
The Interaction European Union– Black Sea Region through The Game – Theoretical Lenses

Livia Rusu ¹

The purpose of this article is to analyze from the perspective of the game-theoretical lenses the most adequate way(s) to interact for two actors: the European Union and the Black Sea region (seen as unitary player and at individual states' level). An important element lies in the fact that the region is not homogenous, the countries demonstrating different levels of economic development. The pillars where a country needs to undertake specific measures, in order to determine progress for its economic development, are highlighted in the Global Competitiveness Report. These pillars include, ultimately, the various domains of interaction and form a structure for the international cooperation. The strategy of cooperation that an international actor chooses must bring an advantage (or a concrete gain value) and basically ensure its own economic growth and increased competitiveness with pre-requisites allowing the advancement to a superior economic development stage.

Key words: pillars of international/regional cooperation, weight, strategies of cooperation, gain value, degree of openness towards cooperation

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¹ **Livia Rusu**, PhD fellow at the Institute of Doctoral Studies within the Academy of Economic Studies in Bucharest. Mail address: livia_rusu@hotmail.com

I. Introduction

The changes in the European geo-political landscape, derived from the enlargement process, imposed a different approach towards the new Eastern neighbourhood. And no one can argue that the European Union did not react to the need to develop a relationship with the Black Sea region. Indeed, various policies and instruments were designed for calibrating the link between the EU and its newest neighbouring region. At a speedy counting, one could enumerate the following initiatives: European Neighbourhood Policy with its newest Eastern Partnership and the Black Sea Synergy. All meant to interact, at various levels and dynamics, with a heterogeneous region composed of countries with different status: EU member states (Bulgaria, Greece, Romania), European Neighbourhood Policy countries (Armenia, Azerbaijan, Georgia, Republic of Moldova, Ukraine), an EU candidate (Turkey) and Russian Federation. The focus in this study will be placed on a region composed from the above-mentioned ten states.

Beyond any possible analysis on achievements accomplished so far, the questions marks are: Was it suitable such a framework of relationships? And, most important, how should be the future interaction foreseen: individually projected for each country or integrated, for the whole region?

II. Interaction domains

Through the perspective of economic links, the most relevant ties of the Black Sea region's states engage either the European Union, either the region itself. A more profound look reveals that the domains of interaction Black Sea region – European Union or even intra-region consist in precisely the sectors where the economies of the countries

in the region have to be consolidated in order to ensure the premises for development needed to allow the progress towards a superior level in their economic evolution.

In the same time, the measures undertaken in order to obtain results in the respective sectors register different levels of intensity. That means a higher attention paid to some pillars, depending on the stage of development and each state's specific necessities. The consequence lies in different weight or importance given to the pillars of cooperation within the comprehensive framework of the entire interaction. Basically, a structure of regional or international cooperation can be defined, composed by pillars of cooperation with various weights in accordance with the economic development stage of each country.

The elements (and, in some cases, the conditionalities) included in the EU framework of cooperation with the states of the region represent domains where there would be necessary some priority progresses in order to create the premises allowing the advancement to a superior phase in the economic development of the respective countries. Moreover, the cooperation framework contains sectors or pillars meant to prepare the foundation for economic development in the attempt of achieving a position situated in an advanced level.

For more clarity, the indicators of The Global Competitiveness Report 2011-2012 could be used as reference. In the Report, 142 world economies are classified in 5 categories: stage 1 (factor-driven economies), transition from stage 1 to stage 2, stage 2 (efficiency-driven economies), transition from stage 2 to stage 3, and, finally, stage 3 (innovation-driven economies). The 12 pillars that influence in various degrees the efforts to improve the competitiveness and the

stage of economic development refer to: (1) institutions; (2) infrastructure; (3) macroeconomic environment; (4) health and primary education; (5) higher education and training; (6) goods market efficiency; (7) labor market efficiency; (8) financial market development; (9) technological readiness; (10) market size; (11) business sophistication; (12) innovation. The first four pillars constitute the key-factors for the factor-driven economies and form the sub-index of basic requirements, the pillars 5-10 represent the key-factors for efficiency-driven economies and generate the efficiency enhancer sub-index, while the 11-12 pillars are key-factors for innovation-driven economies and compose the innovation and sophistication sub-index.

