

Development of Intra-Industry Trade Among the Baltic States

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Abstract

This article investigates development of intra-industry trade among the Baltic States in the context of the EU integration. It was determined that in recent years the share of Lithuanian, Latvian and Estonian intra-industry trade has raised. This article analyses the basic theories and methods of intra-industry trade measurement; the influence of this form of trade on the changes of international trade structure. For measurement of intra-industry trade among the Baltic States two approaches have been adopted in the article. The Grubel-Lloyd index has been used to calculate the intensity of intra-industry trade. Secondly, changes in trade over time have been examined using an index of marginal intra-industry trade. Using these methods of measurement and Combined Nomenclature of commodities (CN) the main directions of nature and pattern of Baltic States foreign trade development have been calculated.

Keywords: intra-industry trade, Grubel-Lloyd index, marginal intra-industry trade index, export, import.

Introduction

Intra-industry trade today is a dynamically developing part of trade. The causes of intra-industry trade, and its implications for structural adjustment and the gains from trade have been the subject of many studies.

D. Ricardo's theory of comparative advantage and Hecksher-Ohlin theory of proportions of production factors explained international trade among countries using differences in resources and availability of production factors (Husted, Melvin, 2004). However, intra-industry trade fails to reflect comparative advantage. This was the reason for the analysis of intra-industry trade using various alternative international trade theories.

Based on new theories, monopolistic competition and increasing returns lead to intra-industry trade among countries, whereas old comparative advantage

is still applied for countries separated by high economic distance (i.e. big difference in factor endowment, technology levels, etc.) (Husted, Melvin, 2004).

Most of research show that the more developed a country is the more specialized is the structure of international trade and, therefore, a larger part of trade within a branch dominates in the total scope of international trade (Kalbasi, 2003; Tiits, Juriado, 2006; McAleese, 2004, etc.).

Although intra-industry trade is wide-spread, economic literature has numerous discussions regarding importance thereof. While analyzing the importance of this trade it is necessary to measure the part of intra-industry trade in international trade. It is an especially urgent problem for Lithuania because there are no studies on the issue.

The following are the dominating approaches of measurement of importance of intra-industry trade: the Balassa index, Grubel-Lloyd index, the Aquino formula, the Bergstrand method, index of marginal intra-industry trade, etc. (Balassa, 1966; Grubel, Lloyd, 1975; Aquino, 1978; Bergstrand, 1990; Hamilton, Kniest, 1991).

Current economic integration processes (accession of Lithuania, Latvia, Estonia and other States into the EU) expanded the boundaries of the European Union thus influencing tendencies of changes of intra-industry trade. However, research related to such changes is lacking. For this reason an urgent problem arises to estimate the significance of development of intra-industry trade among the Baltic States.

The object of this research: intra-industry trade among the Baltic States.

The aim of this research is to analyze the development of intra-industry trade among the Baltic States.

The tasks of the research: to perform analysis of the basic theories of intra-industry trade; to analyze the basic methods of intra-industry trade measurement; to present comparative analysis of changes of intra-industry trade among the Baltic States; to estimate the importance of intra-industry trade on the changes of international trade structure.

The methods of the research: analysis and

synthesis of scientific literature discussing the problems of intra-industry trade, systematic statistical data analysis of the EU and Lithuanian, Latvian and Estonian international trade.

Methodology of the research: to examine the development of intra-industry among the Baltic States two approaches are adopted. The Grubel-Lloyd index (1975) is used to calculate the intensity of intra-industry trade and thus to determine its relative importance compared to inter-industry trade. Secondly, the index of marginal intra-industry trade, developed by M. Brulhart (1994), is used to examine changes in trade flows over time.

The results of the research: on the basis of statistical data and using the Grubel-Lloyd index, marginal intra-industry trade index and Combined Nomenclature of commodities it was determined that intra-industry trade is the most important and constantly increasing sector in international trade of the Baltic States. Analysis of the calculated intra-industry indexes among the Baltic States shows the main directions of nature and pattern of international trade development in the context of the EU integration.

Theoretical analysis of intra-industry trade

Many studies suggest that more developed countries and a more specialized trade structure lead to higher intra-industry trade. Most of research show that industries with high levels of intra-industry trade undergo less structural change – and less adjustment costs – in response to trade liberalization than industries with low levels of intra-industry trade. The reason for this is that it is easier to transfer and adapt resources within firms or industries than from one industry to another (Krugman, 1981; Mc Aleese, 2004). At present, there are increasing number of studies on intra-industry trade between separate countries and their groups.

