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Romanian and Serbian Foreign Trade, Under the Impact of Recession, EU Post/Pre Accession and New Restructuring Process

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This paper describes specific relations between the Romanian and the Serbian economies, especially the foreign trade impact, some structural characteristics and the recent trends during the last years. The foreign trade is one of the important activities of the national economy, providing factual transaction, change of ownership of products, and thus outlining the actual goods. This activity, seen as an isolated one, can affect exponentially the growth of an economy on the long term, but sometimes may make it go bankrupt in a short term, too. The first section describes Romania's economic evolution during this recession period, underlying the significance of the foreign trade in the national external balance of the economy of Romania as a new EU member. The second section analyses the Serbian Economy during the same period, Serbia being a pre-adherent country to EU. These sections also analyze the concentration or specialization process in the structure of the Romanian and Serbian foreign trade using statistical methods, indices and coefficients. A final remark is about the prognosis of the two economies and stresses that the sustainable and vigorous growth in the new context becomes somehow impossible, given the Romanian and Serbian reality and a goal within the timeframe of 2012-2013.

Keywords: foreign trade, structure of import and export flux, Gini-Struck coefficient, concentration / specialization of foreign trade, indices' method.

1. Introduction

The foreign trade is one of the most important activities of a national economy, providing factual transaction, change of ownership of products, and thus outlining the actual goods. Between Romanian and Serbian economies there have been some similar and structural characteristics and some recent and mutual trends, in the last years. Both Serbian and Romanian economies participate in international trade, under the impact of recession and new restructuring process, the former during a specific pre-accession period and the latter during a difficult post-accession period to the European Union.

The trade balance represents the synthetic expression of the degree of economic efficiency in each of these economies recorded in foreign trade activities, and shows the results of nationwide activity, as well as the place it occupies at the Union European and international levels, revealing the real competitiveness of its goods.

The foreign trade activity seen as an isolated one, can affect exponentially the growth of an economy in the long term, but sometimes may cause its bankruptcy in the short term, too. The analyses of foreign trade focuses on: a) the methods that describe the costs of exports and imports and highlights the importance of specific transactions; b) the methods of analysis of an external and globalized balance; c) the methods that quantify the impact of the scale economies, underlining the major technologies' role in foreign trade; d) the method of game theory; e) the statistical and econometric methods for identifying and testing the different trends of the products that are exported and imported; f) the specific empirical methods focusing on the specificity of import and export prices; g) the method of quantification of value and physical degrees of coverage and the net term of transfer between the external trade flows etc.

This paper describes and uses the classical version of the last mentioned method based on the Serbian and Romanian economies (Korka & Tuşa, 2004; Anghelache, Mitruţ, Isaic-Maniu & Voineagu, 2009; Săvoiu, 2011), and improved with statistical instruments for measuring concentration – diversification. The result is called the extended method of exchange ratio indicators (Săvoiu & Dinu, 2012), and it has been already used in statistical and economic analysis.

The phenomena of concentration - diversification are assessed structurally, but also correlated with reference limits by using the Gini - Struck coefficient or index, as a statistical and mathematical solution, continuously replicated since the appearance of that instrument, up to the present moment, passing successively through indices of the following types: Hirschman, Herfindahl-Hirschman, Grubel-Lloyd, Brülhart, Greenaway, Neven, Hine-Milner, Sternberg-Litzenberger, Hannah-Kay, Finger-Kreinin, Andreosso-O’Callaghan, Gini-Struck in the curve ABC, (Hirschman, 1964; Grubel & Lloyd, 1971; Finger & Kreinin, 1979; Lilien, 1982; Curry & George, 1983; Neven, 1995; Sternberg & Litzenberger, 2004; Andreosso-O’Callaghan, 2009; Esteban & Ray, 2011; Săvoiu, Dinu & Tăchiciu, 2012).

