ADVANCING AT ITS OWN SPEED: A TRADE APPROACH ON ROMANIA'S CONVERGENCE TO EU

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Abstract. *This paper analyzes the evolution of the Romanian trade with EU, based on a variety of indicators: Finger similarity index, Hirschmann concentration index, trade development index, revealed comparative advantage, intra-industry trade. The paper finds that the learning effect occurred in trade with EU, that the trade structure has been witnessing certain transformations, and that specialization appears to increase in technology-intensive products, in the fields dominated by the foreign capital; however, export concentration is rather high, while natural resource-intensive and low skilled labor-intensive products face severe competitive pressures. The results suggest that Romania's foreign trade-driven convergence to EU is not spectacular, but it is happening at its own speed.*

The "ever closer" ties with EU led to Romania's *de facto* integration in the EU as far as trade flows are concerned (about two thirds of the Romanian foreign trade takes place with EU). EU is also the largest investor in the Romanian economy (63% of FDI stock) and is becoming its largest donor, through the various pre-accession programs that it finances.

Nevertheless, convergence towards similar structures of production between Romania and EU shows little improvement.[1] Moreover, the fact that Romania is one of the largest net exporters of workforce from the region (Langewiesche, Lubyova, 2000) indicates that wage differentials are large enough to stimulate temporary and/or permanent emigration, meaning that income convergence is still far ahead. Of course, these situations may end up with short and medium term positive results, as the differences in the production structures encourage specialization, and the money earned abroad return as foreign remittances in the domestic economy.[2] These positive implications may, in turn, create further

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[1] Pauna C., Pauna B. (2000) calculate that 31.3 out of 100 workers had to change their job in 1989 for Romania to reach similar production structures with Southern EU-average (Greece, Italy, Portugal, Spain), the similar figure for 1997 being 33.1 workers out of 100. Since unemployment rate grew from virtually zero in 1989 to above 10%, it means that restructuring occurred, but not necessarily in the right direction.

[2] For a detailed analysis of foreign remittances in the Romanian economy, see Daianu, Voinea, Tolici (2001). According to this study, foreign remittances flows exceeded all other autonomous capital flows in 2000, amounting to 3.3% of GDP.

incentives for resources' allocation outside the economic convergence paradigm.

This paper does not test the convergence hypothesis, but it creates the premises for doing so. It analyzes the evolution of the Romanian trade with EU (per se and against CEFTA trade), calculating and interpreting a variety of indicators. Through the Finger similarity index, we look at how trade structure changed since Romania signed the EU Association Agreement.

The Hirschmann index of export and import concentration is used in conjunction with the trade development index, to measure new trade directions. Trade adjustments, in terms of performance and specialization, are then depicted by interpreting in a common matrix the revealed comparative advantage and the intra-industry index for each product group (the low level of desegregation represents a limit of this paper). Concluding remarks are drawn in the last section.

General trade facts

Romania undertook successive trade liberalizations (table 1), achieving current account liberalization by mid of 1998. (Table 1)

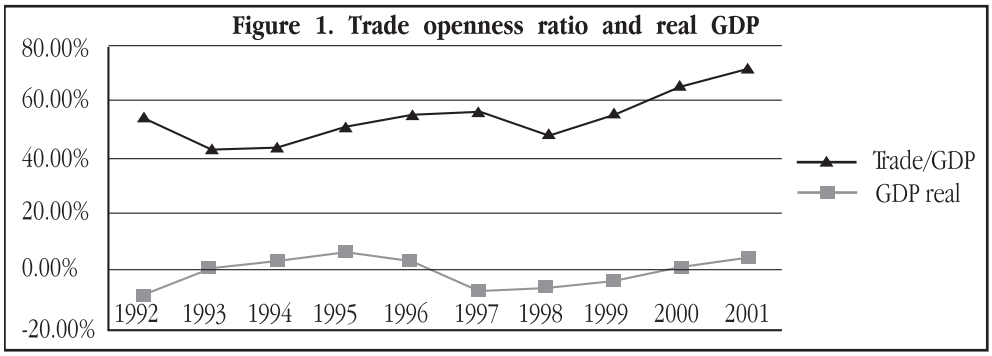
In conjunction with the untamed need for imported goods (final current consumption goods, in the first phase, and technological inputs, later on) and with changing domestic competition structures in certain product markets, this led to an increasing role of foreign trade in the overall functioning of the economy. The increasing trend of the economic openness index stands out, but its evolution has also been influenced by the boom and bust cycles of the economy (figure 1).

