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Effects of Trade Liberalization in Croatia: An Approximation of the Integration Effects with the EU

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Abstract: Economic integration can cause significant adjustment costs and call for economic structure flexibility which will make the relocation of production factors within or between industries less expensive. Based on new trade theory, the integrated economy approach allows an insight into different patterns of trade as an approximation of the expected adjustment costs. In light of the EU-enlargement and the expected Croatian accession the aim is to analyse the effects of Croatian trade liberalization in order to stress the importance of structural adjustment in the process of economic integration and point at industries which will be exposed to significant adjustment costs.

Keywords: new trade theory, increasing returns to scale, marginal intra-industry trade, transition countries, economic integration, EU

JEL Classification: F12, F14, F15

Introduction

Further deepening of integration in the EU is expected to significantly influence the final outcome of Croatian accession. Enlargement vs. deepening of the EU will, accentuate the two conflicting characteristics of the Union in the following years – increasing heterogeneity and stronger requirements for common policies (Ahrens et al., 2005). Under these circumstances a greater flexibility is expected from all member countries particularly regarding the conditions for dynamic economic restructuring[1] conducive to achieving frictionless allocation of resources upon joining economic integration. As a result, prevailing intra-sectoral specialization would contribute to lower adjustment costs preventing that way a drop in economic activities and the overall economic efficiency. An indicator of the expected adjustment costs resulting from economic integration would be the level of

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intra-industry trade, or more precisely the share of intra-industry trade in the newly created trade flows – known as marginal intra-industry trade (MIIT).

Countries which stay outside economic integration can suffer from negative effects, e.g.: slowdown in economic growth and weak convergence to the average development level of the integration as well as the failure to make advantage of the market-size effect. The lack of access to larger markets reduces future capital inflows and the overall investment activities making the gap between member and non-member countries greater[2]. The relatively low inflow of capital contributes to the development of traditional (less capital intensive) sectors and the relative decrease in terms of trade which closes the vicious circle of non-integration for these countries (Manzocchi/Ottaviano, 2001). Although the intensity of trade- and FDI-divergence effects for non-participating countries can vary depending upon the level of trade integration prior to joining economic integration[3], or the degree of convergence in economic structures, they usually strongly influence public support for further integration (Petersson, 2002) and, therefore deserve special attention.

Based on the insights of new trade theory and the integrated economy approach, the aim of the paper is to give an ex ante analysis of the possible effects of trade liberalization and Croatian accession to the EU. The purpose is to shed some light on the importance of structural adjustment in the process of economic integration and point at Croatian industries which might be exposed to significant adjustment costs due to the advanced process of economic integration in Europe. The first part presents theoretical background by referring to new trade theory and the main inferences on the advantages of economic integration. The second part presents the analytical methodology of MIIT as a measure of structure of change in the newly created trade flows. The main results of the analysis of Croatian MIIT with the entire world and the individual country groups are presented in the third part. The final part concludes.

New Trade Theory and the Effects of Trade Liberalization

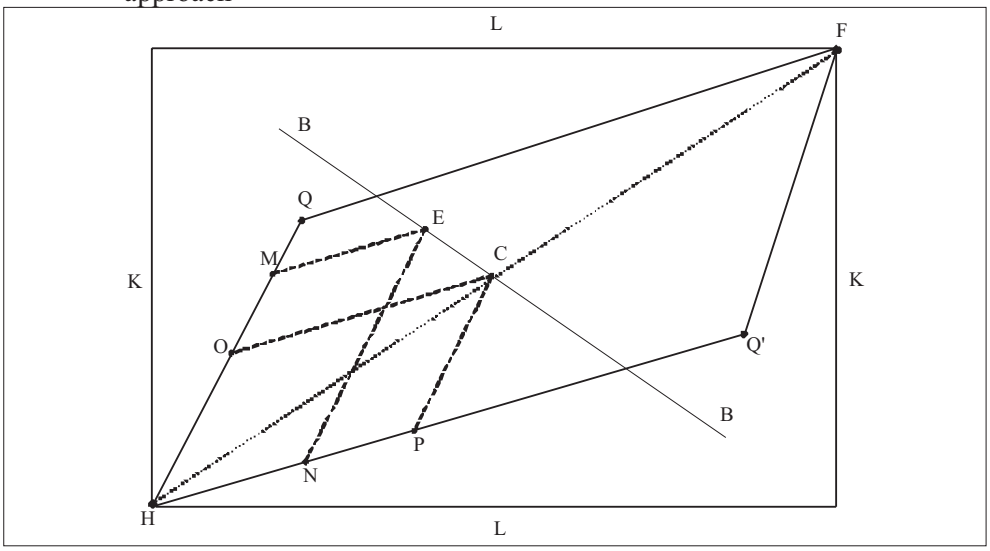
The greatest part of the world trade is realised between countries of the similar level of development[4]. A high share of the North-North trade shows that except for comparative advantage stemming either from production efficiency or availability of resources, trade can also be motivated by the advantages of economies of scale. With imperfect market structures, dynamic technological advance and consumer preferences for differentiated products it is possible to realise economies of scale through more detailed production specialization. This enables a great number of economic agents to engage in the production of goods of different varieties thus