Table 1

**The development stage for each Black Sea region country,
rank (and score) in the global competitiveness classification
and situation for each sub-index**

Country	OVERALL INDEX		SUB-INDEXES					
			Basic requirements		Efficiency enhancers		Innovation and sophistication	
	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Azerbaijan	55	4,31	59	4,68	77	3,99	67	3,51
Turkey	59	4,28	64	4,61	52	4,22	58	3,62
Russian Federation	66	4,21	63	4,61	55	4,19	97	3,24
Bulgaria	74	4,16	74	4,46	59	4,10	96	3,24
Romania	77	4,08	89	4,28	62	4,09	99	3,20
Ukraine	82	4,00	98	4,18	74	4,00	93	3,29
Georgia	88	3,95	86	4,32	89	3,74	117	3,01
Greece	90	3,92	80	4,36	65	4,06	81	3,39
Armenia	92	3,89	94	4,24	91	3,73	110	3,09
R. Moldova	93	3,89	102	4,13	103	3,62	127	2,86

Source of data: The Global Competitiveness Report 2011-2012, World Economic Forum 2011

Therefore, for the Republic of Moldova, the main parameters in the dialogue with the European Union are focused in particular on ensuring a well-functioning of public institutions, infrastructure development and preservation of a stable macroeconomic environment. Finalizing the reforms in these domains would allow the

upgrade of the economy, from the present status of factor-driven economy to an economy in transition from stage 1 to stage 2.

The relationship of the EU with Armenia, Azerbaijan, Georgia and Ukraine underline, in fact, the need to fulfill the conditions necessary to advance from the actual status, as economies in transition from stage 1 to stage 2, to efficiency-driven economies. In concrete terms, this would involve a strengthening of the basic requirements factors for the economy, as well as progresses related to the efficiency enhancers sectors.

Bulgaria and Romania, as efficiency-driven economies, have to concentrate on meeting the premises for the advancement from stage 2 to stage 3, seeking the qualification of innovation-driven economies. That supposes a good and continuous functioning of the first 10 pillars and there should be an addition of specific elements of innovation and sophistication.

Russian Federation and Turkey have been promoted in 2011 in the category of countries with economies in transition from stage 2 to stage 3. In order to obtain progresses that would allow the accession to the next level, for the two countries it would be useful a focus on more sophisticated production processes and on deeper innovation qualities.

Greece, as innovation-driven economy (like EU as a whole), needs to stick to the rules of the European and other international fora in order not only to maintain, but also to advance in its own development process, including in the global competitiveness and productivity classification.

Achieving the common objectives emerged from the dialogue with the European Union has the potential to generate supplementary performances. On their turn, the progresses are meant to improve the sub-indexes of the Global Competitiveness Index, ensuring the accession to the upper phases of economic development. Therefore, in order to attain the maximum level of economic development for the entire region taken as a whole (innovation-driven economies), one should take into account the need to register progresses in all key-factors or sectors.

The possible domains or sectors of cooperation intra-region or between EU and the countries in the region or with the Black Sea region as a whole are, theoretically, the sectors representing the key-factors able to ensure the economic development and the stability for the entire area. So, they could be considered as references or parameters in granting scores in the cooperation level between the EU and each of individual Black Sea region country or the region as a whole. In these cases, taken into account the different importance of key-factors for the development of the respective countries, in evaluating the parameters of cooperation one could grant various weights for each factor. In other words, all the pillars matter to a certain extent for all economies, but they affect the progress of an economy in different ways: the best way to improve productivity and competitiveness (and, as consequence, reach higher level of economic development) for R. of Moldova is not the same as the best way for Greece to do so. The explanation resides in the fact that they are in different stages of development.

In granting weights for the parameters or domains of cooperation, the appropriate start lies in the weights allocated in the Global

Competitiveness Report to the three sub-indexes (basic requirements, economy efficiency enhancer and sophistication and innovation) in the context of each stage of development.

