Hierarchies of Asociative Dynamics, Starting From Romania's Macro-Economic Imbalances in the EU-28. What Does Romania's Economic Evolution in the EU-28 Look Like?

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ABSTRACT

The authors' answer to the second part of the title question is a threefold offer. First of all, they propose to improve the classic statistical ranking methods by capitalizing on the dynamic support of data series that are essentialized by the correlation or association ratio, as a structuring variable. Secondly, they provide an original method of ranking or hierarchizing a set of associative dynamics, or correlative evolutions. Lastly, they offer a disaggregation into partial equilibria turned into the analysis criteria of the general equilibrium theory through Nicholas Kaldor's magical square, which became the magic rectangle of Lionel Stoléru's strategy. All these three contributions are made in the standardized format of the sections of a paper of economic, statistical and econometric research.

Key words: *macroeconomic equilibrium, magic quadrant or square, associative dynamical hierarchy, correlation matrix, econometric model, determinant coefficient.*

Jel codes: B22, C46, C62, D58, F41, R13

INTRODUCTION

A simple question concerning the association of Romania's economic evolution with any other dynamics of an economy in the EU-28 invariably triggers a standard answer, designating the Bulgarian economy. The authors started from the dominant response or the preconceived solution, or else the hypothesis of self-induced validation, which gradually become false or outdated, as they attempt to give a chance to the alternative or alternatives appropriate to the new realities related to new similarities of national economy and other economic areas. At the same time, the authors exploit an econometric model as a tool to rank the territorial association or correlation, hoping that progress indicators that generate the main macroeconomic balances in Romania will place its economy on short-term horizons and influences of sustainable development, with other dynamics and trends at the end of more than two decades of evolutionary analysis.

An innovative approach, based on the Keynesian acceptation of the similarities of the "magic" balances belonging to Nicholas Kaldor (Kaldor, 1939; 1957; 1967), which became "strategic", in the vision of Lionel Stoléru (Stoléru, 1967; 1972; 1974), generated in this article an original method of associative or correlative ranking dynamics, both econometric by integrating major modeling balances of growth, prices, labour market and external, and statistical, by evaluating the ranks in keeping with the intensity of associating to the macroeconomic construct the consolidated or stabilized balances according to the coefficient of determination in the final model, described briefly by the value of R^2 (Rsquared).

In summary, the present paper begins with a very brief introduction, brings together a presentation section concerning economic equilibrium theories, choosing the magical square solution, synthesizes the specificity of the new dynamic hierarchy-making (statistics of a both classical and econometric type, through the R^2 model of which it is being evaluated), then it details a section of results and discussion, identifying the hierarchies of associative dynamics, starting from Romania's macroeconomic imbalances in pre-accession and post-accession to the EU-28. Some remarks concerning the limits of creativity in classical statistical hierarchies and the utility of the new method are the end of the article.

A BRIEF REVIEW OF THE LITERATURE DEDICATED TO ECONOMIC EQUILIBRIUM THEORIES

General economic equilibrium describes a situation of interdependent markets characterized by the absence of excess demand or supply, or in the view of mathematical inference, n interdependent markets are in equilibrium if in $n - 1$ markets excess demand or supply is equal to zero (Genereux, 2001). In 1803, Jean-Baptiste-Say took the first step towards a more elaborate analysis of the imbalance between global supply and global demand, by stating the *law of outlets*. The first demonstration and the first structured statement of economic equilibrium theory are attributed to Léon Walras (1874), in his work *Elements of Pure Economics*, one of the first rigorous mathematical analyses of general equilibrium, centered on a specific exploration or tentative checking that still bears his name. In Walrasian theory, perfect price flexibility appeared as a condition for achieving and stability of the overall equilibrium or balance.