generating similar structure in export and import flows, a phenomenon known as intra-industry trade[5].

The integrated economy approach is a novel attempt of achieving an integrated treatment of both classical trade theory based on comparative advantage and new trade theory which incorporates increasing returns to scale. While standard analytical approach based on a model of two separated economies is unable to offer a combined treatment, the integrated economy model assumes a unified economy which is broken up into smaller economic units[6]. The main idea underlying this approach is that a unified economy achieves a higher level of economic efficiency compared to many small economic units (individual or taken together). In that respect trade among economic units serves as a means of reproducing the highest possible efficiency typical for an integrated economy.

The analytical model of 2×2×2-dimensionality assumes two production factors (labour and capital), two countries (home and foreign) and two products (a capital-intensive one produced with increasing returns to scale and a labour-intensive one produced under constant returns). The model further assumes: a zero-profit condition, equalization of marginal revenue to marginal cost and a balance between monopoly power and the level of economies of scale (Helpman, 1981). The graphical representation of trade model within an integrated economy framework can be observed in Figure 1.

Figure 1: The graphic representation of trade model based on the integrated economy approach



Source: Helpman/Krugman, 1986

The box in figure 1 represents total amounts of production factors available in the integrated economy. Vectors $\vec{HQ}$ and $\vec{FQ}'$ depict various production quantities of a capital-intensive product with the corresponding amounts of production factors dedicated to each specific quantity. Vectors $\vec{HQ}'$ and $\vec{FQ}$ depict in the same way production of a labour-intensive product. Following the split-up of the integrated economy into two countries – home (H) and foreign (F) – it is necessary to find out the specialization pattern which is basically determined by the availability of production factors, i.e. their division between home and foreign country. In order for both countries to reach the production efficiency of the integrated economy, production techniques are assumed to be the same as before the split-up[7]. Accordingly, the production point should be located within the parallelogram HQFQ'. Therefore, point E represents the production structure in both countries according to which $\vec{HM}$ depicts quantity of a capital-intensive and $\vec{HN}$ of a labour-intensive product both produced in the home country, while $\vec{MQ}$ and $\vec{NQ}$ show the corresponding production structure of a foreign country.

Assuming homothetic consumer preferences according to which each individual's consumption resembles the integrated economy's capital-labour ratio, the consumption point is found on the diagonal $\overline{HF}$. Since $\overline{BB}$ depicts relative price of production factors (wage-to-interest rate ratio) and due to the zero-profit condition of the Chamberlin model, the actual model allows for the entire income to be spent. Therefore, the consumption point C is positioned on $\overline{BB}$ determining that way the share of home and foreign country in the integrated economy income. As a result home country consumes $\vec{HO}$ of a capital-intensive (differentiated) and of a labour-intensive (homogeneous) product. By comparing production and consumption points (Figure 1) one can determine trade pattern according to which home country exports $\vec{OM}$ of a capital-intensive (differentiated) product, while importing $\vec{NP}$ of a labour-intensive product and some other varieties of the manufacturing product. Considering a relatively high endowment of capital in the home country, it becomes a net-exporter of a capital-intensive product, while foreign country acts as a net-importer of the same product thus generating simultaneous exports and imports of different varieties of the same manufacturing product known as intra-industry trade. The remaining trade in labour-intensive products (e.g. food) results from comparative advantage and is used to be called inter-industry trade.