Table 2
Sub-indexes weights for stages of development

Sub-Indexes	DEVELOPMENT STAGES				
	Stage 1 Factor-driven economies	Transition from stage 1 to stage 2 economies	Stage 2 Efficiency – driven economies	Transition from stage 2 to stage 3 economies	Stage 3 Innovation – driven economies
Basic requirements	60%	40-60%	40%	20-40%	20%
Efficiency enhancers	35%	35-50%	50%	50%	50%
Innovation & sophistication	5%	5-10%	10%	10-30%	30%

Source of data: The Global Competitiveness Report 2011-2012, World Economic Forum 2011

The table reflects the weight of each group of factors in the stages of development. These key-factors could be considered as representing wide interaction domains, to which different weights could be conferred. The weights attached indicate the degree of importance for the economic development (a state is interested and acts for the

improvement of its competitiveness and productivity in order to achieve a higher, superior level of economic development). Subsequently, the weights are relevant for the interaction with the European Union (or within the international cooperation, where the objective is the same – attaining economic growth and ensuring prosperity for citizens). The following pillars are to be considered as part of the structure (possible pyramid) of the international or regional cooperation:

- ❖ Politico-institutional and basic economy pillar (P1) with domains such as political dialogue, democratization, good governance and stability, including justice and home affairs, good neighbourly relations, infrastructure, macroeconomic environment, health and primary education.
- ❖ Consolidating economic efficiency and economic integration pillar (P2) with sectors as higher education and training, financial market, labor market, migration, technological readiness, agriculture, environment, energy/energy security.
- ❖ Modernization and innovation pillar (P3) with domains related to business sophistication and innovation/research.

All pillars are interdependent, because without the possibility to access the fundament or the base and without the “security and safety” given by a proper foundation an economy cannot pass to the superior level.

Particularizing for each stage of economic development of the countries in question, the weights from the total cooperation granted to the pillars of cooperation European Union-Black Sea region countries (considered as individual actors) need to take into account the key-factors of progress. Therefore, they will match the weights composing the Global Competitiveness Index. It also has to be considered the total cooperation that would imply the ideal hypothesis

of a full and efficient interaction in all domains between the individual actor states from the Black Sea region and the European Union.

Table 3
Pillars weights in the structure of international/regional cooperation in accordance with the stages of development

PILLARS	WEIGHTS (%) IN ACCORDANCE WITH THE STAGES OF DEVELOPMENT				
	Stage 1 Factor-driven Republic of Moldova	Transition from stage 1 to stage 2 Armenia, Azerbaijan , Georgia, Ukraine	Stage 2 Efficiency – driven: Bulgaria, Romania Black Sea region	Transition from stage 2 to stage 3 Russian Federation Turkey	Stage 3 Innovation – driven Greece EU
P1	60%	40-60%	40%	20-40%	20%
P2	35%	35-50%	50%	50%	50%
P3	5%	5-10%	10%	10-30%	30%
Total cooperation	100%	100%	100%	100%	100%

The table includes, therefore, the weights for each economy from the Black Sea region granted to the pillars of cooperation (that contain the relevant domains and sectors of interaction) with the European Union. For a further analyses, the ideal case where the Black Sea region as a whole (and unique actor) deals with the Union needs to be considered. Calculating the GDP/capita at the region level (year 2010) and comparing the average value of the global competitiveness index

(4,06), as well as the average value of the 12 indicators and the three sub-indexes with the values calculated for other economies, it can be noticed that the results are comparable with the values for other economies efficiency-driven. In this way, the Black Sea region as a whole could be judged as presenting a stage of development at the level of an efficiency-driven economy. In the worst case scenario, assuming a wrong argumentation, the hypothesis refers to a Black Sea region as an economy in transition from stage 1 to stage 2.

III. Possible interaction European Union - Black Sea region

Once the pillars containing the domains of international cooperation are identified, it would be interesting to determine the most appropriate cooperation strategies. The actors involved will be considered in two circumstances, through the game-theoretical lenses: the particular case of the region as a whole dealing with the EU; the separate case of each state of the region, each one interacting separately with the EU.