In order to understand why economists have turned their attention to the analysis of intra-industry trade, it is necessary to examine the importance of intra-industry trade using various theories and on these grounds to explain differences between inter-industry trade and intra-industry trade.

Classical approaches to international trade and specialization such as David Ricardo's theory on relative comparative advantage provide the fact that different countries have comparative advantage in different production branches, and individual regions or countries should specialize in production and export of goods which can be produced comparatively cheaper than in other countries. Thus the goods that can be produced by other countries more effectively shall be imported. D. Ricardo provided the main principle

of this theory: goods are more mobile between different regions than resources (work, capital, land). This assumption describes the theory of intra-industry trade (Ricardo, 1955).

The theory of comparative advantage deals with all the reasons of international trade that are generated by differences between the countries. D. Ricardo's contribution is not related to his note that all countries are different, but, rather, to the fact that these differences help all countries gain an international advantage even if they have higher wages (developed countries) or lower productivity (developing countries) if compared to neighbouring countries. D. Ricardo's idea of the trade model was to show that each country can gain an advantage due to certain differences among countries. Anyway, whether a country has higher wages or another – lower productivity, competitive wage rates that prevail in a country ensure that every country will specialize in the good having a comparative advantage. However, D. Ricardo's trade model is unable to explain the influence of trade on distribution of income within the country or what can be described by a comparative advantage. Thus trade theorists turn their attention to the Heckscher-Ohlin trade model.

In the Heckscher-Ohlin model a country exports goods, production of which consumes more relatively abundant resources of that country, and imports goods, production of which consumes more relatively scarce resources of that country (Lindert, Pugel, 1996).

Yet empirical research of the Heckscher-Ohlin model failed. The reason was that the researched models failed to provide the fact that international trade has great influence on distribution of income. The main reason why international trade fails to provide influence on distribution of income is that most international trade is intra-industry trade. When international trade takes place there is not massive redistribution of production factors from labor-intensive industries to capital-intensive industries. On the contrary, the production factors are redistributed within industries and this does not have the same impact as inter-industry trade.

Thus, the said theories analyzed trade between countries with different provision of production factors. However, majority of global trade is conducted between the developed countries having similar economic structure and endowment of production factors.

In the models of monopolistic competition, the preference for variety on the demand side combined with the presence of economies of scale on the production side play a crucial role in the increase of intra-industry trade. Consumers have a preference for

variety. However, only a small number of them are domestically produced. This happens because of increasing returns to scale, which favors concentration of production by limiting an optimal number of varieties that may be produced in each country. Kevin Lancaster and Paul Krugman show that intra-industry trade expansion is a result of product differentiation in markets with monopolistic competition and increasing returns to scale (Lancaster, 1980, Krugman, 1981).

According to these authors, trade in differentiated products is most likely to take place between countries with similar factor endowments and which have a high level of per inhabitant income. Elhanan Helpman and Paul Krugman synthesize traditional and new international trade theories in a framework that incorporates differences in factor endowments, decreasing costs and horizontal product differentiation in order to explain both intra- and inter-industry trade (Helpman, 1981). Furthermore, consumers are supposed to have preference for goods variety represented by Ansh Dixit and Joseph Stiglitz preferences (Dixit, Stiglitz, 1977). Moreover, they assume insignificant transport costs, no trade impediments, and leveling factor prices. The volume of intra-industry trade evolves when allocation of resources changes between trading partners. Thus, the said models fail to provide sufficient understanding of intra-industry trade. Therefore, a new approach to intra-industry trade was provided. According to it, intra-industry trade is of two kinds: horizontal and vertical. Horizontal intra-industry trade is explained by economies of scale in the presence of product differentiation and monopolistic competition. Horizontal intra-industry trade arises when produced goods are similar in quality but different in their variety features. The theoretical source for such trade has been developed by Kevin Lancaster, Paul Krugman and Bergstrand (Lancaster, 1980; Krugman, 1981; Bergstrand, 1990). These theories suggest that similar countries in terms of income intensity do intra-industry trade.