This result shows that the analytical model based on the integrated economy approach makes it possible to deal not only with issues emerging from imperfect market structures, but also with those that the classical Heckscher-Ohlin-Samuelson model could not solve, such as: trade with transport costs, trade in intermediate goods or intra-firma trade of MNE.

The main conclusions resulting from the above inferences are:

1. motive for trade comes not only from comparative advantage but also from advantages of economies of scale;
2. both theoretical and analytical models cannot *a priori* determine the specialization pattern as it can sometimes result from pure historical coincidence;
3. due to imperfect competition, trade barriers do not necessarily have welfare-reducing effect.

The last conclusion helps to ascertain advantages and disadvantages of trade liberalization. Apart from short-term effects which can sometimes get a negative net-value[8], long-term effects are much more relevant as they influence economic restructuring and growth. The long-term effects occur as a result of stronger competitive pressure which contributes to increasing investment, technology transfer and innovation and strategic business networking (vertical or horizontal). Thanks to improvements in allocation efficiency, countries realise increasing exports, while induced changes in the structure of trade flows guarantee more advantages from international trade and a stabile position on the world market. With the ongoing globalization as well as the advanced process of economic integration, changes in trade flows can take form of increasing intra-industry trade. This is particularly the case with developed countries and is more pronounced the more similar the countries are regarding their level of development[9] and existing economic structures (Loertscher/Wolter, 1980, Falvey, 1981). Nevertheless, growth of intra-industry trade is even more important for the less developed (e.g. transition) countries as increasing share of 'two-way trade' can be seen as an indicator of convergence in GDP, industrial structure and the development level, particularly in trade with the developed countries.

Due to real limitations which small economies face in international trade (the size of home market, availability of production factors), increase in intra-industry trade is very important as it enables them to make advantage of production differentiation and economies of scale. These advantages can be efficiently achieved if reduction in trade barriers is followed by technology transfer, inflow of FDI or vertical integration of local producers into international production systems and business networks. Regarding imperfect competition on international markets, which can make even the limited trade liberalization superior to free trade, and appreciating the positive experience of the advanced transition countries in Europe, positive effects of participation in regional economic integration on increasing intra-industry trade can be confirmed[10]. In that way, with gradual trade liberalization and preferential access to the EU-market it is possible to induce intra-industry specialization through frictionless economic restructuring and minimise short term negative effects resulting from exposing domestic market to international competition[11]. Intra-industry specialization prevents, namely high structural adjustment costs by

relocating production factors within the same sector, while inter-industry specialization shifts production factors across sectors thus incurring significant adjustment costs (Greenaway et al., 1994).

Marginal Intra-Industry Trade as a Measure of Trade Liberalization Effects

The idea of MIIT follows the 'standard' Grubel and Lloyd (1971) methodology of measuring similarity in export and import flows[12]. Basically, MIIT shows the share of intra-industry trade in total trade increase, or more generally the extent to which intra-industry trade has contributed to changes in trade flows. MIIT is, therefore used to analyse the structure of changes in trade flows depicting in that way the marginal changes in trade.

The Grubel-Lloyd (GL) index proved to be relevant, but 'static' measure of intra-industry trade which merely allows inter-temporal comparisons of intra-industry trade (Balassa/Bauwens, 1987; Fidrmuc et al., 1999; Gabrisch/Segnana, 1999; Greenaway/Milner, 1987). Therefore, it is usually argued that comparisons of the GL-index explain only the changes in trade structure, yet not the structure of the changing trade flows. Since a higher value of the GL-index shows a higher share of intra-industry trade and not necessarily the more significant contribution of intra-industry trade to total trade growth[13], the measuring of MIIT makes it possible to gain a deeper insight into trade liberalization effects and more reliable ex ante estimations of the expected effects of economic integration[14].