III. 1. Cooperation versus Non-cooperation. The unitary approach case

Applying “Prisoner’s Dilemma” for the situation when two players exist – EU and the Black Sea region as a whole, each player has at its disposal two strategies: Cooperation (C) and Non-cooperation (N). The strategies generate a winning value for each player, the utility function for each chosen strategy being:

- For the first player, European Union:

$$u_1(C,C) = \alpha;$$

$$u_1(C,N) = \gamma;$$

$$u_1(N,C) = \theta;$$

$$u_1(N,N) = \beta.$$

- For the second player, the Black Sea region:

$$u_2(C,C) = \alpha;$$

$$u_2(C,N) = \theta;$$

$$u_2(N,C) = \gamma;$$

$$u_2(N,N) = \beta.$$

The representation of the game is as follows, with the rows and columns indicating the strategies of each player, while the cells of the matrix include the winnings for each player, pending on the chosen strategies:

		The Black Sea region	
		C	N
European Union	C	α, α	γ, θ
	N	θ, γ	β, β

In order to determine the possible values for each actor's winning (EU and the Black Sea region as a whole), table 3 is useful with the weights of the cooperation pillars established by taking into consideration the key-factors or sectors needed for economic development.

Bearing in mind that the economy of the region, as a unique actor, is an efficiency-driven economy, should a strategy of cooperation on all pillars be chosen by the EU, as well as by the region, the advantage of both actors would be 100. That means $\alpha=100$. Should a non-cooperation strategy be chosen also by both actors, than the advantage for the EU and the region would be the smallest possible, $\beta \rightarrow 0$. In case EU chooses a strategy of cooperation only on certain pillars, the region refusing to cooperate in the other fields, the gain of the EU will be $\gamma = \alpha - (p_i + \dots + p_{i-1})$, where i = the set of pillars composing the structure of the international cooperation. Therefore, $\gamma < \alpha$, a winning

value smaller than in the case of the full cooperation for both players. If the region chooses a strategy of cooperation on specific sectors, EU refusing to cooperate, the value for the earning of the region will be $\theta = \alpha - (p_i + \dots + p_{i-1})$, where i = the set of pillars composing the structure of the international cooperation. So $\theta < \alpha$, resulting again a value smaller than in the case of the full interaction for the both players. The graphic representation for the game will be:

		The Black Sea region	
		C	N
European Union	C	100, 100	γ, θ
	N	θ, γ	$\beta \rightarrow 0, \beta \rightarrow 0$

In the case the economy of the region is considered in transition from stage 1 to stage 2, the reasoning is similar, even if the weights of the pillars of cooperation are different. In this phase, the analysis is concentrated on the possibility of opting or not for the alternative of cooperation in the interaction between the two actors.

The conclusion is that for both players, EU and the Black Sea region as a whole, the best possible strategy or the „best response” resides in

the choice of cooperation. Moreover, the more intense and more complex the cooperation is, the bigger the advantages or the earnings for both the EU and the Black Sea region are. Once again, it is important to underline that this constitutes the ideal case when the Black Sea region functions and manifests itself as a unitary ensemble.

III. 2. Multiple strategies and gain value. The degree of openness towards cooperation

Let's see what kind of strategies can every player choose and how much would win from the choice made, starting with the situation of an efficiency-driven economy. The following strategies could be envisaged: S1 = Cooperation on the politico-institutional and basic economy pillar (P1); S2 = Cooperation on the consolidating economic efficiency and economic integration pillar (P2); S3 = Cooperation on the modernization and innovation pillar (P3); S4 = Cooperation on all domains; S5 = Non-cooperation.

In practice, the plausible alternatives are the adoption by one partner of S1 and by the other S1 again, or the adoption of S2 with response S2, or S3 with reaction S3 or S4 with response S4 (or to refuse any of these strategies, meaning to adopt S5). A decisive advancement in adopting a more sophisticated and complex strategy (situated on the upper levels in the pillar structure of cooperation) will reveal that the strategies become at a certain point limited for the Black Sea region. This is due to its heterogeneity and to the existence of the premises that in practice, a collaboration in S3 and S4 without touching upon S1 and S2 (or a combination of S1 and S2 elements), be proven very

difficult. Unless the first steps are finalized, the Black Sea region can engage in perspective in a dialogue on S3 and S4, but on a quite limited manner, because the region does not have the necessary force to sustain the requirements requested by the cooperation on the respective pillars.

The gains for these strategies are:

If EU adopts S1 and the Black Sea region adopts S1, then EU gains stability in its immediate neighborhood and the perspective of an economic framework with attractive policies for investments and improved practices for the business environment. On its turn, the Black Sea region will gain future increased EU investments with a higher interest coming from the EU private and governmental sector. The region will basically have the conditions required to register economic growth and higher competitiveness, as well as to facilitate the cooperation in the subsequent strategies S2, S3, S4. A similar argumentation can be drawn for the decision to adopt the remaining strategies.