In 1911 there appeared a variant of the economic equilibrium theory drafted by Irving Fisher, which equalizes the product of the monetary mass and the circulation speed of the currency to the product of the general price level and the volume of transactions, and in 1917 Arthur Pigou originally nuances the economic equilibrium or balance, capitalizing on real income and a constant derived from a fraction of the real income that companies want to keep in the form of cash (the Cambridge solution). In 1936, Maynard Keynes developed the general theory of employment, interest and money, challenging from the outset the existence of a Walrasian exploration mechanism. Economic equilibrium becomes the object of a more careful study of the negotiations, and the Nash equilibrium represents a remarkable example in this respect, which transformed a much-discussed economic term into a central concept of the mathematical theory of games (Morgenstern and von Neumann, 1947; Nash, 1950). Kenneth Arrow and Gerard Debreu identified, as early as the 1950s, the main conditions for a Walrasian general balance, ranging from rationality, to pure and perfect competition, from complete markets to survival endowment, from the convexity of indifference curves to scale yields or absence of fixed costs. The Arrow-Debreu theorem disputes the anticipated effects of the exploration and imposes this very broad set of conditioning or restrictions. However, in 1973-1974, the Sonnenschein–Mantel–Debreu theorem stresses that, even if all conditions were met, nothing can guarantee that essential market mechanisms will achieve and maintain the general balance. Even when all the Arrow-Debreu hypotheses capable of generating a general balance were respected, the form of the functions of net demand for various goods remains undetermined, or more specifically, even if prices are perfectly flexible, nothing guarantees that price fluctuations ensure simultaneous convergence of all markets towards equilibrium (Genereux, 2001).

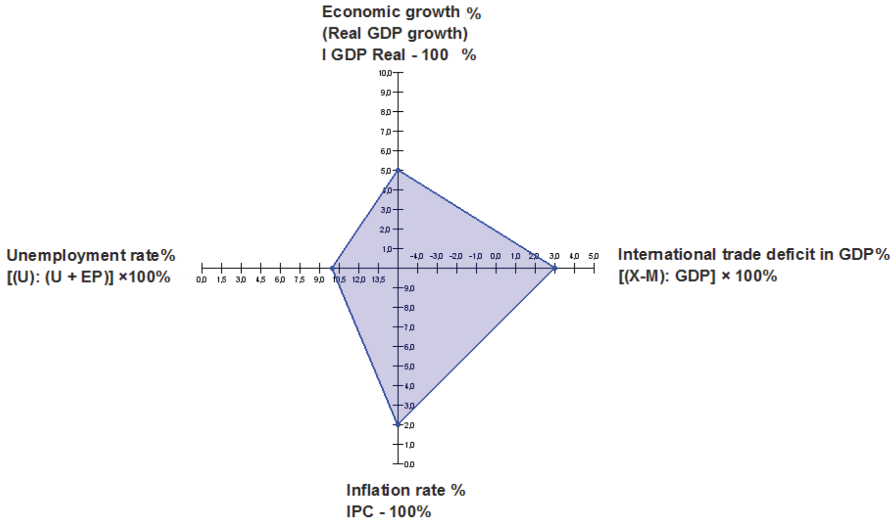
The relativity of general economic equilibrium is more and more frequently invoked as the depth of analysis grows, or attempts to focus on an economic and social optimum. Kenneth Arrow and Amartya Sen's impossibility theorems (1970) found that simply defining an optimum becomes impossible, just like trying to imagine some democratic rules of public decision-making or policy capable of respecting freedom of expression and the principle of unanimity, or avoiding ineffective choices. If, over the course of two centuries, theorists tried to prove that the general balance exists, and real economic competition and price flexibility can contribute to the stability of a general equilibrium, some pragmatic economists, such as Nicholas Kaldor and Lionel Stoléru, managed to decompose a general economic balance in partial balances, reaggregating them into a complex concept, which transforms Kaldor's magical square centred on the rate of economic growth, inflation, unemployment, and the trade balance in GDP (expressed as a percentage) into a quadrilateral of the main strategies for balancing an economy according to the Stoléru model. Linking the four major indicators, the four nodes or points on each axis of the square, defining four objectives of the economic policy of a state, describes a stable geometric figure with trends of continuity in development and diminishing the trade deficit, and the larger the surface of the square, the healthier the real network of an economy (obviously, with the restrictions of a sustainable development, with limiting inflation and unemployment thresholds).

METHODOLOGY AND DATA BASES

Kaldor's *Magic quadrant*, which became *le carré magique* with Stoléru, has a polar diagram as its visual expression, which synthesizes four objectives of macroeconomic policy: a) economic growth; b) the full employment of the labour force; c) price stability; s) external balance. The magic quadrant reveals, and even accentuates the conflictuality of some goals (Bezbakh, Gherardi, 2000, p. 36), especially those related to the hopefully full employment of labour force and price stability (theorized in the Phillips curve). In Figure 1 are presented the dimensions of the magical quadrant and the concrete ways of calculating the indicators on the quadrant axes. The quadrant was called "magic" because, according to Kaldor, it is impossible to attain the four goals at the same time.