An early attempt of measuring MIIT is incorporated within the following formula:

$$MIIT = \begin{cases} \dfrac{\Delta X}{\Delta \mathrm{M}} \ldots\ldots\ldots if \ldots\ldots\ldots \Delta \mathrm{M} > \Delta X > 0 \\ \dfrac{\Delta M}{\Delta X} \ldots\ldots\ldots if \ldots\ldots\ldots \Delta X > \Delta M > 0 \end{cases} . \qquad (1)$$

This index uses variables which indicate changes in exports and imports ($\Delta X = X_t - X_{t-n}, \Delta \mathrm{M} = M_t - M_{t-n}$) and focuses, primarily on the new trade flows. It takes value within the range [0, 1] with 1 indicating that the realised trade growth is entirely of intra-industry nature (MIIT). However, this index is defined only in case of trade growth and not for situations of decreasing or stationary exports or imports. Further, it deals with absolute changes and gives no insight into initial values of exports and imports or the volume of trade[15]. Some other attempts which followed, tried to find out an ideal measure of the structure of change in trade flows by using absolute measures of MIIT. In that way they tried to eliminate one of the major weaknesses of index (1) – non-applicability in case of decreasing trade (Greenaway

et al., 1994). However, due to the comparative-static character such methodology offered no insight into dynamics and structure of changes in trade flows. Absolute measures proved to be unpractical for interpretation as they can take value outside the range [0, 1] and are, therefore not applicable in the analysis of relative changes – e.g. cross-country and cross-sectoral comparisons.

In order to detect structural adjustment effects of trade liberalization it is necessary to identify the pattern of change in trade flows instead of just comparing trade structure in different periods of time. The appropriate methodology should, therefore, be able to measure adjustment dynamics as well as its sectoral and geographical aspects. The following index which meets these criteria represents a ratio between the absolute change in intra-industry trade and the change in total trade (Brülhart, 1994):

$$A = 1 - \frac{\left|\Delta X - \Delta M\right|}{\left|\Delta X\right| + \left|\Delta M\right|}. \tag{2}$$

It can take value within the range of [0, 1] with 0 indicating that marginal trade is realised entirely through inter-industry trade and 1 showing that marginal trade is entirely of intra-industry type. At the higher level of statistical trade classification (usually 1-digit SITC), MIIT can be calculated according to the following formula:

$$A_{tot} = \sum_{i=1}^{n} w_i A_i \tag{3}$$

in which A_i, representing an industry and calculated according to (2), is weighted by the share of that specific industry in the change of total trade volume (all industries) as follows:

$$w_i = \frac{\left|\Delta X\right|_i + \left|\Delta M\right|_i}{\sum_{i=1}^{n}\left(\left|\Delta X\right|_i + \left|\Delta M\right|_i\right)} \tag{4}$$

The following index ($|B|=1-A$), being an improved version of (2), makes it possible to analyze sectoral effects of the changes in trade flows and solves some of the most significant weaknesses of the previous attempts of measuring MIIT:

$$B = \frac{\Delta X - \Delta M}{\left|\Delta X\right| + \left|\Delta M\right|}. \tag{5}$$

It represents the ratio between net-trade and the volume of trade and measures, therefore directly the share of intra-industry trade in the new trade flows. This index takes value within the range [-1, 1] and except the share of intra-industry trade in marginal trade it gives information on the sectoral structure of changes in exports and

imports (particularly if $\Delta X \neq \Delta M$). The closer the value to 0, the higher the share of intra-industry trade in total trade growth, while 1 marks the absence of intra-industry trade in trade growth (trade increase is realised only through inter-industry trade and predominant inter-sectoral specialization). Negative sign indicates deterioration of international competitiveness (increasing trade deficit), while positive sign shows improvements in international competitiveness through a more dynamic export growth[16].