The evolution of a national economy can be shown by foreign / external trading, through the balance of the export and import fluxes, as well as the dynamics of that balance, which has a direct impact on the level of the gross domestic product and that of foreign debt and here are included the following statistical instruments: a) the index of the value exchange ratio (the index of percentage coverage of imports by exports - ICXM); b) the index of the gross exchange ratio (the “gross barter” terms of trade index - IGB); c) the index of the net exchange ratio (the “net barter” terms of trade index - INB), known as the terms of trade index; d) the foreign trade price shears – FTSP); e) the effect, in absolute value, of the deterioration of the net exchange ratio (the absolute value of the losses - ΔVL); f) the purchasing power of exports index (IPPX); g) the factorial terms of trade index (IFTT).

Making use of the statistical instrument of Gini - Struck (G-S), the article identifies the trends and specific limits in the processes of concentration and diversification in the export or import flows in Serbia and Romania

$$Coefficient\ G - S = \sqrt{\frac{n \sum_{i=1}^n g_i^2 - 1}{n - 1}} \tag{1}$$

2. Applied method, some results and discussions

2.1. Developments and trends of Romania’s export and import developments and trends

Due to the fact that the European Union is the major commercial partner of Romania, a country that became, after January 1, 2007, its member, it is obvious that the external trade flows of this country depends, mostly, on the member countries of the European Union, between the years 2004 and 2010 (three pre-accession years and three other post-accession years); they accounted for between 69.5% and 74.3 %, of its total volume. In relation to import, the share of the member states of the EU amounted between 63.2 % and 73.3%, which shows that imports’ dynamics was a much more upward one (in fact ¾ of Romania’s balance of trade deficit stems from the EU member states as well).

The recession has diminished the negative impact of net exports in GDP as the only favourable effect of a major impact: in Romania, the balance deficit already had a continuous upward trend from about 8% to about 14% of GDP between 2004 - 2008, only to change sharply, to below 10% in 2010 (although the share of exports declined by 5 % in the same year 2010, the imports had a more severe setback).

Table 1: Romanian foreign trade, between 2004 and 2010

	2004	2005	2006	2007	2008	2009	2010
	Million Euro						
Exports (X)	18935	22255	25850	29549	33628	29116	37293
Imports (M)	26281	32569	40746	51322	56337	38897	46802
$\Delta = X - M$	-7346	-10314	-14896	-21773	-22709	-9781	-9509
	out of which with the European Union, in %:						
Exports (X_{UE})	72.9	69.5	70.5	71.98	70.4	74.3	72.2
Imports (M_{UE})	64.9	63.2	68.71	71.29	69.1	73.3	72.5

Source: Romanian Statistical Yearbook, 2011, NSI Edition, Bucharest.

Table 2: The most important statistical indicators according to the method of exchange ratio, in Romania, between 2004 and 2010

	Previous year = 100%						
	2004	2005	2006	2007	2008	2009	2010
General evolutions of export and import							
Exports Index (X)	121.3	117.5	116.2	113.7	113.8	86.3	128.1
Imports Index (M)	124.0	123.8	125.1	125.2	109.8	67.9	120.3
Quantitative evolutions							
Export Quantum Index (I_X^Q)	115.4	107.3	107.4	107.3	109.6	96.7	119.7
Import Quantum Index (I_M^Q)	123.1	117.6	120.8	127.5	106.2	76.1	115.5
Evolution of the prices							
Unit Value Index Exports Index (X)	105.1	109.5	108.2	106.0	103.8	89.3	107.0
Unit Value Index Imports Index (M)	100.7	105.3	103.6	98.2	103.4	89.3	104.2
Indicators of exchange ratio							
IGB (Gross Barter Index)	93.7	91.2	88.9	84.2	103.2	127.1	103.6
INB (Net Barter Index)	104.4	104.0	104.4	107.9	100.4	100.0	102.7
FTPS (price shears)	-	-	-	-	-	*	-
ΔVL (value of the losses)	Insignificant value						
ICXM = IGB \times INB	97.8	94.9	92.9	90.8	103.6	127.1	106.4
IPPX = $I_X^Q \times INB$	120.4	111.6	112.2	115.8	110.0	96.7	122.9
IFFT = (Index of productivity*) \times INB	115.2	110.0	111.8	114.3	107.7	95.3	103.0

Source: Composed by the authors based on data of *Statistical Yearbook of Romania*, 2011, NSI Edition, Bucharest.