Table 1. Selected stages of current account liberalization in Romania

1993	EU Association Agreement
1995	WTO membership
1997	CEFTA membership
1998	Full currency convertibility

Source: OECD Transition Report 2001

Figure 1. Trade openness ratio and real GDP



The major role in this process of trade openness has been played by the reorientation of Romanian trade towards EU. As early as in 1991, EU turned out to be Romania's largest trade partner, a position further enhanced by the Association Agreement signed in 1993. However, this reorientation occurred not by default, as in absolute terms the trade volume increased in the medium run with each of EU, CEFTA and SEE. Table 2 indicates that Romania recorded one of the largest increases in exports to EU among transition economies, despite having an irregular path of development in the 90's.

In relative terms (Table 3), the first year after signing the EU Association Agreement brought higher CEFTA share in aggregated trade, and the first full year of CEFTA membership brought an increase in EU's share in aggregated trade.

Table 2. Exports' reorientation to EU in selected transition economies

Transition economy	Increase in exports to EU, %, 2000 vs. 1993
Hungary	395.1
Slovak Rep.	347.0
Romania	328.2
Czech Rep.	282.9
Bulgaria	225.6
Poland	201.5
Slovenia	159.9
Croatia	100.9

Source: adapted from Cornelius, Kirchbach, Zhang (2001)

Table 3. Shares in aggregated Romanian foreign trade, by partners, %

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 -sem I
EU 15	38.7	43.6	48.2	52.0	54.0	54.2	60.5	62.8	59.8	61.8	63.7
CEFTA5	4.5	3.8	4.2	4.2	4.2	5.0	7.0	7.0	6.9	7.3	7.0
SEE 7	9.0	5.9	4.9	4.7	5.0	4.8	4.7	5.7	6.6	5.3	136.1

Note: CEFTA5 excludes Bulgaria; SEE7 includes former Yugoslav Republics (except Slovenia), Albania, Bulgaria, Turkey.
Source: based on NIS (**National Institute for Statistics**) data

Table 4. Coverage ratio in Romanian foreign trade, by partners, %

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002 -sem I
EU 15	59.4	68.4	86.5	82.5	76.3	80.5	78.4	86.8	89.5	88.8	90.7
CEFTA5	51.7	60.7	94.5	54.1	54.3	53.4	35.4	52.2	52.0	44.5	42.3
SEE 7	128	164.4	175.1	144.1	187.8	169.0	140.2	201.1	252.9	157	136.1

Source: based on **NIS** data

Conditions of trade liberalization episodes appear to be important in determining foreign trade results. The asymmetrical concessions of the EU Association Agreement created the premises for an impressive upturn in the coverage ratio, while the symmetrical concessions of the CEFTA accession led to a severe decrease in the coverage ratio in the first year of full membership, followed by a return to the same path of chronic deficits with CEFTA countries (table 4).

Trade deficit varies at fairly high levels (over 8% of GDP in 2001), as it remains true the general observation that, for producing 1 extra dollar of GDP, the Romanian economy imports 50 cents and exports only 40 cents. This would suggests an import-dependant feature of exports, which is valid mainly for the trade with EU, as we will insist upon later on.

Hirschmann concentration index[3], which, in this context, shows the degree of concentration, or specialization of foreign trade (table 5), is comparable with that recorded in the first wave of EU candidate countries, and even with the lower income economies in South EU.

Table 5. Hirschmann index, export and import concentration of Romanian foreign trade, by partners, %

	Total		EU-15		CEFTA-5	SEE-7
Year	2000	2001	2000	2001	2000	2000
HIx	12.73	13.12	18.10	18.21	12.13	21.35
HIm	12.80	11.96	16.20	14.48	8.24	11.02

Note: data result from multiplying the H-index by 100
Source: author's calculation

Memo: Hirschmann index for total exports, other countries, data for 1998 (Davenport, 2001): Latvia 16.0, Croatia 12.0, Slovakia 11.0, Slovenia 11.0, Hungary 10.0, Bulgaria 9.0, Poland 7.0, Czech Republic 6.0, transition countries average 16.0, Spain 12.0, Portugal 12.0, Greece 10.0, Italy 5.0, developed countries average 17.0.

[3] Hirschmann concentration index is calculated as:

$$HIx=\sum(xi/X)^2, \text{ respectively } HIm=\sum(mi/M)^2$$

where i is the number of product groups (groups I-XX of the Combined Nomenclature), xi and mi stand for exports, respectively imports of i, while X and M represent total exports, respectively total imports. This index varies between 0 and 1 (or 0% and 100%) – normal values correspond, according to UNCTAD calculation (data available for 1998), to an average index of 0.16 for transition economies and 0.17 for developed economies. Significantly lower values indicate low concentration (numerous products contribute with small shares in total trade), while significantly higher values indicate high concentration (a few products contribute with large shares in total trade).

Nevertheless, the only marginal variations of the total export concentration index may suggest that, whatever economic restructuring has taken place so far, it did not result in a strikingly better specialization of the whole economy.