Croatian Marginal Intra-Industry Trade During the 1990s

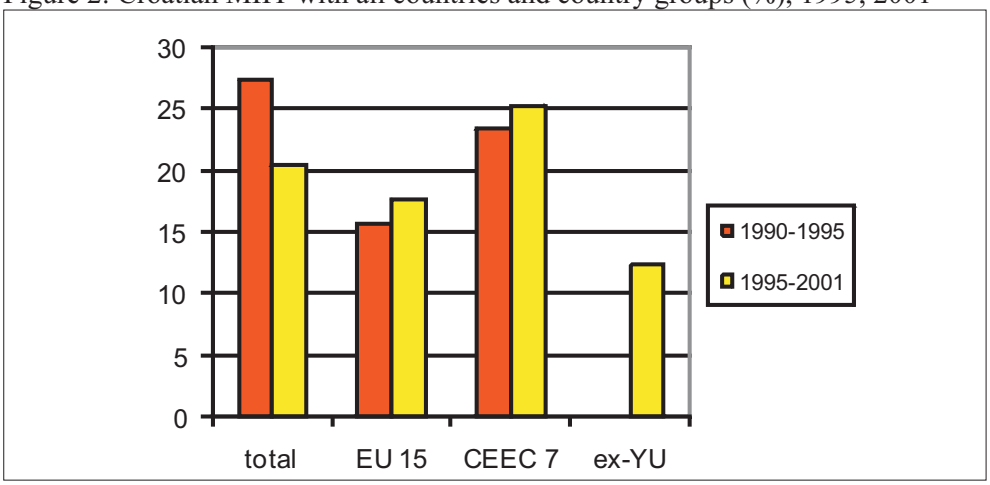
The following analysis is based on the Croatian exports and imports data[17] for the years 1990, 1995 and 2001 that enabled the calculation of MIIT for the periods 1990-1995 and 1995-2001 among which the second period was marked by stronger changes in the structure of trade flows[18]. MIIT is calculated for manufacturing (5-8 SITC) and other commodity classes shown in 3-digit classification system of Croatian trade with all countries and the selected country groups. The regional groups are created according to the geo-political criteria, thus making it possible to follow the dynamics of economic integration in Europe and its effects on Croatia which embarked on the integration process later than other Central and East European countries (CEEC). The groups include the EU 15 as a 'core' of economic integration in Europe, the CEEC 7 representing the advanced transition countries which underwent an intensive process of economic adjustment (including restructuring of trade flows) during the second half of the 1990s and finally, the succession countries of former Yugoslavia[19] which contributed to Croatian trade growth particularly in the second half of the 1990s as economic cooperation in South East Europe has intensified.

In order to calculate MIIT, indices (2) and (5) have been used. Index B was used for calculating the structure of marginal changes in trade flows for individual industries (3-digit SITC) as it indicates both the intensity and the direction of changes in trade flows (depicting that way the resulting structural adjustment). However, since it is impossible to aggregate index B across industries, the weighted index A_{tot} (3) was used in order to calculate MIIT at the higher level of statistical aggregation (1-digit SITC). Therefore, MIIT at the highest level of aggregation (total trade in all commodities) was calculated as a simple (unweighted) average of A_{tot}[20].

Figure 2 shows Croatian MIIT with all countries and selected country groups at the highest level of data aggregation (all commodity classes). Generally, MIIT fluctuated during the 1990s at the level of app. 20-28%, yet with decreasing trend towards the end of the decade. However, in case of the EU 15 and the CEEC 7, Croatia recorded an increase in MIIT. The most significant contribution of

intra-industry trade to marginal trade has been realised with transition countries in the second half of the 1990s. Despite an increase over the period 1995-2001, MIIT with the EU 15 is below average as it hardly exceeds 20%. The realised changes in the structure of trade growth are the weakest with the countries of former Yugoslavia where just app. 12% of marginal trade is of intra-industry type[21].

Figure 2: Croatian MIIT with all countries and country groups (%), 1995, 2001



Source: author's own calculation; according to: DZS – data series on exports and imports, 1990, 1995, 2001

Measured by commodity classes (0-9 SITC) Croatia realised a slowdown in the growth of MIIT during the 1990s. The only exceptions within the manufacturing are commodity class 7 (machinery and transport equipment) in trade with all countries and the EU 15 and commodity class 6 (manufactured goods classified by material) in trade with the CEEC 7 (Table 1). In trade with the EU 15, MIIT increased during the second half of the 1990s in five commodity classes out of which commodity class 7 is the only manufacturing sector. Significant contribution of intra-industry trade to marginal trade (more than 50%) during the 1990s was recorded only with miscellaneous manufactured articles (class 8) and animal and vegetable oils and fats (class 4). By the end of the decade, a very high MIIT was realised only in class 4 – animal and vegetable oils, fats and waxes (with the CEEC 7) which realises a negligible share in Croatian trade volume.