*Note: labour productivity considered per employed person, taken from the site: http://www.insse.ro/cms/rw/files/Web_IDD_BD_ro/index.htm.

Some of the major aspects describing the reactive external trade profile of the Romanian economy before and under the impact of recession are the specific elements of the analyzed indicators:

- in the peak period of the recession, the volume or the index of quantity of the export increased maximally, the export prices fell, the price scissors remained as a potential, while the volume of imports decreased much more, import prices were reduced at a maximum intensity;
- the "gross barter" terms of trade index (IGB) reflect a sharp deterioration in the exports, partly delayed for almost a year (in fact Romania certainly supports other partner economies, by paying the wages and profits incorporated in the imported goods, while failing to ensure the entire survival of the entrepreneurs and employees in its own economy);
- the "net barter" terms of trade index (INB) emphasize a shift from recording the effect of "rises" in absolute terms to quantifying in relative terms, a process that is more severe at the beginning of the recession as Romanian economy does not have a "critical" mass of internationally competitive products;
- the difference in the point of percentage rate between export and import price indices tends to reach "zero" during the recession;
- the signal generated by the purchasing power of exports index or IPPX, though it marks a limit where imports was expected to be stopped, was by no means an important decision-making tool, which gave recession the character of a natural regulator in this respect. (Săvoiu, Dinu & Tăchiciu, 2012).

Table 3: Annual values of the indices of concentration of exports and imports, in 2001 and 2010 in Romania

Categories of products	The structural values of g_i and g_i^2 determined through Gini - Struck							
	2001				2010			
	Export		Import		Export		Import	
	g_i	g_i^2	g_i	g_i^2	g_i	g_i^2	g_i	g_i^2
Mineral products	0.069	0.0048	0.144	0.0207	0.055	0.0030	0.110	0.0121
Food and agricultural products	0.038	0.0014	0.078	0.0061	0.084	0.0076	0.084	0.0071
Chemical products	0.064	0.0041	0.127	0.0161	0.095	0.0090	0.169	0.0286
Metallurgical products	0.133	0.0177	0.073	0.0053	0.119	0.0142	0.109	0.0119
Textiles, clothing, leather products, footwear	0.348	0.1211	0.177	0.0313	0.122	0.0149	0.090	0.0081
Transport means	0.200	0.0400	0.278	0.0773	0.154	0.0237	0.074	0.0055
Machines and mechanical devices					0.272	0.0740	0.285	0.0812
Other products	0.148	0.0219	0.123	0.0151	0.099	0.0098	0.079	0.0062
Total	1.000	0.211	1.000	0.1719	1.000	0.1562	1.000	0.1607
Hirschmann coefficient	-	0.4593	-	0.4158	-	0.3952	-	0.4009
Gini-Struck coefficient	-	0.6076	-	0.5643	-	0.5653	-	0.5615

Source: Composed by the authors based on data of *Statistical Yearbook of Romania*, 2011, NSI Edition, Bucharest.

The impact of recession changed structural trends of export and import flows of Romania between 2001 and 2010, and identified the persistence of both flows within the area of excessive concentration, according to the Gini-Struck index values in the curve ABC-Struck (Săvoiu, Crăciuneanu & Țaicu, 2010). Even the trend for the four years prior to recession was one of diversification; recession resumed the high level at the beginning of the decade under review, with however some positive aspects by the densification of both flows to the categories of manufacture-intensive products. The sources of imports and the destinations of exports also follow a natural process of concentration on the destinations by groups of countries (by increasing trade with the European Union, and Europe as a whole), conforming to the political options to integrate the national economy.

2.2. Serbia's export and import developments and trades

In the last decade of the past century Serbia's foreign trade knew an unfavourable period that had three major causes: a) shifting from planned economy to the market economy, losing traditional economic partners in the former socialist block; b) the dissolution of the former Yugoslavia and the wars that followed in the region led to the loss of commercial partners from the former union republics; c) the economic sanctions imposed by the European Union and the United Nations.