On the positive side, it can be submitted that the higher than average concentration indexes with EU show that Romania is acting like an integrated part of it. A situation opposed to that registered within CEFTA, where Romanian trade is even less concentrated, and exports are less linked to imports, than on the average of the Romanian foreign trade. This calls for a more detailed view on performance divergence in result of trade liberalization.

CEFTA: a case of divergence

CEFTA accounts for 4.8% of Romania's exports and 8.8% of its imports (as of first semester 2002). Romania's coverage ratio with CEFTA (table 4) slightly varied over the last ten years, except for two short-lived episodes of increasing (1994) and decreasing (1998). On aggregate, these figures suggest that trade liberalization with CEFTA failed to reap benefits.

Venables (1999) created a model to demonstrate that, if low income countries form a free trade area, then there will be a tendency for the lowest income members to suffer real income loss due to trade diversion; the losing country is the one with comparative advantages most different from the rest of the world.

It is my opinion that Romania experienced too early a symmetry of concessions with countries that had progressed faster on the reform programs, had had tighter links with EU[4], and, noteworthy, were (still are) subsidizing a number of sensitive products in which mutual trade occurs. This subsidizing feature perpetuated market entry barriers of domestic nature, rendering ineffective the cut in tariff barriers. In addition, the rather inelastic supply of specific products traded with CEFTA also limits the relevance of removing trade barriers.

Goods traded within CEFTA differ from those traded with EU, in terms of structure and performance (see annex 1). Furthermore, even four years after joining this regional free trade agreement, Romania is the only CEFTA country that records poorer coverage ratio with CEFTA, than with EU (table 6).

Hence, at least as Romania is concerned, it can be submitted that CEFTA failed to act as a training ground in itself and for the EU integration. Export concentration index with CEFTA is lower than Romania's average export concentration[5], and import concentration

[4] Companies located in CEFTA countries can act as intermediaries for EU firms trying to escape tariffs in agricultural products.

[5] As opposed to the normal theoretical expectation that trade with CEFTA – which has almost become, indirectly, a customs union, as it is a free trade area and its members are advanced in implementing EU Association Agreements determining similarities in CEFTAs external tariff, at least with EU.

Table 6. CEFTA members' coverage ratio, 1999-2000, %

	Coverage ratio, %			
	1999		2000	
	Trade with CEFTA*	Trade with EU	Trade with CEFTA*	Trade with EU
Romania	64.3	88.7	73.1	89.5
Czech Rep.	126.8	100.7	118	89.5
Hungary	96.8	105.6	94.6	112.5
Poland	72.8	64.7	76.8	73.9
Slovenia	73.0	81.3	75.2	81.3
Slovak Rep.	114.9	103.7	130.4	112.2

*trade with Bulgaria also considered
Source: **NIS and World Bank** data

(table 5) shows very limited, if any, specialization, both indicating the heterogeneity of CEFTA economies.

The spreading-out effect of CEFTA cannot be denied, as the trade volume continues to increase, but the learning effect has not appeared, due to symmetrical concessions that left Romanian producers fighting for the domestic market and not having time and resources to learn how to develop on CEFTA markets.

Fear was expressed (Voinea, 2002) that CEFTA negative RCAs could be transferred into EU negative RCAs; this could happen as CEFTA-5 countries are to join the EU prior to Romania. This transfer seems to have already been taking place, as RCAs with the EU in these sectors have deteriorated in 2001 (annexes 1 and 2) compared to previous years.

EU: is Romania catching up?

As already mentioned, EU is Romania's largest trade partner; over the last decade, a massive learning effect (improved coverage ratio) manifested in addition to the spreading-out effect (rise in volume). But did these evolutions help Romania closing the development gap with EU? Aside from trading more quantities, have we left the periphery by trading more complex products? Or are we still prisoners of the traditional comparative advantages, based on superior endowment with cheap labor?

David and Loewy (1998) consider that free trade leads poorer countries to specialize in technologically-stagnant products. In the tradables, they hold, comparative advantage leads to specialization, and to the extent that countries produce different goods, then there is no a priori reason to expect technologies to converge.

To see whether the evolution in Romania's trade with EU points in the direction of increased

convergence, one must resort to a number of indicators.

The **Finger similarity index** shows the similarity of trade structures at different times:

FSI = ∑min (Xit1, Xit2),

where: Xi – export of group i, t1 and t2 – two different years.

Same index can be applied to imports (Mi instead of Xi). FSI can take values from 0 to 1; the closer to 0, the more different trade structures; and the closer to 1, the more similar trade structures.