In parallel, it is worth to explore the gain in the case EU adopts a combination of strategies, for instance S1 and S2, while the Black Sea region strategy is to answer positively for S1 and S2. The gain generated by the adoption of S2 will add to the gain determined by S1, meaning that the economy of the region will become more functional and will benefit from the advantages given by interconnecting the economic actors, regions and markets. It would also induce a stable macroeconomic environment able to sustain and maintain a good labor force quality. In addition, the EU economic actors will benefit from a developed goods market and a more sophisticated financial

market, with clear regulation and more accessible and diverse financing instruments. Going progressively forward with the reasoning in the process of choosing multiple strategies, it can be noticed that the decision to adopt strategies on several pillars of cooperation leads to an increase in the gain.

And again, it results that a decision in adopting S4 by both partners constitutes the alternative allowing the best gain for players, if they have the conditions necessary to make operational in practice the full cooperation. In other words, the higher the degree of openness towards cooperation is, the greater the rewards for the players.

Concerning the adoption of S5 (Non-cooperation), in theory it is possible any decision taken by the international actors, but they will have to assume the consequences of the respective choice and to prior analyze if they can afford a S5 strategy.

With the purpose to observe the earning of each player generated by the adoption of strategies S1, S2, ..., S5 associated to the pillars of cooperation, there can be established a convention through which utility functions are allocated in order to quantify the result of each interaction decision (from 0 to 5). Obviously, a decision S5 will determine a 0 gain for both players.

In the case of the region as an efficiency-driven economy, a strategy S4 will have as result a benefit of 5 for both players ($1 \times 5 = 5$). For the Black Sea region, a S1 strategy will produce a gain on the first pillar of

interaction, the value of the earning being $0,40 \times 5 = 2$ (using the weight of the first pillar in the total cooperation). A S2 strategy will determine an earning of $0,5 \times 5 = 2,5$, and a S3 strategy will offer a gain of $0,1 \times 5 = 0,5$.

For the European Union, as innovation – driven economy, a strategy of international cooperation on domains pertaining to S1 will induce a benefit of $0,2 \times 5 = 1$, a strategy S2 will determine a gain of $0,5 \times 5 = 2,5$, and a strategy S3 will offer a gain of $0,3 \times 5 = 1,5$.

It can be noticed that the adoption of a strategy S1 should rather be in the interest of the Black Sea region (wins 2) than in the EU's interest (wins 1). The benefit is equal (2,5) when both choose S2, while a strategy S3 benefits more for the EU (wins 1,5) than the Black Sea region (wins 0,5), besides the latter not being able to display the premises to sustain a full cooperation on the modernization and innovation pillar. The maximum gain (5) will be generated in the case of a full cooperation if the conditions are met in practice.

If a combination of S1 and S2 is adopted than the Black Sea region wins 4,5 and EU wins 3,5. None of the combinations of two strategies S1, ..., S3 does not generate a higher earning than 4,5, so the situation of possible „best response” consists in the combination of S1 and S2 strategies (cooperation on the politico-institutional and basic economy pillar and on the consolidating economic efficiency and economic integration pillar).

Also, another valid conclusion could be drawn: there is a possibility of a gradual choice of amplifying the cooperation on S3 strategies (modernization and innovation), pending on the level of development

achieved and the necessities posed by the economic growth and the competitiveness.

For the situation when the Black Sea region as a whole is considered a transition economy from stage 1 to stage 2, there could be determined the earnings taking into account the weights allocated for the pillars of cooperation for these economies.

Clearly, a S4 strategy will generate a benefit of 5 for both players, if the necessary conditions are met. A strategy S1 will produce for the Black Sea region an earning on the first pillar of interaction with the value ranging from $0,40 \times 5 = 2$ to $0,60 \times 5 = 3$. A strategy S2 will generate a gain between $0,35 \times 5 = 1,75$ and $0,50 \times 5 = 2,5$, while a strategy S3 will offer a gain of $0,05 \times 5 = 0,25$ until $0,1 \times 5 = 0,5$. As a consequence, the biggest benefit is a strategy S1, with domains of interaction on the politico-institutional and basic economy pillar (earning between 2 and 3). The “income” for EU is the same: cooperation on S1 domains brings a benefit of $0,2 \times 5 = 1$, S2 determines a gain of $0,5 \times 5 = 2,5$, and a strategy S3 offers earnings of $0,3 \times 5 = 1,5$.