As a CEFTA member state since 2007 and especially after December 22nd, 2009, when it officially applied for membership to the European Union, entering a pre-accession stage comparable as trends with Romania between 2004 and 2007, Serbia provides unambiguous and methodologically unitary statistical databases. Unfortunately, they are still expressed in US dollars, and require an analysis to exploit the relative indicators or Gini-Struck type indices.

The CEFTA (The Central European Free Trade Agreement) membership, held by countries in the South-Eastern Europe, allows Serbian companies to export duty free on a market of almost 30 million consumers. Serbia is the only country outside the Community of Independent States which has a free trade agreement with Russia, since 2000 (http://www.siepa.gov.rs/site/en/home/1/importing_from_serbia/trade_regulations/). Serbia also concluded such free trade agreements with Turkey and with the EFTA member states (Switzerland, Liechtenstein, Norway and Iceland). From the point of view of the product, the structure of Serbian exports is in 2010 as follows: intermediary goods account for approx. 2/3, consumer goods account for approx. 1/4 and capital goods account for almost 1/12 of the total volume. (http://www.siepa.gov.rs/site/en/home/1/importing_from_serbia/foreign_trade_data/foreign_trade_by_commodities/).

Table 4: Evolution of Serbia's foreign trade in the period 2004-2010

	<i>USD thousand</i>						
	2004	2005	2006	2007	2008	2009	2010
EXPORTS	3522424,6	4480801,5	6426633,9	8824013,1	10972201	8342909,5	9793048,1
IMPORTS	10750607	10458614,5	13169531,4	19161203,8	24327867,9	16052876,4	16731763,4
DEFICIT	-7228182,4	-5977813	-6742897,5	-10337190,7	-13355666,9	-7709966,9	-6938715,3

Source: Statistical Office of the Republic of Serbia

The chart of this evolution is presented in Figure 1.

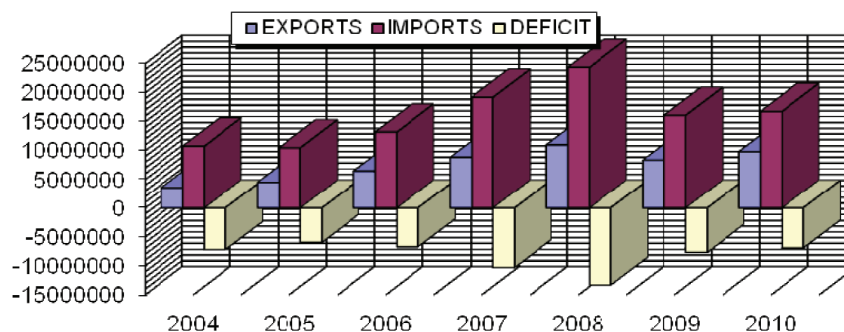


Figure 1: Serbia's export, import and balance of trade deficit

In the period 2004-2010, we can notice the diversification of Serbian foreign trade demonstrated by the continuous decrease of Gini-Struck coefficient values. This evolution is shown in table 5.

Table 5: The values of Gini-Struck coefficient for Serbia's foreign trade

	2004	2005	2006	2007	2008	2009	2010
Total Exports	0.3215	0.3417	0.3567	0.3341	0.3162	0.2770	0.2844
Total Imports	0.3175	0.2957	0.2972	0.2554	0.2543	0.2407	0.2354
Exports to Romania	0.7544	0.5955	0.5851	0.5151	0.4379	0.4343	0.4331
Imports from Romania	0.3863	0.3171	0.3563	0.4101	0.3578	0.3692	0.3406

Source: Composed by the authors based on data from the Statistical Office of the Republic of Serbia

We can notice that the values of Gini-Struck coefficient are higher for the commerce with Romania in comparison with those for the total foreign trade of Serbia. The conclusion is that in the case of commerce with Romania there is a higher concentration. However, there is also a tendency of decreasing values for this coefficient in the case of Serbian-Romanian bilateral trade. In 2011, Romania was Serbia's fifth export partner, with 6.9% of the total Serbian exports. In relation to imports, Romania holds the 6th place with 4.4% of the total value of Serbian imports. Table 6 presents a detailed situation of bilateral commerce in 2010.