Calculating this index by comparing Romania's trade structures with EU between 2001 and 1993[6], the results are:

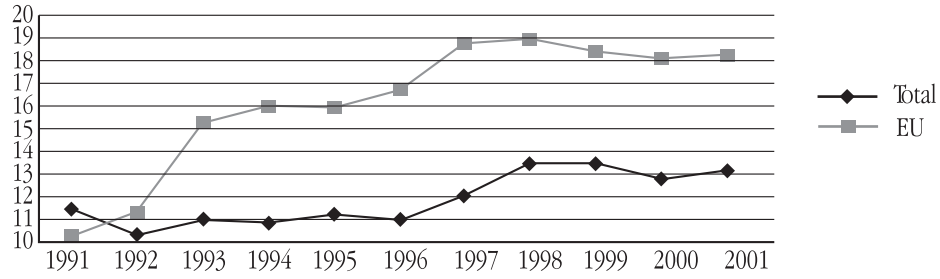
- FSI for exports to EU = 0.78 and
- FSI for imports from EU = 0.82

By comparison, FSI for exports in the case of Hungary, in the period 1992-2000, was 0.4 (Elteto, 2000). The Finger similarity index for Romania indicates that changes occurred in Romania's trade with EU, but the pace of these changes was rather slow (in a rough translation of FSI, it means that about one fifth of the trade structure changed). Moreover, the resembling figures for exports, respectively imports' structure similarities, support the remark that most exports to EU depend on EU imported inputs.

The changing trade structures occurred in the direction of increasing trade concentration. **Hirschmann concentration index** (HHI – see figure 2) shows an upward slope; the current level of trade concentration with EU is very much similar to that of developed economies.

Up to now, we saw that trade structures changed to some extent, and this change came together with an increase in trade concentration. However, neither FSI, nor HHI, tells us anything about factor intensities. We know trade structures changed and got more concentrated, but did they so to the right direction?

Figure 2. Hirschmann index, export concentration of Romanian foreign trade, %, 1991-2001



Source: author's calculations

[6] The choice for year 1993 as a basis year is normal, as it was the first year of recovery after the unavoidable GDP plunge in early 90s. Also, in 1993 Romania signed the EU Association Agreement.

Table 7. Trade structure development index

	1993	1997	2001
Technology-intensive exports (Kraus classification*), % of total exports to EU	13.05	14.63	22.38

* According to Kraus classification, tradables are split into four categories: natural resource-intensive, unskilled labor-intensive, human capital intensive, technology-intensive. The latter includes: machines and equipment, means of transportation, optical, medical instruments and chemical products.

Source: authors'calculation

In the understanding of this paper, this right direction is the one that provides for convergence towards EU structures. Many would translate it as the increase in trade with modern, or technology-intensive, products. The departure from low and medium skilled labor intensive products cannot be easy; clothing, footwear and furniture still account for more than half of Romania's exports to EU. However, there appears to be a clear cut improvement in the so-called trade structure development index (TDI), calculated as the share of modern products exports in total exports (Barry, 2000).

If we apply the Kraus classification of technology-intensive products, TDI almost spurred, especially after 1997. The same result would be obtained by applying Barry's interpretation[7] of modern exports. This evolution may be linked – as a hypothesis, until a more in-depth study of FDI spillovers is completed- with the surge in FDI after 1997[8]. Machines and equipment sector, respectively means of transportation sector, are now dominated by the foreign capital. Productivity has grown considerably in these sectors[9], and their performances improved sharply (see figure 3).

Indeed, what we did next was to calculate the **revealed comparative advantage**[10] (RCA)

[7] Taking the optical and medical instruments out of the Kraus classification would make no impact, as their share was constantly below 0.5%.

[8] By the end of 1996, the stock of FDI did not exceed 1 bn. USD. In the next five years, the FDI stock increased to 7.7 bn. USD (note that data are underestimated, as they do not account for reinvested profits).

[9] Look at the current situation. In the first semester of 2002, compared to the first semester 2001, the rise in labor productivity exceeded the rise in real wages (the W/Sr index) with 13.6% for electrical machines and equipment, and with 23.3% for transportation means, much above the manufacturing industry average of 9.2%.

[10] Revealed comparative advantage is calculated in its "domestic" understanding, as:

$$RCAi = \ln (xi/mi)/(X/M)$$

where xi and mi stand for exports, respectively imports of i, while X and M represent total exports, respectively total imports. In this context, one product is considered to reveal comparative advantage if it is traded more efficiently as compared to the average trade performance; positive values indicate comparative advantages, negative values indicate comparative disadvantages.