Nicholas Kaldor's magical quadrant, which became the quadrilateral of economic strategy, in the vision of Lionel Stoléru

Figure 1



Source: Adapted and updated by the authors, in point of calculation method, after Larue, C. (2013), *Qu'est-ce que le Carré Magique de Kaldor?* Les Yeux du Monde.fr, available online at: http://les-yeux-du-monde.fr/ressources/14053-quest-ce-le-carre-magique-de-kaldor

In order to achieve the associated hierarchies, we made use of the classical methods of ranks and the relative distance, innovatively made use of by means of the correlation rate, matricially deduced with the Eviews software package, from the Eurostat databases (http://ec.europa.eu/eurostat/data/database)

The correlation matrix concerning economic growth initially had 44 or 45 series, from which the authors selected Romania, followed by two comparable EU-28 aggregations, and Euro or Euro zone (19 countries), followed, in the same order, by 27 states of EU-28 (minus Romania, which appears in the initial processing in position 25 of 30).

The new method proposed by the authors starts from the four equilibria or axes of the magic quadrant, transformed into endogenous variables (real GDP rate, or economic growth) and exogenous (inflation rate, unemployment rate and trade balance as a percentage of GDP) of an econometric model of multifactorial regression, applied to all 30 series of data for a longer time interval.

The method responds to a modern question and solves the problem of dynamic or evolutive hierarchies, over longer periods of time, in relation to one or more econometric modelling hypotheses, which gives it originality. The final ranking or hierarchy was made by the value R^2 or Rsquared, i.e. the coefficient of determination in relation to the level it reached in the model of the four constitutive equilibria of the magic quadrant: equilibrium of economic growth, price equilibrium, labour market equilibrium and external or macroeconomic equilibrium:

$$\text{Rate of PIB}_i = \alpha + \beta\times \text{ Inflation rate}_i + \beta\times \text{ Unemployment rate}_i + \gamma\times\text{Net balance of trade in GDP}_i + \varepsilon_i \quad (1)$$

The econometric model, which reflects the four previously commented balances, is built for both Romania and the other 27 European states, including two aggregations in the form of the EU-28 and the distinct Euro zone (19 countries), the authors opting for statistical gaps determined as discriminatory deviations calculated in the module (a simple difference between the determinations of the econometric models describing intensities, close or not, within the general balance or imbalance specific to each economy):

$$\left| R_i^2 - R^2_{\text{Romania}} \right| \quad (2)$$

The originality of the method proceeds from solving a question related to the integration of econometric models derived from economic laws or theories, validated in dynamic hierarchies or rankings (associative or correlative hierarchies), which classical statistical methods cannot make in practice, both for reasons of static applicability, and for reasons related to the volume of data involved (120 separate series of data, for the period 1996-2016, were used in the correlation ratio calculations and in the econometric modeling).

RESULTS AND DISCUSSION

The first result, or the first step in the complex approach of the proposed method, after the realization of a correlation matrix, is obtaining an accurate database (which explains the option for six decimal figures), focused on the values of the correlation ratio between similar generators or quantifiers of the equilibria in the magical quadrant, both in Romania and in the other 27 EU-28 states (alphabetically ordered, by their official names in English, but also in comparison with the EU-28 average and the Euro zone average (19 countries) The values of the correlation ratio (R) for each economy or aggregate area, following the quantification of the intensity of the link or the evolutive association over the period 1996-2016, are presented in Table 1:

The values of the correlation ratio between the signalling indicators of equilibria specific to the magic quadrant, compared to the Romanian economy (1996-2016)