Vertical intra-industry trade is explained as simultaneous export and import of products, which are different by quality (Falvey, Kierzkowski, 1987). They demonstrated that the share of vertical intra-industry trade increases in an environment where many big firms settle and produce numerous varieties. They suggest that the share of vertical intra-industry trade will be positively correlated with the differences of the average market size, and a growing difference in per capita income.

Sylvie Montout, Jean-Louis Mucchielli and Soledad Zignago established that international and inter-regional trade increase the size of the market because of a bigger variety of goods, therefore, the possibility

to gain benefit from economy of production volume is increased. They indicated that products may only differ in their quality (this is the reason for difference in price). In this case specialization is grounded on the changes of quality within the same branch. Thus they indicate the importance of intra-industry trade (Montout, Mucchielli, Zignago, 2002).

In order to understand the influence of intra-industry trade on the changes of international trade structure it is necessary to analyze the problem of its measurement.

Methods of assessment of intra-industry trade

Various methods are used for measuring intra-industry trade. Early works on intra-industry trade measurement included its degrees and the pattern of trade (Greenaway, Milner, 1989). The first measurement of intra-industry trade was proposed by Bela Balassa (Balassa, 1966). He proposed that it be measured by the extent to which exports of a given good are offset by imports of an equivalent good.

The index most often used to assess the importance of intra-industry trade was introduced by Grubel and Lloyd in 1975. Herbert Grubel and Peter Lloyd when examining the trade of the countries of the Organization for Economic Cooperation and Development (OECD) suggested the following formula to measure the importance of intra-industry trade:

$$GL_i = [(X_i + M_i) - |X_i - M_i|] / (X_i + M_i) \cdot 100 \%, \quad (1)$$

Where GL_i – index of intra-industry trade for industry i ;

X_i – value of export in industry i ;

M_i – value of import in industry i ;

$X_i + M_i$ – total value of trade;

$|X_i - M_i|$ – trade balance industry i .

The value of GL_i ranges from 0 to 100. Thus the closer the GL_i value is to 100, the more important is intra-industry trade and vice versa, the closer the value GL_i is to 0, the more important is inter-industry trade. If X_i or M_i equal to 0, there is no intra-industry trade, and this index equals to 0 because the country is only exporting or importing the products of a given branch. When $GL_i = 100$, two-sided trade is conducted: the country exports as much as it imports. In other words, the closer the value of GL_i is to 100, the larger the volume of intra-industry trade is (Grubel & Lloyd, 1975). In order to establish an average level of intra-industry trade, Grubel and Lloyd proposed the weighted index to arrive at an overall measure of intra-industry trade. They noticed that GL_i is characterized by the tendency of reduction when trade in goods is not balanced. Limitation of using this index

is related to the reason that the value thereof is highly dependent on whether the branch of group of goods is defined. The wider the definition is, the larger the possibility that countries trade in a certain amount of differentiated goods within the limits of the groups of goods (branches) and, therefore, the value of this index is larger.

The traditional measure of intra-industry trade is used and the Grubel–Lloyd index calculated as:

$$GL_i = 1 - [|X_i - M_i| / (X_i + M_i)], \quad (2)$$

Where X_i is the export in a certain line of goods and M_i – import in the same commodity group.

The value of the GL_i index can vary between 0 and 1, whereas the former denotes zero intra-industry trade and the latter corresponds to the situation where all trade is intra-industry. One should also note that trade imbalance between trading partners leads to downward deviation of the value of the GL_i index, i.e. the theoretical maximum value 1, which corresponds to hundred-percent, intra-industry remains unachievable.

Some authors: Ramal Abd-El-Rahman, Lionel Fontagne, and Michael Freudenberg provided a different view on the concept of intra-industry trade. They provided a method according to which trade is examined as a two-way trade, where the value of the minority flow of goods exceeds 20% of the majority flow of goods (Abd-El-Rahman, 1986; Fontagne, Freudenberg, 1997). Having established a two-way trade, trading in goods can be defined by differentiating according to the quality or features. Usually differences in price reflect differences in quality.

Takamune Fuji suggests using two methods to measure the importance of intra-industry trade: Grubel-Lloyd index (GL_i); Parallel index of intra-industry trade (CEPIT). The latter index is suggested to measure the Japanese intra-industry trade. The degree of import and export overlap in each commodity is calculated and trade amount of the total sector by using unit price of export and import commodity is distinguished (Fuji, 2006).