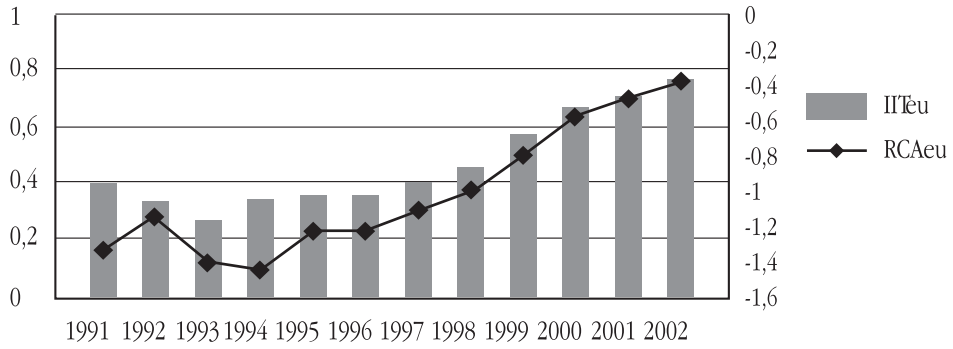
and the **intra-industry trade index** (IIT)[11] for each product group.

Here we have the confirmation of a worthmentioning outcome: the technology-intensive products, grouped under machines and equipments, transportation means, and optical, medical instruments are all in the most performant category: simultaneous increase in IIT and RCA. Furthermore, if we add food and beverages industry, practically the „fast forward" sectors, the engines of catching up with EU, are dominated by the foreign capital.

It is, nevertheless, true that we do not provide here for an up-to-date assessment of how much of the intra-industry trade is horizontal (fragmented) and how much is vertical (integrated in European networks).

An earlier study (Kaminski, Ng, 2001), using 1998 data suggests that 52 of the most performant 60 export articles do not have double RCA (for both exports and imports), meaning that they are only assembled in Romania. Another paper (Astrov, 2001), applying the WIFO taxonomy on 1999 data, finds that only 5% of exports are technology-intensive (compared to an CEECs average of 26%). Cornelius, Friedrich and Zhang (2001) find out that Romania has only one "champion" export product (meaning that the growth rate of Romania's exports of that product exceeds the growth rate for that product in the foreign market), namely parts for office machines. All these would indicate that, even within the technology-intensive groups, Romania actually exports intermediate goods that are labor-intensive.

Figure 3. EU-driven improvements in group XVI (machines and equipment)



Source: author's calculations

[11] Intra-industry trade, also known as the Grubel-Lloyd index, is calculated as:

$$IITi = 1 - (xi-mi)/(xi+mi)$$

same specifications as above. This index takes values from 0 to 1; the closer the index value for a product group is to 1, the more specialized is the economy in producing that product group. Note that a low level of desegregation, as the one used here, can be a bias towards higher values of IIT; this bias is however uniform over all groups, therefore not deceiving us with respect to the IIT trends.

Figure 4. Trends in Romania's foreign trade adjustments with EU, 2001 against 1993

	IIT increased	IIT decreased
RCA increased	- food, beverages (gr.IV) - minerals (gr.V) - machines and equipment (gr.XVI) - means of transportation (gr.XVII) - optical, medical instruments (gr.XVIII)	- wood products, except furniture (gr.IX)
RCA decreased	- vegetal products (gr.II)* - paper (gr.X) - articles of cement, glass, ceramics, stone (gr.XIII) - basic metals and articles thereof (gr.XV) - furniture (gr.XX)*	- animal products (gr.I) - animal, vegetal oils (gr.III) - chemical products (gr.VI) - plastics, rubber (gr.VII) - skin, leather, furs (gr.VIII) - textiles, clothing (gr.XI)** - footwear (gr.XII)**

Note: * IIT decreasing since 1998; **IIT slightly increasing after 1998
Source: based on authors calculations, see annexes 2

The fact that both RCA and IIT consistently show positive evolutions should however determine a more prudent approach. It might be that production stages developed, and foreign suppliers relocated production units to Romania[12], facilitating vertical integration.

In cases when IIT increased, but at the expense of decreasing RCA, one explanation can be the use of transfer pricing in the intra-firm trade[13]. Note that furniture (gr.XX) and vegetal products (gr.II) recorded decreasing IIT over the last years, therefore belonging to an increasing extent to the „losers" sectors (with both decreasing IIT and RCA). But maybe most important, note that all products in this group record even worse RCA with CEFTA[14].

Not surprinsingly, in this last group we find most of the agricultural products, facing increasing competition from EU farmers as trade liberalization was more gradual here. Also, the

[12] The case of Renault may be illustrative in this respect; after it bought the local car producer Dacia Pitesti in 1999, Renault had been followed by more than ten large suppliers of car components.
[13] Boscaiu, Munteanu (2000) find that 46% of the export oriented foreign firms (firms obtaining over 75% of their turnover from exports) operating in Romania make losses from their export operations.
[14] Take the cement industry, e.g. All firms are foreign owned, local market being split between three foreign owned companies; the same companies share the other markets in the region, making cement products (in group XIII) perfect candidate for transfer pricing.

traditional products (clothing, footwear) belong here, but two positive explanations can be found: the technological inputs, on the one side, and the potential for domestic market expansion, on the other side. However, the vast majority of producers in these sectors are still in the initial stages of production development (outward processing traffic or lohn), a fact that reduces considerably the value added margins.