Table 1

Areas or economy correlated with the Romanian economy	Real GDP Ratio (RPR) or economic growth rate	Rate of inflation (RI)	Unemployment rate (RS)	Net balance of trade in GDP (SBCP)
European Union (28 countries)	**0.745384**	**0.833512**	*0.372883*	**0.795822**
Euro area (19 countries)	0.734858	0.756101	-0.013902	0.745533
Belgium	0.623701	0.555229	0.082971	-0.341178
Bulgaria	**0.889865**	**0.831962**	0.788160	0.580668
Czech Republic	0.769932	0.621872	**0.828067**	0.404197
Denmark	0.651018	0.829612	-0.001994	0.729305
Germany	0.506316	0.657877	0.470365	0.136952
Estonia	0.592918	0.688922	0.459508	0.626486
Ireland	0.280610	0.342164	-0.289093	0.816060
Greece	0.713789	**0.842596**	-0.209807	**0.829388**
Spain	0.778304	0.799258	-0.240992	**0.901820**
France	0.677817	0.730256	-0.154851	-0.171086
Croatia	**0.882371**	0.814656	0.497383	0.710690
Italy	0.674100	0.756496	-0.040208	0.493712
Cyprus	0.625202	**0.842015**	-0.291483	0.500477
Latvia	0.712356	0.630028	0.274686	**0.847320**
Lithuania	0.780126	0.751085	0.500731	0.810198
Luxembourg	0.499522	0.766910	-0.548910	0.263037
Hungary	0.760474	0.764813	-0.227101	0.620520
Malta	0.284758	0.655127	0.715725	0.611976
Netherlands	0.757312	0.580973	-0.134210	0.373462
Austria	0.738401	0.516921	-0.222460	-0.045005
Poland	0.363192	0.801348	**0.849696**	0.605644
Portugal	0.610539	0.516516	-0.391356	0.707721
Romania	1.000000	1.000000	1.000000	1.000000
Slovenia	**0.876634**	0.793488	0.053315	0.702531
Slovakia	0.789251	0.732481	**0.902304**	0.489558
Finland	0.756108	0.692679	0.596629	-0.433893
Sweden	0.521128	0.733623	-0.147979	-0.813690
United Kingdom	0.634270	0.821490	-0.166594	0.213048

Software used: Eviews

What can be noticed at this stage of intermediate processing, is a stronger similarity per indicator for Romania's economy as compared to the EU-28 average (in relation to the EURO Zone), as well as a more pronounced similarity of the evolution of associations with certain economies, of which Bulgaria and Greece present values in the first three, two indicators generating specific balances of the magic quadrant.

By applying the classical rank-establishing method (according to the value of the correlation ratio with the data from the Romanian economy, as values expressed in the mathematical module), the following results are obtained (Table 2)

The final associative hierarchy, obtained by the rank method, improved according to the correlation ratio with the dynamics of Romania's similar indicators

Table 2

Countries	**Characteristics**				**Rank as to r_i**				**Cumulated score ($\sum r_i$)**	**Final rank**
	Real GDP rate (RGR)	Rate of inflation (RI)	Rate of unemployment (RU)	Net trade balance in GDP (NTBG)	RGR	RI	RU	NTBG		
Bulgaria	**0.889865**	**0.831962**	0.788160	0.580668	**1**	**3**	4	15	23	1
Croatia	**0.882371**	0.814656	0.497383	0.710690	**2**	6	9	8	25	2
Spain	0.778304	0.799258	-0.240992	**0.901820**	6	8	16	**1**	31	3
Lithuania	0.780126	0.751085	0.500731	0.810198	5	13	8	6	32	4
Greece	0.713789	**0.842596**	-0.209807	**0.829388**	12	**1**	19	**3**	35	5
Slovakia	0.789251	0.732481	**0.902304**	0.489558	4	15	**1**	18	38	6
Slovenia	**0.876634**	0.793488	0.053315	0.702531	**3**	9	25	10	47	7
Hungary	0.760474	0.764813	-0.227101	0.620520	8	11	17	12	48	8
Poland	0.363192	0.801348	**0.849696**	0.605644	25	7	**2**	14	48	9
Cyprus	0.625202	**0.842015**	-0.291483	0.500477	18	**2**	13	16	49	10
Latvia	0.712356	0.630028	0.274686	**0.847320**	13	21	15	**2**	51	11
Czech Republic	0.769932	0.621872	**0.828067**	0.404197	7	22	**3**	20	52	12
Finland	0.756108	0.692679	0.596629	-0.433893	10	17	6	19	52	13
Denmark	0.651018	0.829612	-0.001994	0.729305	16	4	27	7	54	14
Estonia	0.592918	0.688922	0.459508	0.626486	21	18	11	11	61	15
Sweden	0.521128	0.733623	-0.147979	-0.813690	22	14	22	5	63	16
Luxembourg	0.499522	0.766910	-0.548910	0.263037	24	10	7	23	64	17
Malta	0.284758	0.655127	0.715725	0.611976	26	20	5	13	64	18
United Kingdom	0.634270	0.821490	-0.166594	0.213048	17	5	20	24	66	19
Portugal	0.610539	0.516516	-0.391356	0.707721	20	26	12	9	67	20
Italy	0.674100	0.756496	-0.040208	0.493712	15	12	26	17	70	21
Ireland	0.280610	0.342164	-0.289093	0.816060	27	27	14	4	72	22
France	0.677817	0.730256	-0.154851	-0.171086	14	16	21	25	76	23
Netherlands	0.757312	0.580973	-0.134210	0.373462	9	23	23	21	76	24
Germany	0.506316	0.657877	0.470365	0.136952	23	19	10	26	78	25
Austria	0.738401	0.516921	-0.222460	-0.045005	11	25	18	27	81	26
Belgium	0.623701	0.555229	0.082971	-0.341178	19	24	24	22	89	27