Again, choosing S1, as unique strategy, would favor a bigger income for the Black Sea region (interval 2-3) and it would be mainly in the interest of the region. In fact, the gain of 3, conditioned by the adoption and the interaction on all elements of S1 is higher than S2. Choosing a strategy S2 will determine an income for the region of minimum 1,75 and maximum 2,5, while EU has a gain of 2,5. A combination of S1 and S2 generates the highest possible income for the region, a value in the interval 4,5-4,75, representing also a „best

response” strategy. Because not all conditions are met, a strategy S3 or a full S4 are difficult to choose, but the region can envisage a dialogue in the perspective of S3 and S4.

Concerning the win result for the EU in adopting the strategies S1, ..., S3, in practice EU is interested in a stable and secure neighborhood, with the perspective of third parties with economies characterized by opportunities and investments conditions, with good administrations and predictable policies able to ensure internal security and prosperity for the population.

III. 3. The Multi-players case. Individual strategies

The next analysis refers to the case where the EU is a unitary player, while the Black Sea region acts at the level of each state transformed in individual player adopting individual strategies. Eleven players will fill the game: EU, Armenia (AR), Azerbaijan (AZ), Georgia (GE), R. Moldova (MD), Russian Federation (RU), Bulgaria (BG), Romania (RO), Greece (EL) and Turkey (TR).

The result of each decision of cooperation (on the pillars shown in table 3) will be quantified using the convention establishing utility functions in the interval 0 to 5. A strategy S5 (Non-cooperation) will generate an income of 0 for all actors.

The earnings for the EU remain the same as described above.

For the Republic of Moldova, a factor-driven economy, the adoption of a S1 strategy will bring a gain of $0,6 \times 5 = 3$, a strategy S2 will allow an

income of $0,35 \times 5 = 1,75$, while a strategy S3 will provide the lowest gain 0,25.

The interpretation resides in the fact that the R. of Moldova badly needs interaction on the first pillar of international cooperation in order to obtain economic growth and increased competitiveness. If adopts S1 and/or elements of S2, then the income is of 3 and/or part of 1,75). It is difficult for this state to rapidly pass to S2 and S3 or to focus only on S2 and S3. The EU would obtain the highest gain with S2, but it cannot be applied in a singular manner because R. of Moldova cannot sustain such a cooperation and it is even in its interest (gain of 1,75). The „best response” would be S1, with some elements of S2. It would also be possible the presence of the country in a process of dialogue with the EU at the level of the whole region on elements of S3, in order to acknowledge the evolutions and to be prepared to know the measures needed in the future.

For Armenia, Azerbaijan, Georgia and Ukraine, as transition economies from stage 1 to stage 2 (case evocated above), the equation would be: a strategy S1 brings a value from $0,40 \times 5 = 2$ to $0,60 \times 5 = 3$, S2 generates a value between $0,35 \times 5 = 1,75$ and $0,50 \times 5 = 2,5$ and S3 offers a value from $0,05 \times 5 = 0,25$ till $0,1 \times 5 = 0,5$.

In preparing their economies for the efficiency-driven level, Armenia, Azerbaijan, Georgia and Ukraine need to ensure a strong foundation on the politico-institutional pillar (gain of 3), in parallel with the attempt to attract more and more substantial elements of (1,75 to 2,5). As in R. of Moldova's case, these states can participate to an eventual dialogue at regional level with the EU on aspects pertaining to S3. In the same vain, they could be included in an interaction at the whole

region level on S1 and elements of S2. And, for these countries too, S3 and S4 alone are not feasible, as they are not able to face the conditions to cope with this types of cooperation.

Therefore, the „best response” for the bilateral interaction between these states and the EU would be S1 (covering aspects related to institutions and basic economy), with a gradual addition of more and more elements of S2 (consolidating economy and realizing the economic integration).

It would be worth to mention that in the case of EU – individual player (state) interaction, the upgrade to a superior development level and the creation of the premises allowing the adoption of complex strategies, with changes of becoming operational in practice, depends on the each player’s evolution.