Concluding remarks

Periphery is not only a distance from purchasing power. It is also a distance from production structures, reflected in trade structure and performance. Bottom line, escaping periphery is making sure that the distanced country improves its comparative advantages in technology-intensive products, and that local production takes the step further in intra-industry trade from assembling to integrating products.

This paper analyzed Romania's potential for catching up with EU from a trade-based perspective, and it reached encouraging conclusions, although they still need to be supported at a more desegregated level.

First, a **learning effect occurred in trade with EU**, as coverage ratio improved dramatically in a short period of time – a result that can not be dissociated from the asymmetrical conditions of trade liberalization (the opposite case, with negative consequences, is CEFTA).

Second, **trade structure with EU has been changing significantly**, although not as fast as in other economies.

Third, **the current level of trade concentration with EU is rather high**, being comparable with that recorded, on average, for developed economies, and the close figures for import and export concentration indicate an import-dependant feature of exports.

Fourth, it has been an upsurge in technology-intensive exports, not unlikely in result of large FDI in sectors like machines and equipment and transportation means. **Specialization in technology-intensive products seems to be the engine of the convergence process (as they record both increasing RCA and IIT)**, providing empirical support for the endogenous growth theory; still, how much of these products are actually labor-intensive subcontracted products remains a debatable issue.

Fifth, **agricultural products and traditional exports (clothing, footwear, furniture)** have to face the challenges posed by convergence, as they **are now in the most disadvantageous position (both decreasing RCA and IIT)**. For traditional exports at least, the escape is also in moving forward, to more technology and human capital-intensive stages of production development.

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Annex 1. Sharp differences in Romania's trade with CEFTA vs. EU
Trade structure, % of total exports (X) or imports (M)

		EU	CEFTA-5
I. live animals and animal products	X	1.06	1.81
	M	0.95	4.28
II. vegetal products	X	0.87	1.24
	M	0.87	6.71
IV. food, beverages, tobacco	X	0.51	3.07
	M	1.93	7.15
V. mineral products	X	0.66	8.35
	M	1.67	4.39
VII. plastics, rubber	X	2.07	2.43
	M	4.90	10.11
IX. wooden products	X	3.38	9.30
	M	0.55	3.13
X. paper	X	0.45	0.84
	M	2.35	7.75
XI. textiles	X	34.31	11.00
	M	24.32	5.54
XII. footwear	X	11.64	11.10
	M	2.49	1.22
XVI. machines and equipment	X	16.18	21.64
	M	28.25	13.54
XVII. means of transport	X	3.94	7.89
	M	4.92	2.97

Source: based on **National Institute for Statistics** data

Trade performance in terms of revealed comparative advantage, 2000

	EU	CEFTA-5
I.live animals and animal products	0.1	-0.85
II.vegetal products	0	-1.68
III.animal or vegetal oil	-1.01	0.76
IV.food, beverages, tobacco	-1.34	-0.84
V.mineral products	-0.66	0.64
VI.chemical products	-1.52	-0.43
VII.plastics, rubber	-0.86	-1.42
VIII.skin, leather, furs	-1.31	1.06
IX.wooden products	1.82	1.08
X.paper	-1.64	-2.22
XI.textiles	0.34	0.68
XII.footwear	1.54	2.2
XIII.plastic, glass, cement	0.13	-0.82
XV.basic metals and articles	0.75	0.23
XVI. machines and equipment	-0.55	0.46
XVII.means of transport	-0.22	0.97
XVIII. optical, photo instr.	-1.76	-1.17
XX. miscellanous incl. furniture	1.02	0.47