Source: The data in Table 2 were processed by the authors and reordered according to the final ranks

Only seven of the top ten countries, according to the final rankings, remain in the first third of heranking in the confrontation of the two improved classical methods, to be transformed from static to dynamic mehods (Table 3), and only Bulgaria retains its rank, and implicitly the position, which confirms the highest evolutionary similarity with the Romanian economy.

The final associative hierarchy, obtained by the relative distance method, improved according to the correlation ratio with the dynamics of Romania's similar indicators

Table 3

Țări	Real GDP rate (RGR)	Rate of inflation (RI)	Rate of unemployment (RU)	Net trade balance in GDP (NTBG)	D1	D2	D3	D4	Average D	Final Rank
Bulgaria	0.889865	0.831962	0.788160	0.580668	100	98.73795	87.34972	64.38846	86.33	1
Slovakia	0.789251	0.732481	0.902304	0.489558	88.69334	86.93146	100	54.28556	80.43	2
Croatia	0.882371	0.814656	0.497383	0.710690	99.15785	96.68406	55.12366	78.80619	80.33	3
Lithuania	0.780126	0.751085	0.500731	0.810198	87.6679	89.1394	55.49471	89.84032	79.01	4
Czech Republic	0.769932	0.621872	0.828067	0.404197	86.52234	73.80429	91.77251	44.82014	71.59	5
Poland	0.363192	0.801348	0.849696	0.605644	40.81428	95.10465	94.16959	67.15797	70.39	6
Finland	0.756108	0.692679	0.596629	-0.433893	84.96884	82.20772	66.12284	48.11304	68.66	7
Spain	0.778304	0.799258	-0.240992	0.901820	87.46315	94.85661	26.70852	100	68.61	8
Estonia	0.592918	0.688922	0.459508	0.626486	66.63011	81.76184	50.92607	69.46907	66.26	9
Greece	0.713789	0.842596	-0.209807	0.829388	80.21318	100	23.25236	91.96824	64.36	10
Latvia	0.712356	0.630028	0.274686	0.847320	80.05214	74.77225	30.44273	93.95667	64.33	11
Portugal	0.610539	0.516516	-0.391356	0.707721	68.61029	61.30055	43.37297	78.47697	61.51	12
Hungary	0.760474	0.764813	-0.227101	0.620520	85.45948	90.76865	25.16901	68.80752	60.54	13
Malta	0.284758	0.655127	0.715725	0.611976	32.00013	77.75102	79.32194	67.86011	60.49	14
Cyprus	0.625202	0.842015	-0.291483	0.500477	70.25807	99.93105	32.3043	55.49633	59.56	15
Luxembourg	0.499522	0.766910	-0.548910	0.263037	56.13458	91.01752	60.83426	29.16735	54.87	16
Sweden	0.521128	0.733623	-0.147979	-0.813690	58.56259	87.06699	16.40013	90.22754	52.41	17
Slovenia	0.876634	0.793488	0.053315	0.702531	98.51315	94.17182	5.908762	77.90147	45.46	18
Ireland	0.280610	0.342164	-0.289093	0.816060	31.534	40.60831	32.03942	90.49034	43.90	19
Netherlands	0.757312	0.580973	-0.134210	0.373462	85.10415	68.95036	14.87414	41.41203	43.60	20
Germany	0.506316	0.657877	0.470365	0.136952	56.89807	78.07739	52.12933	15.18618	43.31	21
United Kingdom	0.634270	0.821490	-0.166594	0.213048	71.2771	97.49512	18.46318	23.62423	41.73	22
France	0.677817	0.730256	-0.154851	-0.171086	76.17077	86.66739	17.16173	18.97119	38.29	23
Italy	0.674100	0.756496	-0.040208	0.493712	75.75306	89.78158	4.456148	54.74618	35.89	24
Belgium	0.623701	0.555229	0.082971	-0.341178	70.0894	65.89504	9.19546	37.83216	35.60	25
Austria	0.738401	0.516921	-0.222460	-0.045005	82.97899	61.34862	24.65466	4.990464	28.13	26
Denmark	0.651018	0.829612	-0.001994	0.729305	73.15919	98.45905	0.22099	80.87035	18.94	27