In total trade in goods from commodity class 7 (machinery and transport equipment) Croatia realised a considerable improvement in MIIT with machinery and machine tools (72, 73), which include civil engineering machinery, telecommunication equipment (764) and motor vehicles (including parts and accessories) of group 78. In the first half of the 1990s strong growth of MIIT was

recorded in rotating electric plant (716), parts for metal processing machine tools (735), non-electric (mechanical) equipment for machinery (74) and electric apparatus and equipment (77). However, MIIT in the above mentioned medium-high technology sectors[22] (except for telecommunication which belong to high technology) was realised with increasing trade deficit. In trade with the EU 15 a high level of MIIT is realised in civil engineering and food processing machinery, while in the second half of the 1990s machinery and equipment for special purposes as well as metalworking machinery (73), engines and motors (71), electric machinery and apparatus, motor vehicle parts and accessories entered the group.

Table 1: Croatian MIIT by commodity classes and groups of countries, %

SITC	share (%) in trade volume	TOTAL	EU 15	CEEC 7	ex-YU				
	2005	1990-1995	1995-2001	1990-1995	1995-2001	1990-1995	1995-2001	1990-1995	1995-2001
0	7,4	44,62	18,82	6,34	8,18	27,37	9,66	-	13,80
1	1,18	36,24	9,48	17,77	23,94	14,06	8,08	-	3,65
2	3,2	33,84	14,24	0,00	10,46	0,00	14,92	-	14,58
3	14,72	8,16	32,66	4,60	22,78	7,76	1,83	-	4,68
4	0,25	27,84	26,42	7,48	3,86	58,44	89,84	-	22,78
5	10,73	18,12	11,12	15,22	6,83	37,08	6,14	-	5,16
6	17,64	30,04	15,31	23,62	20,98	0,00	8,88	-	12,92
7	31,65	23,23	37,99	28,76	45,94	29,89	14,02	-	14,08
8	13,19	51,81	36,75	54,63	32,42	59,54	18,13	-	28,70
9	0,04	0,16	0,98	0,10	0,59	0,00	0,71	-	2,76

Source: author's own calculation; according to: DZS – data series on exports and imports, 1990, 1995, 2001.

With the CEEC 7, a high value of MIIT-index appears in only a few industries, while inter-industry trade (and specialization) dominates in all other sectors. Significant MIIT was realised in non-electric (mechanical) equipment (74), various electric machinery and apparatus, parts and accessories for agricultural motor vehicles (tractors), paper and pulp mill machinery and automatic data processing machines. In trade with countries of former Yugoslavia intra-industry trade significantly contributed to total trade growth (1995-2001) in engines and motors (71), machinery (723, 725), non-electric parts for machinery (74), electric equipment and apparatus (77), as well as parts and accessories for motor vehicles (784, 786). However, the group of commodities with zero MIIT is large and includes power

engines, metalworking machinery, various types of machinery for different industries, telecommunication equipment, heavy motor vehicles, ships and most commodities from the group of non-electric parts for machinery or electrical equipment and apparatus.

In other commodity classes of Croatian manufacturing (5-8 SITC) MIIT is significantly lower and this is especially the case in chemical industry. The weak contribution of intra-industry trade to (marginal) trade increase in this commodity group can be observed after 1995 (following the outset of dynamic trade liberalization of the CEEC 7 with the EU). Consequently, in the first half of the 1990s a high MIIT was evident in organic and inorganic chemicals (51, 52), medical and pharmaceutical products (541), polymers and basic products of plastics as well as technologically more sophisticated products such as: insecticides, explosives (59), etc.

Similar trends are evident in trade in manufactured goods classified by material (commodity class 6), both with all countries and across country groups. In trade with all countries realised before 1995, MIIT was effectuated in trade with simple wood products (e.g. veneers, plywood), wide range of textile fabrics – both synthetic and of natural raw materials (65) and a narrow spectrum of metal and metal products. During the second half of the 1990s only MIIT in clay construction materials (662), pig iron and the manufactures thereof and simple metal products (694) has remained. By 2001 a remarkable decrease in MIIT occurred in the leather, rubber and textile sector as well as production based on mineral raw materials and metal and metal products. However, high MIIT still dominates in trade of simply processed wood, products of paper industry and of mineral raw materials. It should be stressed that the realised MIIT with the EU 15 and all countries was followed by further deterioration of trade deficit in these commodity groups.