Table 6: Serbia’s trade with Romania in 2010

Exports. by SITC rev. 4 sections		2010 Total. USD thousand	g %	g²
0	Food and live animals	280277.9	43.075	0.18554309
1	Beverages and tobacco	1266.2	0.195	0.00000379
2	Crude materials, inedible, except fuels	10383.2	1.596	0.00025464
3	Mineral fuels, lubricants and related materials	84798.4	13.032	0.01698409
4	Animal and vegetable oils, fats and waxes	153.4	0.024	0.00000006
5	Chemicals and related products, not elsewhere specified	88312.1	13.572	0.01842076
6	Manufactured goods classified chiefly by material	137830.4	21.183	0.04487011
7	Machinery and transport equipment	18619.6	2.862	0.00081886
8	Miscellaneous manufactured articles	28542.2	4.387	0.00192416
9	SMTK Rev. 4 Commodities n.e.s. in the SITC Rev. 4	495.1	0.076	0.00000058
	TOTAL EXPORTS	650678.5	100.000	0.26882014
Imports. by SITC rev. 4 sections		2010 Total. USD thousand	g %	g²
0	Food and live animals	5220.1	0.875	0.00007657
1	Beverages and tobacco	153.3	0.026	0.00000007
2	Crude materials, inedible, except fuels	22024.4	3.692	0.00136298
3	Mineral fuels, lubricants and related materials	163531.5	27.412	0.07514208
4	Animal and vegetable oils, fats and waxes	4.6	0.001	0.00000000
5	Chemicals and related products, not elsewhere specified	56293.2	9.436	0.00890415
6	Manufactured goods classified chiefly by material	73246.2	12.278	0.01507477
7	Machinery and transport equipment	78396.6	13.141	0.01726930
8	Miscellaneous manufactured articles	23792.7	3.988	0.00159063
9	SMTK Rev. 4 Commodities n.e.s. in the SITC Rev. 4	173905.2	29.151	0.08497781
	TOTAL IMPORTS	596567.8	100.000	0.20439834

Source: Composed by the authors based on data from the *Statistical Office of the Republic of Serbia*
<http://webrzs.stat.gov.rs>

For Serbia’s exports to Romania in 2010, the Gini-Struck coefficient is calculated below:

$$G - S_{2010} = \sqrt{\frac{n \sum_{i=1}^n g_i^2 - 1}{n - 1}} = \sqrt{\frac{10 \times 0.26882014 - 1}{10 - 1}} = 0.4331 \tag{2}$$

In the case of Serbia’s imports from Romania, the Gini-Struck coefficient has a smaller value:

$$G - S_{2010} = \sqrt{\frac{n \sum_{i=1}^n g_i^2 - 1}{n - 1}} = \sqrt{\frac{10 \times 0.20439834 - 1}{10 - 1}} = 0.3406 \tag{3}$$

In relation to Serbia’s exports to Romania, in the period 2004 - 2010, there was a continuous decrease in the value of the Gini - Struck coefficient, which proves a diversification trend.

Conclusion

Smaller or less developed economies such as Romanian or Serbian cases cannot afford scale interventions and policies in the competition and trading on international markets and Serbia and Romania’s behaviours can be no exception to this truth. The extensive method seeks, through the additional information, to help a prompt and accurate response in times of crisis and recession, a reaction that can always be improved. The prognosis for the two economies stresses that the sustainable and vigorous growth in the new context becomes somehow difficult or even impossible as a Romanian and Serbian reality and a goal within the timeframe of 2012-2013.