For Romania and Bulgaria, the case of efficiency-driven economies highlighted earlier is applicable. „Best response” consists in accepting a full cooperation on S1 and S2 (being also able to take part in a dialogue at the level of the region as a whole on S1 and S2). They already have the fundament for economic development, so they should tend towards an association with external partners on aspects of S3.

Interesting to reveal may prove to be the case of Russian Federation and Turkey, as transition economies from stage 2 to stage 3. The weight of cooperation pillars is different, so the earning is different. Should they choose S1, then the benefit is situated in the interval $0,20 \times 5 = 1$ and $0,40 \times 5 = 2$. A strategy S2 will determine a gain of $0,50 \times 5 = 2,5$ and a strategy S3 will establish a benefit varying from

$0,10 \times 5 = 0,5$ to $0,30 \times 5 = 1,5$. Obviously, S4 will bring the maximum for all actors, but it cannot be fully applied.

The most advantageous strategy for the players and EU is S2 (income of 2,5 for each). The adoption of S1 will generate a gain for Russia and Turkey from 1 to 2, less than in S2 and of only 1 for the EU. Theoretically, that would mean that the states should be more interested than the EU on an interaction on the politico-institutional pillar. The aspect that brings novelty in the case refers to the possibility of earning brought by the adoption of S3, where the income would potentially be of 1,5 for the EU and between 0,5 and 1,5 for Russia and Turkey. Moreover, a full interaction on S3 can exceed the income of 1 brought by S1.

In concrete terms, Russia and Turkey, as economies that seek to become innovation-driven, have as target more and more elements of S3, with potential gain higher than S1. The decision to adopt S3 could ensure an increase in competitiveness and economic development, their placement in the category of transition from stage 2 to stage 3 signifying that they already have the foundation necessary for further economic development. What they could obtain by S3 is better than S1, so the adoption of S1 is less attracting. As a consequence, they are free to decide not to embrace S1. In practice, the situation translates in the need of offering stimulus or, on case-by-case basis, applying some types of “constraints” (interaction on elements regarding the modernization and innovation pillar or other aspects of interest from S2, as long the gain for EU is not affected) in order to determine a dialogue on S1 with the respective states.

Turkey's reaction to the adoption of S1 and S2 falls under Ankara's European accession process. But there is a possibility that once Turkey rapidly advances towards innovation-driven, to register a decrease in the interest to apply EU regulations and standards should she realizes that the progress is achievable without conditional ties. More specific, Turkey could allow itself not to be convinced to make efforts to transform the internal legislation, as long as the stimulus would not exceed the income provided by the accumulation of innovation-driven elements.

The options for Russian Federation reveal a particular interest for S2 and S3, because she already surpassed the development stage where there was an acute need for S1. Russia would be more advantaged to adopt a cooperation as unique actor with the EU (to the minimum earning of $1+2,5=3,5$ it adds from S3 minimum 0,5 or even 1,5) than to interact at the level of the region (as a whole the area cannot access elements of S3). Adopting strategies limited to S1 and partially S2 would not ensure a supplementary advantage for Russia. That explains way Russia is motivated to be persistent on aspects concerning modernization and innovation from S3 or energy from S2, despite of policies pertaining to S1 (that becomes an inferior pillar).

The involvement of Russia in a dialogue on S1 and S2 in Black Sea regional format with the EU can take place if Russia wishes to follow the rhythm in which other states advance in their economic development process and register increased competitiveness.

Greece, as innovation-driven economy, interacts following the rules specific for the communitary framework.

III. 4. Multi-players and bi – and tri-lateral strategies...

The interaction on the first pillars of cooperation should be handier for the states with similar development levels such as R. of Moldova, Armenia, Azerbaijan, Georgia and Ukraine. S1 and S2 strategies would bring a higher income, so they can imagine formulas of cooperation on domains pertaining to these pillars. In addition, they can take into account, with difficulty, elements of S3. Accessing more complex elements of S2 or S3 could prove to be not operational in practice, given the development stage of their economies. R. of Moldova finds itself in the situation of “asking” and “accepting” various formula of support that could help overcoming the factor-driven stage and enable it to sustain along with the others the interaction on more S2 pillar.