The pattern of trade growth (measured by MIIT-index) with both the CEEC 7 and countries of former Yugoslavia is almost identical and in both cases the greatest MIIT was realised in leather and rubber products, textile yarn and knitted fabrics, as well as metal structures and parts. Generally, it can be observed that in the commodity class 6 Croatia lost the position in which it realised MIIT in a wider spectrum of goods (entire 2-digit SITC) and achieves in the second half of the 1990s significant MIIT only in some mutually heterogeneous industries.

In 2001 a high share of MIIT in the commodity class 8 (miscellaneous manufactured articles) is realised through trade in articles of apparel of textile fabrics, footwear, optical instruments and apparatus, watches, printed products, baby carriages, toys and sporting goods and office supplies. Similar structure of trade growth (dominance of intra-industry trade) is realised with the EU 15, yet with stronger presence of clothes, articles of textile fabrics and commodities of class 89. In case of the CEEC 7 Croatia experienced a strong decrease in MIIT in clothes (84) and

commodities of the group 89, articles for home furnishing (812, 813) and technologically advanced products of the group 88. In the period 1995-2001 a significant MIIT with the CEEC 7 has been realised only in prefabricated buildings and a narrow range of textiles (841). Commodities from the group 81 (811, 812, 813) have contributed to total trade growth mostly through intra-industry trade, while MIIT with increasing negative balance can be observed with clothes and technologically advanced products of the group 87.

Concluding Remarks

Regarding the completion of trade liberalization with its main trading partner – the EU (January 2007) and the recent EU-enlargements (2004, 2007), structural adjustment effects in Croatia are yet to be realised to their full extent. The analysis has shown that Croatian manufacturing will be exposed to significant adjustment costs both in high- as well as in medium- and low-technology sectors.

Strong structural adjustment is expected in high-technology industries in trade with the EU 15, while medium- and low-technology sectors will experience significant structural adjustment in all commodity groups. Among the low-technology sectors, the highest adjustment costs are expected in the metal industry (including iron and steel) and in the production of non-metallic mineral products and the textile industry (including both textile fabrics and clothes). Apart from low values of MIIT these industries have also experienced an increasing trade deficit in the second half of the 1990s which points not only at narrower basis for intra-industry trade, but also at falling international competitiveness. Low level of MIIT and the corresponding inter-sectoral specialization realised during the 1990s is expected to bring about significant adjustment costs in machinery industry – particularly machinery specialised for specific industries and metalworking machinery. High-technology industries in this branch like electrical machinery (medicine) and scientific and controlling instruments will also come under severe pressure of international competition and will have to struggle for their own market niches. As for the high-value added production in chemical industry the same applies to pharmaceutical industry, cosmetics and production of other chemical materials and products. Low value-added products like plastics in primary and non-primary forms and basic products of chemical industry will be exposed to increasing international competition, too.

In order to prevent or reduce high structural adjustment costs in the above mentioned sectors, Croatian economic policy should be concentrated on improving economic competitiveness. To that end horizontal measures should be used as joining the EU would mean reducing other means of economic policy intervention or at least

adjusting it to the common policies. Transfer of technology which can be effectively realised through sector-oriented FDI and increasing local innovative capacity should enable local companies to find easily their market niches and become more flexible in adjusting to international demand. Business networking should promote building of backward- and forward-linkages and secure stronger positive spill-over effects on the entire economy. Support for SME, creation of clusters and business zones would contribute to that end by inducing company restructuring and creating business and investment environment supportive towards entrepreneurial activities.

NOTES

[1] Macroeconomic stability, flexible labour market, efficient financial market, availability of modern technology, high level of production efficiency.

[2] Therefore, gradual asymmetrical trade liberalization of the EU with transition countries (European Agreements, Stabilization and Association Agreements) can be seen as the right way of achieving economic convergence.

[3] In 2005 Croatia realized app. 80% of trade volume with the EU 27.