REFERENCES

- [1] Aiginger, K. & Rossi-Hansberg, E. (2006). Specialization and concentration: a note on theory and evidence. *Empirica*, 33(4), 255 – 266.
- [2] Anghelache, C., Mitruț, C., Isaic-Maniu, Al. & Voineagu, V. (2009). The Structural Analysis of the Foreign Trade Activity. *Romanian Statistical Review*, 58(9), 21-28.
- [3] Basti, E. & Bayyurt, N. (2008). Efficiency Performance of Foreign-owned Firms in Turkey, *Transformations in Business & Economic*, 7(3), Supplement C, 20-30.
- [4] Bickenbach, F. & Bode, E. (2008). Disproportionality Measures of Concentration, Specialization, and Localization, *International Regional Science Review*, 31(4), 359 – 388.
- [5] Bosma, N. & Schutjens, V. (2011). Understanding regional variation in entrepreneurial activity and entrepreneurial attitude in Europe. *The Annals of Regional Science*, 47(3), 711–742.
- [6] Coughlin, C. C. (2010). Measuring international trade policy: a primer on trade restrictiveness indices. *Federal Reserve Bank of St Louis Review*, 92(5), 381–394.
- [7] Davidson, R. (2009). Reliable inference for the Gini index. *Journal of econometrics*, 150(1), 30 – 40.
- [8] Essaji, A. (2008). Technical regulations and specialization in international trade, *Journal of international economics*, 76, (2), 166 – 176.
- [9] Esteban, J & Ray, D. (2011). Linking Conflict to Inequality and Polarization, *American Economic Review*, 101(4) 1345–1374.
- [10] Grigorovici, C. (2009). Analysing the Degree of Specialization in Romania's Services Trade, *Romanian Journal of Economic Forecasting*, 10(1), 94-114.
- [11] Hsing, Y. & Hsieh, W.J. (2010). Responses of Real Output in Serbia to the Financial and Global Economic Conditions. *Romanian Journal of Economic Forecasting*, 13(3), 107-114.
- [12] Korka, M. & Tușa, E. (2004). *Statistics for international business*, Bucharest: Ed. ASE.
- [13] Lorraine, E. & Peter, R. (2004). How weak are the signals? International price indices and multinational enterprises, *Journal of International Business Studies*, 35(1), 61 – 74.
- [14] Nauenberg, E., Basu, K. & Chand, H. (1997). Hirschman - Herfindahl index determination under incomplete information. *Applied Economics Letters*, 4(10), 639–642.
- [15] Neven, D. (1995). Trade liberalisation with Eastern nations: Some distribution issues, *European Economic Review*, 39(3-4), 622-632.
- [16] Ricardo, H., Jason, H. & Dani, R. (2007). What You Export Matters, *Journal of Economic Growth*, 12(1), 1–25.
- [17] Rossi-Hansberg, E. (2005). A spatial theory of trade, *American Economic Review*, 95(5), 1464-1491.
- [18] Săvoiu, G., Crăciuneanu, V. & Taicu, M. (2010). A New Method of Statistical Analysis of Markets' Concentration or Diversification. *Romanian Statistical Review*, 58(2), 15-27.
- [19] Săvoiu, G. (2011). *Statistics for bussines*, Bucharest: Ed. Universitară, 221-223.
- [20] Savoiu, G. & Dinu, V. (2012). Solutions for the Statistical Analysis of the Economic Phenomena Described as Opposed, Partially of Entirely Compensated Fluxes: A Case Study on the Exports and Imports of Romania and the Baltic States, *Transformations in Business & Economics*, 11(25), 54-71.
- [21] Săvoiu, G., Vasile, D. & Tâchiciu, L. (2012). Romania Foreign Trade in Global Recession, Revealed by the Extended Method of Exchange Rate Indicators. *Amfiteatru economic Journal*, 14(31), 173-195.
- [22] Silver, M. (2009). Do Unit Value Export, Import, and Terms of Trade Indices Represent or Misrepresent Price Indices?, *IMF Staff Papers*, 56(2), 297– 22.
- [23] Zanas, G.P. (2005). Testing for trends in the terms of trade between primary commodities and manufactured goods”, *Journal of Development Economics*, 78(1), 49–59.

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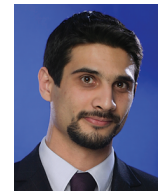
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