The cooperation on S1 and S2 at regional level, all states included, would benefit more for R. of Moldova, Armenia, Azerbaijan, Georgia and Ukraine. Russia, Turkey, Romania, Bulgaria (and Greece) should in fact be interested in aspects of S2 and S3 strategies able to generate supplementary earnings. In theory, it is possible for Russia, Turkey, Romania, Bulgaria (and Greece) to refuse the cooperation or to pose certain conditions to make the interaction be accepted.

Russia, Turkey, Romania, Bulgaria (and Greece) can easily adopt S2 and elements of S3, so, in practice, they could imagine agreements or other bilateral collaboration frameworks, pending on the specific interests (Russia and Turkey or Russia and Greece etc.).

IV. Conclusions

A series of conclusions can be drawn as a result of the above analysis process.

First of all, the conclusions with general character:

- The structure of international/regional cooperation (pyramid) can be valid and applicable at international level.
- When it comes to cooperation between developed states and states with economies in the first two stages of development, in order to ensure a positive economic evolution for the latter ones, it is essential to lay down the foundation formed by the politico-institutional and basic economy pillar.
- The cooperation is possible only in certain sectors, but unless the domains situated at the basis of the pyramid are not deepened, the consequences rely in a lower economic development and productivity, generating reduced global competitiveness.
- The higher the degree of openness towards cooperation is, the higher the earning for players is. Practically, the degree of openness towards cooperation becomes indicator measuring the potential to identify the level of the advantages or benefits from the international cooperation.
- Adopting a Non-cooperation strategy constitutes an attribute for every actor, but any decision has consequences. These observations are also applicable to the EU-Black Sea region relationship.

Conclusions regarding the EU-Black Sea region interaction:

- The bilateral cooperation EU-states from the Black Sea region has to continue in parallel with a multilateral unitary dimension.

- The alternative of interaction on all pillars of cooperation is the advisable option, the ideal case being represented by the region acting in a unified manner.
- The cooperation can be envisaged only in some areas (supposing the capacity exists, but the interest is not expressed), even in the situation where the region acts as a unitary player. The earning will be smaller and, in addition, the foundation to allow for an upgrade in the development stage and in the competitiveness will not be properly established.
- Taking into account the disparities amongst states, it would be useful a mixed cooperation formula: bilateral interaction EU-states from the region (for the non-EU members of course) and multilateral approach. There are possibilities for formulas of “opt-out” from certain dialogues, pending on the gain realized, but the sectors of interaction that need priority are reflected by pillars included in the pyramidal structure of international cooperation.
- There is one actor that supposedly has more to win from a singular interaction with the EU, in comparison with the gain obtained from cooperation with the EU in a unitary framework at the level of the whole region. This actor can certainly favor a singular more complex dialogue with the EU, instead of a less attracting interaction at the regional level.
- With regard to the cooperation in the Black Sea area, the actors have the possibility to conclude agreements in bilateral or trilateral format meant to ensure to interaction granting the premises to help those states to achieve a superior development stage and higher level of global competitiveness, even if this target is attained without the involvement or, in some cases, despite a positive evolution for the other countries.
- Observing the data revealed by the Global Competitiveness Report 2011-2012 the economic operators can conclude that the most attractive state to invest/do business in the Black Sea region is, at

present, Georgia, followed by R. of Moldova, the last spot being occupied by Ukraine.

At last, but not least, a few considerations regarding the inconveniences of the present analyses. Firstly, there are factors very difficult to quantify, such as the political will of states to interact or the prevalence of foreign political decisions that affect the dialogue or the economies of other countries. These decisions can represent in certain circumstances the best strategies for the governments adopting such attitudes.

In the same manner, as long as the actors on the first two development stages are not aware that it is their own interest to consolidate the foundation meant to allow the advancement to a superior economic level, it would be difficult to apply and cooperate in domains proven to be essential for their economic capacities.

Another inconvenient could be generated by the degree or the level of importance of what EU can consider as best strategy and best income. Until now, the EU proved that the weights allocated to the pillars of the structure of international cooperation are convergent with the vision and the relevance encountered in the domains of interaction with the Black Sea region. Should the EU's interest be modified, then the entire equation of cooperation in the region suffers changes. As a corollary, one can be state that the Black Sea region must have all the interest to keep the EU's attention focused towards the area.

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