Source: The data in Table 2 were processed by the authors and reordered according to the final ranks

The classical statistical methods presented above, and improved by capitalizing the correlation ratio introduced as an indicator that has the ability to provide a dynamic rather than static hierarchy, do not overlap with an economic reasoning that has become a model, or even a recognized theory. The criteria of the two methods are not criteria based on a recognized economic relationship, as in the case of the magic quadrant, and hence the complete approach of the method involves making use of the econometric model (Table 4), with the role of a hierarchical confrontation through R^2 or Rsquared (it is not the validation of the model itself that becomes the key methodological problem, but the confrontation of the values of the determination of the Romania's econometric model with other models of the other EU-28 countries).

The econometric model of the four partial equilibria that make up Romania's magical quadrant (1996-2016)

Table 4

Dependent Variable: SER25 (RPR) Method: Least Squares				
Sample(adjusted): 1997 2016 Included observations: 20				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8.310266	8.889692	-0.934820	0.3638
SER55 (RI)	-0.054916	0.023616	-2.325345	0.0335
SER85 (RS)	1.412508	1.232565	1.145990	0.2687
SER115 (SBCP)	-0.393538	0.209670	-1.876943	0.0789
R-squared	**0.393376**	Mean dependent var		2.830000
Adjusted R-squared	0.279634	S.D. dependent var		4.281183
S.E. of regression	3.633627	Akaike info criterion		5.595196
Sum squared resid	211.2519	Schwarz criterion		5.794343
Log likelihood	-51.95196	F-statistic		3.458494
Durbin-Watson stat	1.511674	Prob(F-statistic)		0.041475

Software utilizat: EViews

The determinant coefficient R^2, or Rsquared, subsequently hierarchizes in relation to the effectively achieved level of 0,393376 in the model of the four constitutive balances of the magic quadrant, starting from the deviation from the value in the econometric model specific to Romania for the 1996-2016 period (Table 5 and Table 6). Comparing the final gaps of R^2 as to the two EU-28 final aggregates and the EURO zone, by means of the new method, it can be noticed that Romania is already closer, in point of a correlative intensity, to this monetary area made up of 19 countries, more economically developed as a matter of principle.

The final correlative hierarchy of EU aggregates, obtained by the new method centred on econometric modeling, structured according to the determinant coefficient R^2 or Rsquared

Table no. 5

Aggregated areas	The ranking method centered on R^2, or R squared, of the reunited equilibrium models Rhythm GDP = Inflation rate + Unemployment rate + Trade balance in GDP	Deviation (gap) $\lvert R^2 - R^2_{Romania} \rvert$	Considerations relating to evolutive similarities according to the comparison of the intensity of the models
European Union (28 countries)	0.163045	0,230331	Romania is closer to EU-28 as intensity of the correlation
Euro area (19 countries)	0.232663	0,160713	Romania is closer to Euro area as intensity of the correlation Zona EURO