Source: author's calculation

Annex 2. Revealed comparative advantage (RCA), total and with EU

		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002-I
grI	RCAt	1.56	1.08	1.14	0.94	0.54	1.09	1.41	-0.43	0.14	0.07	-0.44	-0.56
	RCAeu	-1.73	0.65	0.56	0.57	0.4	0.6	0.93	-0.01	0.46	0.1	-0.25	-0.53
grII	RCAt	-1.35	-1.83	-1.82	-0.64	0.56	1.15	0.25	0.13	0.31	-0.59	-0.3	-0.65
	RCAeu	-1.44	-1.4	-1.65	0.12	0.6	0.23	0.4	0.33	0.76	0	0.41	-0.45
grIII	RCAt	-0.59	-1.32	1.27	0.51	1.18	1.4	1.63	0.57	0.71	-0.27	0	-1.83
	RCAeu	-0.66	-0.99	0.38	-1.62	-0.37	-1.6	-2.32	-2.19	-0.9	-1.01	-1.73	-4.61
grIV	RCAt	-1.98	-1.9	-1.85	-1.61	-1.82	-1.37	-1.09	-1.39	-1.67	-1.66	-1.43	-1.35
	RCAeu	-1.74	-1.13	-1.21	-1.36	-1.59	-1.25	-1.15	-1.62	-1.56	-1.34	-1.02	-1.31
grV	RCAt	n.a.	-0.88	-0.89	-0.83	-0.96	-1.01	-1.03	-0.84	-0.71	-0.6	-0.73	-0.43
	RCAeu	n.a.	0.22	0.87	0.89	-0.06	-0.03	-0.53	-0.08	-0.45	-0.66	0.19	1.18
grVI	RCAt	0.69	0.34	-0.1	0	0.01	-0.01	-0.22	-0.76	-0.89	-0.5	-0.57	-0.84
	RCAeu	-1.04	-0.54	-0.95	-0.69	-0.81	-0.95	-1.12	-1.56	-1.91	-1.52	-1.79	-1.89
grVII	RCAt	-0.06	-0.42	-0.62	-0.31	-0.39	-0.49	-0.57	-0.72	-0.76	-0.69	-0.87	-0.77
	RCAeu	-0.67	-0.3	-0.66	-0.65	-0.38	-0.53	-1	-0.7	-0.91	-0.86	-1.09	-0.89
grVIII	RCAt	0.64	-0.8	-0.89	-0.83	-1.13	-1.25	-1.14	-1.24	-1.34	-1.06	-0.95	-1.1
	RCAeu	0.71	-0.62	-0.75	-0.93	-1.33	-1.51	-1.45	-1.44	-1.49	-1.31	-1.27	-1.34
grIX	RCAt	1.48	1.87	2.05	2.26	1.78	2.08	2.14	2.23	2.18	2.14	1.88	1.74
	RCAeu	0.86	1.47	1.16	1.26	0.86	1.27	1.34	1.81	1.94	1.82	1.68	1.51
grX	RCAt	-0.27	-1.35	-1.32	-1.23	-0.75	-1.21	-1.09	-1.55	-1.5	-1.04	-0.87	-0.99
	RCAeu	-0.34	-1.41	-1.64	-1.59	-1.25	-1.77	-1.83	-2.13	-2.08	-1.64	-1.26	-1.66
grXI	RCAt	0.8	0.11	0.46	0.49	0.52	0.6	0.5	0.52	0.32	0.39	0.48	0.36
	RCAeu	1.42	0.13	0.59	0.49	0.46	0.54	0.45	0.45	0.3	0.34	0.4	0.31
grXII	RCAt	0.94	0.86	1.48	1.67	1.65	1.75	1.53	1.47	1.47	1.49	1.66	1.6
	RCAeu	0.85	0.95	1.82	1.84	1.69	1.72	1.59	1.56	1.51	1.54	1.62	1.61
gXIII	RCAt	0.27	0.62	0.5	0.54	0.49	0.36	0.34	0.31	0.23	0.12	0.02	0.04
	RCAeu	0.05	1.03	0.91	0.63	0.43	0.3	0.32	0.31	0.26	0.13	-0.04	0.04
grXV	RCAt	1.27	1.31	1.52	1.25	1.22	0.91	1.13	10.04	0.84	0.85	0.59	0.64
	RCAeu	0.74	0.84	0.77	0.8	1.08	0.82	1.04	0.97	0.68	0.75	0.34	0.21
grXVI	RCAt	0.2	-0.26	-0.67	-0.88	-0.9	-0.96	-0.96	-0.88	-0.72	-0.56	-0.43	-0.37
	RCAeu	-1.33	-1.13	-1.42	-1.44	-1.2	-1.2	-1.11	-0.97	-0.77	-0.55	-0.44	-0.37
grXVII	RCAt	1.54	1.3	0.64	0.31	0.33	0.4	0.44	0.22	0.59	0.15	0.02	0
	RCAeu	-0.29	-1.03	-0.84	-0.46	-0.21	0.13	-0.22	-0.21	0.6	-0.22	-0.43	-0.32
grXVIII	RCAt	-1.63	-1.46	-2.03	-2.16	-2.38	-2	-2.05	-1.64	-1.84	-1.9	-1.59	-1.71
	RCAeu	-2.52	-1.75	-2.15	-2.33	-2.51	-2.19	-1.95	-1.71	-1.89	-1.76	-1.63	-1.46
grXX	RCAt	2.86	2.27	1.93	1.49	1.41	1.35	1.21	1.18	1.1	1.01	1.11	1.13
	RCAeu	2.86	2.58	2.04	1.47	1.41	1.29	1.15	1.11	1.11	1.02	1.13	1.17

