAC-F evolution for the selected member states, in the period analysed

Source: Author's representation, based on data available in GCR, WEF, for the period (2006/2007÷2012/2013)

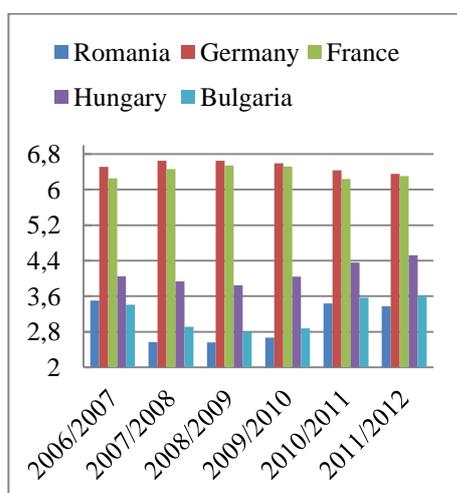


Fig 3: IPC-I evolution for the selected member states in the period analysed

Source: Author's representation, based on data available in GCR, WEF, for the period (2006/2007÷2012/2013)

Out of the graphic representations presented in this paper, we can determine the classification of the analysed member states, under the aspect of IG-I and that is also reflected in the case of GCI and IAC-F, and also in the case of IPC-I, whose values show a changing position between Romania and Bulgaria.

The next table presents the values of the indicators (Δx_r) during the analysed period, with reference to all 4 indicators.

TABLE III
RELATIVE PERCENTAGE VARIATIONS OF THE COMPETITIVENESS INDICATORS [%]

Anul	2006	2007	2008	2009	2010	2011		
Nivelul indicatorului	2007	2008	2009	2010	2011	2012		
	[1]	[2]	[3]	[4]	[5]	[6]		
Germania	ΔGCI_r	0	-1,25	-2,15	-3,76	-3	-3,04	
a	$\Delta(IAC-F)_r$	0	1,21	3,65	1,73	2,43	1,39	
	$\Delta(IPC-I)_r$	0	2,15	2,15	1,22	-1,22	-2,45	
	$\Delta(IG-I)_r$	0	0	-1,13	-3,4	-1,13	-2,27	
Franța	ΔGCI_r	0	-2,44	-1,69	-3,38	-3,38	-3,2	
	$\Delta(IAC-F)_r$	0	0,7	1,76	-1,06	0,17	-1,59	
	$\Delta(IPC-I)_r$	0	3,36	4,64	4,32	-0,16	0,8	
	$\Delta(IG-I)_r$	0	0	-	-1,26	-2,53	-2,53	
				11,3				
				9				
	România	ΔGCI_r	0	-1,25	1,99	2,23	3,48	1,49
		$\Delta(IAC-F)_r$	0	-2,86	-0,95	-2,14	4,05	2,14
$\Delta(IPC-I)_r$		0	-	-	-	12,7	10,4	
			15,7	16,0	12,4	8	9	
			3	6	5			
	$\Delta(IG-I)_r$	0	0	6,25	0	-6,25	-6,25	
	Ungaria	ΔGCI_r	0	-3,76	-6,63	-6,63	-4,2	-3,53
		$\Delta(IAC-F)_r$	0	-2,15	1,07	-3,44	0,21	1,72
$\Delta(IPC-I)_r$		0	-2,96	-4,93	-0,24	7,65	11,6	
$\Delta(IG-I)_r$		0	0	-6,66	-3,33	3,33	0	
Bulgaria	ΔGCI_r	0	-0,75	1,76	1,51	4,29	5,8	
	$\Delta(IAC-F)_r$	0	-6,22	-6,66	-8,22	-1,55	-0,88	
	$\Delta(IPC-I)_r$	0	-	-	-	4,69	6,15	
			14,6	18,1	15,5			
			6	8	4			
	$\Delta(IG-I)_r$	0	75	75	37,5	125	50	

Source: Author's calculation based on data available in table I and II

We can notice that for France and Germany the values of the indicators (GCI and IG-I) registered a decreasing trend over the analysed period while the values of the

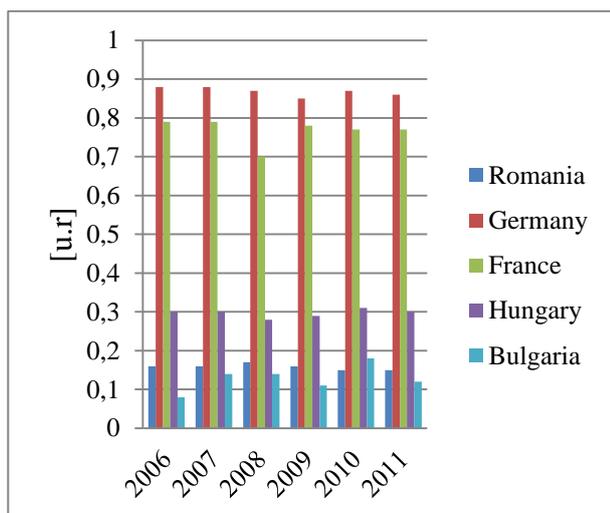


Fig 4. IG-I evolution for the selected member states in the period analysed

Source: Author's calculations based on data available in [17-19].

other two indicators are oscillating. In the case of Romania, we can notice an increasing trend for GCI, compared to the reference year, and an oscillating variation of the other indicators. In the case of Hungary, most of the variations of the 4 indicators are negative, except the last two years of the analysed period, for indicators IAC-F, IPC-I and IG-I. In the case of Bulgaria, we can notice an important increase of GCI, while the values of the other two indicators are negative.

IV. CONCLUSIONS

The evaluation results reflect a certain influence of the industrial competitiveness level on the national competitiveness level, under the global indicator and under the „factor based economy” indicator and the „infrastructure” pillar. In the case of Germany, France and Bulgaria, the impact of the evolution of the industrial competitiveness level partially manifests over the global competitiveness level and manifests less over the levels of national competitiveness (for Germany and France). In the case of Romania, we could not identify a correlation between the industrial competitiveness evolution and the other types of analysed competitiveness levels. In the case of Hungary, the results reflect the best timing, between the industrial competitiveness and the three levels of national competitiveness levels analysed, which

during the analysed period of time registered a negative evolution.

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