Software used: EViews

Comparing the final rankings of the new method, it is obvious that only five countries are among the top ten in the face of the improved classical rank method, and as many out of the comparison with the improved method of relative distance, and the hierarchy of the first two places is completely changed, this time Bulgaria appearing only on the third position. Hungary tends to be the closest to Romania's economy, in point of intensity of the model of the equilibria in the magic quadrant (intrinsic determination), and surprisingly Ireland appears on the second place (some values in equilibrium evolution confirm contradictory tendencies similar to the Romanian economy, although they seem to be lack level similarities). The new method centred on the econometric modeling and assigning ranks according to the determination coefficient R^2 or Rsquared reached in relation to a well-established economic theory (in this case, the general equilibrium of the magic quadrant, disaggregated in four specific equilibria) hierarchizes according to the intensity of the correlation of the general equilibrium, or in other words, the method is simultaneously statistical, econometric and economic by the theoretical arguments of the final ordering of gaps (the deviations of specific determinations)

The final correlative hierarchy of the other EU-28 countries, obtained by the new method focused on econometric modelling and ranking by the R^2 or Rsquared determination coefficient reached in relation to an established economic theory

Table no. 6

Countries	Ranking method centered on R2 or R squared of the reunited equilibrium models Rhythm GDP = Inflation rate + Unemployment rate + Trade balance in GDP	Gap (deviation) $\lvert R^2 - R^2_{Romania} \rvert$	Final rank
Hungary	**0.378879**	0,014497	1
Ireland	**0.378705**	0,014671	2
Bulgaria	**0.428022**	0,034646	3
Greece	0.337695	0,055681	4
Finland	0.336478	0,056898	5
Croatia	0.452832	0,059456	6
Belgium	0.324212	0,069164	7
United Kingdom	0.303679	0,089697	8
Portugal	0.491723	0,098347	9
Lithuania	0.286133	0,107243	10
Estonia	0.272370	0,121006	11
Cyprus	0.514462	0,121086	12
France	0.271329	0,122047	13
Poland	0.250791	0,142585	14
Malta	0.557546	0,164170	15
Sweden	0.217856	0,175520	16
Spain	0.590992	0,197616	17
Slovenia	0.186531	0,206845	18
Austria	0.177602	0,215774	19
Germany	0.149991	0,243385	20
Netherlands	0.139586	0,253790	21
Latvia	0.672651	0,279275	22
Luxembourg	0.108965	0,284411	23
Slovakia	0.070646	0,322730	24
Italy	0.061261	0,332115	25
Czech Republic	0.055903	0,337473	26
Denmark	0.051573	0,341803	27

Software used: EViews

We should perceive the contribution of econometric thinking not as one of modeling validation, nor as a strict assessment of a number of tested hypotheses, but rather as one of ordering models that are relatively valid over time, and ultimately offering a more general criterion in a context of a well-established economic theory.

CONCLUSIONS

Of the three methods presented, with their different results in proportions ranging from 50% to 66%, the authors give greater credibility to *the method of correlation-based ranking, or the method centred on associative dynamics*, which performs an evolutive statistical analysis, economically discriminates from a criterion point of view, and relativizes stationary data, conferring authority on dynamics by integrating a modelling economic theory. This theory is clearly different in comparison to its application to various territorial hierarchies of specific domains, for example in the case of foreign direct investment analyses, one can opt for John H. Dunning's *eclectic* theory, which allows the step-planning and selection of hierarchy factors with much rigor.

The originality of the new complex dynamic hierarchy-building method for economies following the associated analysis of major macroeconomic equilibria in a well-established manner, applied in relation to Romania, for four international statistical indicators as endogenous (economic growth) and exogenous variables (inflation rate, unemployment rate, net trade balance as a percentage of GDP), represents, in the opinion of the authors, a necessary and pragmatic stratification activity, and is the result of a compromise dictated by the existence of a limited number of statistically comparable series, although the authors worked on 120 series of data collected from Eurostat.

The method of correlative ranking, or the method centred on associative dynamics, provides continuity to classic methods in the stationary stalemate, or even static information from a temporal point of view. The pragmatism and originality of the method provide another answer to the question in the second title of the paper, as its quality depends on the validity and perishability of the economic theory that constitutes the source of the discriminated and hierarchical model, in this case the theory of the general economic equilibrium materialized in the magic quadrant or quadrilateral.

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