Source: author's calculation

Annex 3. Intra-industry trade, total and with EU

		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002-I
grI	IITeu	0.29	0.91	0.91	0.79	0.89	0.83	0.66	0.84	0.83	1.00	0.80	0.70
	IITt	0.44	0.63	0.59	0.62	0.86	0.64	0.49	0.62	0.97	0.92	0.64	0.62
grII	IITeu	0.37	0.27	0.23	0.99	0.80	0.98	0.91	0.95	0.69	0.94	0.87	0.74
	IITt	0.32	0.21	0.22	0.63	0.85	0.62	0.98	0.89	0.95	0.61	0.7	0.58
grIII	IITeu	0.66	0.37	1	0.29	0.72	0.27	0.15	0.16	0.53	0.49	0.27	1
	IITt	0.58	0.32	0.54	0.82	0.57	0.52	0.42	0.89	0.75	0.75	0.85	0.22
grIV	IITeu	0.28	0.33	0.34	0.36	0.29	0.36	0.41	0.27	0.31	0.38	0.48	0.39
	IITt	0.18	0.2	0.21	0.29	0.22	0.3	0.4	0.3	0.27	0.26	0.3	0.34
grV	IITeu	0.79	0.88	0.76	0.64	0.87	0.85	0.64	0.84	0.72	0.63	0.98	0.51
	IITt	0.21	0.46	0.47	0.55	0.45	0.41	0.42	0.46	0.57	0.61	0.52	0.67
grVI	IITeu	0.5	0.53	0.42	0.6	0.54	0.45	0.42	0.28	0.23	0.33	0.25	0.23
	IITt	0.81	0.99	0.8	0.93	0.88	0.82	0.75	0.49	0.5	0.65	0.58	0.5
grVII	IITeu	0.65	0.63	0.52	0.62	0.72	0.62	0.46	0.56	0.52	0.55	0.45	0.54
	IITt	0.82	0.64	0.57	0.77	0.68	0.6	0.59	0.51	0.55	0.57	0.47	0.53
grVIII	IITeu	0.68	0.5	0.49	0.51	0.34	0.29	0.32	0.31	0.33	0.39	0.39	0.38
	IITt	0.83	0.49	0.47	0.54	0.4	0.34	0.38	0.34	0.35	0.43	0.44	0.41
grIX	IITeu	0.62	0.54	0.63	0.49	0.67	0.53	0.49	0.34	0.28	0.31	0.35	0.39
	IITt	0.49	0.35	0.29	0.21	0.36	0.3	0.27	0.27	0.24	0.26	0.34	0.37
grX	IITeu	0.8	0.26	0.23	0.3	0.38	0.23	0.23	0.17	0.2	0.3	0.39	0.3
	IITt	0.72	0.32	0.33	0.4	0.53	0.35	0.4	0.26	0.31	0.44	0.47	0.45
grXI	IITeu	0.4	0.83	0.89	0.83	0.86	0.86	0.88	0.89	0.91	0.88	0.87	0.89
	IITt	0.76	0.9	0.91	0.82	0.87	0.87	0.89	0.92	0.94	0.92	0.91	0.94
grXII	IITeu	0.62	0.77	0.38	0.31	0.35	0.38	0.4	0.42	0.4	0.39	0.37	0.36
	IITt	0.69	0.73	0.46	0.35	0.4	0.39	0.45	0.49	0.44	0.44	0.41	0.41
gXIII	IITeu	1	0.73	0.74	0.76	0.88	0.98	0.94	0.97	0.93	0.99	0.9	0.98
	IITt	0.99	0.85	0.89	0.8	0.88	0.99	0.97	0.98	0.98	0.95	0.86	0.9
grXV	IITeu	0.67	0.82	0.8	0.68	0.58	0.73	0.61	0.65	0.72	0.69	0.9	0.93
	IITt	0.55	0.54	0.45	0.5	0.55	0.72	0.6	0.67	0.69	0.7	0.86	0.81
grXVI	IITeu	0.4	0.33	0.28	0.34	0.37	0.37	0.42	0.46	0.58	0.68	0.71	0.77
	IITt	0.95	0.71	0.55	0.53	0.47	0.42	0.44	0.45	0.57	0.62	0.65	0.7
grXVII	IITeu	0.83	0.36	0.45	0.71	0.8	0.93	0.78	0.78	0.76	0.84	0.72	0.79
	IITt	0.45	0.54	0.82	0.92	0.96	0.97	0.92	0.94	0.81	0.96	0.86	0.88
grXVIII	IITeu	0.14	0.19	0.15	0.15	0.13	0.16	0.2	0.25	0.24	0.27	0.29	0.36
	IITt	0.25	0.29	0.18	0.18	0.13	0.17	0.18	0.24	0.23	0.21	0.26	0.25
grXX	IITeu	0.11	0.22	0.32	0.42	0.45	0.53	0.56	0.59	0.54	0.57	0.54	0.51
	IITt	0.14	0.25	0.32	0.41	0.48	0.54	0.57	0.61	0.58	0.62	0.62	0.58

Source: author's calculation