[4] Approximately 45% of the world exports is realised among developed countries what accounts for almost 65% of the entire developed countries' exports. However, in 1999-2003 exports of developing countries grew by 9,8% per annum, while that of Eastern Europe and the European part of ex-USSR reached 16,7% a year. At the same time, developed countries' exports grew by 5,4% annually, less than overall world exports (7,2%), (UN, 2004).

[5] The most thorough definition of intra-industry trade is given by Tharakan and Calfat (1996) who describe it as trade in goods which are similar regarding either their factor inputs or final consumption.

[6] This approach is also known as the story of a Samuelson's angel and is originally used to explain factor price equalization (Krugman, 1995).

[7] Despite the restrictiveness of the full employment criteria it is, however shown that international trade can be efficient even in the case of significant differences in the relative endowment of production factors among countries. This is possible in the models which incorporate multinational enterprises (MNE) which give rise to intra-firm trade as a form of intra-sectoral trade (for further details see: Helpman/Krugman, 1986).

[8] Despite the positive downward pressure on prices, the competition from foreign markets can result in negative net-effects through temporary fall in output and employment, increasing trade deficit or slowdown in economic growth.

[9] The main factor behind the North-North trade is the similarity in demand across countries which is determined by the similarity in GDP/capita. Therefore, countries will specialise in and export those products for which they have sufficiently large domestic demand.

[10] Gradual and partial asymmetrical trade liberalization with the EU helped the most successful transition countries to increase their shares of intra-industry trade in total trade flows to the levels which exceed those of some of the old member countries in intra-EU trade (e.g. Spain, Portugal, Ireland, Finland and Greece) – Hungary (60,6%), Slovenia (67,4%) and Czech Republic (72,9%), (Fidrmuc, 2001).

[11] An important aspect of increased competition are improvements in labour productivity realised through: better allocation of production factors, deeper specialization, higher return on investment and technology spill-over (Nordas et al., 2006).

[12] More on standard methodology of measuring intra-industry trade and its improvements in: Derado, 2007.

[13] Increasing exports for a net-importing country or increasing imports for a net-exporting country leads to a higher share of IIT, although the increase in both cases is not of intra-industry type (see: Shelburne, 1993).

[14] The analysis of the effects of 'Closer Economic Relations Agreement' between Australia and New Zealand (1983) proved that industries with lower intra-industry trade have experienced more intensive structural adjustments (higher adjustment costs) than those which realised a higher MIIT (Hamilton/Kniest, 1991).

[15] Two industries (A, B) experiencing different amounts of absolute trade growth (e.g. $\Delta X_A = 1, \Delta M_A = 1$ and $\Delta X_B = 100, \Delta M_B = 100$) realise the same value of index (1) with no regard for differences in the absolute amount of trade growth or the initial volume of trade, as long as in each of them increase in exports equals increase in imports in absolute terms.

[16] Positive sign indicates one of the following situations: increasing exports and decreasing imports, faster growing exports to imports or faster decreasing imports to exports. Negative sign applies to the opposite.

[17] The data broken down to 7-digit SITC (f.o.b.-parity, in USD according to the market exchange rate of 01. December of the current year) are obtained from the Republic of Croatia – Central Bureau of Statistics.

[18] Until 2007 Croatia has signed nine free trade agreements (among which the Stabilization and Association Agreement with the EU) which include 37 countries and UNMIK Kosovo. This makes almost 80% of Croatian exports and app. 70% of imports (MINGORP, 2007).

[19] CEEC 7 includes: Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic and Slovenia, while to former Yugoslav countries belong: Bosnia and Herzegovina, Macedonia, Serbia and Montenegro and Slovenia.

[20] Differences in the applied methodology at the 3-digit SITC (0 = max. MIIT) on one hand and 1-digit SITC and total trade (1 = max. MIIT) on the other, requires additional attention in interpretation of the results.

[21] The modest MIIT realised throughout the 1990s is consistent with Croatian predominant inter-sectoral specialization confirmed by the values of the Grubel-Lloyd index: 46,6% (total trade), 40% (EU 15), 34,4% (CEEC 7) and 55,7% (ex-YU)

[22] For classification of manufacturing according to technological intensity see: Hatzchronoglou, 1996.

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