Limitations of using changes in the standard Grubel–Lloyd index to capture the dynamics of changes in intra-industry trade are widely recognized. In literature on trade liberalization it has been identified that the Grubel–Lloyd index, as a measure of intra-industry trade, is negatively correlated with the factor of market adjustment costs. But adjustment costs are dynamic phenomena and the static Grubel–Lloyd index is not a suitable measure in this instance. Consequently, recent theoretical developments stress the importance of marginal intra-industry trade in the context of the adjustment costs of trade liberalization.

Several indices of marginal intra-industry trade have been developed. The first attempt to construct an index of marginal intra-industry trade was made by Chris Hamilton and George Kniest in 1991, who argued that for the purpose of evaluating the adjustment consequences of trade expansion it was important to focus on how intra-industry trade changes at the margin. They offered an index which effectively calculated the proportion of changes in exports or imports (Hamilton & Kniest, 1991). The most popular measure in recent empirical studies is that proposed by Marius Brulhart (1994), which is transposition of the Grubel–Lloyd index to trade changes:

$$A = 1 - [(\Delta X_i - \Delta M_i) / (\Delta X_i + \Delta M_i)], \quad (3)$$

Where X_i and M_i have the same meaning as in the case of the GL_i index; Δ is the change in trade flows between two years.

Like the GL_i index, the A index varies between 0 and 1, where the extreme values correspond to changes trade flows that are attributable to being entirely of an inter-industry (0) and intra-industry (1) nature. The A index is defined in all cases, can be aggregated over a number of product groups using appropriate weights and indeed shares many familiar statistical properties of the Grubel–Lloyd index. When a country's exports and imports in a particular industry grow or shrink at a similar absolute rate (high A), trade-induced adjustment is likely to occur at the intra-industry level, while the overall performance of the industry is determined by factors which tend to affect all countries symmetrically, such as global demand or technology changes. The A index therefore captures the degree of cross-country symmetry in trade changes. Conversely, where a country's exports and imports in a particular industry show diverging trends (low A), both trade-induced asymmetrical forces for the geographical inter-industry adjustment and exogenous factors determining the fate of the industry across all countries are likely to be relevant (Brulhart, 1994). Regarding the fact that the Grubel-Lloyd index is widespread and used for analysis of importance of intra-industry trade in separate countries, it will be used in this paper to analyze the importance of this kind of trade to the nature of international trade. Changes in trade over time are examined using an index of marginal intra-industry trade.

Intra-industry trade between the Baltic States: empirical results

Using the Grubel-Lloyd index and Combined Nomenclature of commodities (CN) is calculated the index of intra-industry trade between Lithuania and

its main partners during 2001–2007. The Grubel-Lloyd index of intra-industry trade were calculated

between Lithuania and all trading partners; the EU; Latvia, Estonia and other countries (Table 1).

Table 1

Intra-industry trade between Lithuania and its trading partners in 2001–2007

Countries	Year						
	2001	2002	2003	2004	2005	2006	2007
ES	0.88	0.87	0.82	0.88	0.91	0.85	0.80
Latvia	0.29	0.38	0.37	0.67	0.67	0.74	0.75
Estonia	0.63	0.56	0.61	0.92	0.77	0.79	0.93
Other countries	0.66	0.68	0.76	0.62	0.58	0.64	0.93
World total	0.84	0.64	0.85	0.86	0.86	0.84	0.83

Source: Author’s calculation, Statistics database of Lithuania, January, 2008.

Results presented in Table 1 reveal that generally intra-industry trade in Lithuania compose the majority part of total trade. A high level of intra-industry trade is usually attributed to a number of country specific factors, including its close geographical proximity, similar level of development, similar consumer tastes, culture, institutional, political and transport links. Analysis of intra-industry trade between Lithuania and the EU shows that the value of the GL_i index is close to 1 (Table 1). This is related to the fact that the EU is the main Lithuanian trading partner: share of export of goods to the EU in the total export during 2001–2007 were the largest. This was also characteristic to import from the EU. Such a tendency remained through 2004, when Lithuania became a member of the EU. In 2007 export of Lithuanian goods to the EU comprised 64.8% and import from

the EU – 68.3% (Foreign trade in 2007, 2008). As we can see from Table 1, growth tendency is characteristic to Lithuanian intra-industry trade with the Latvia, Estonia (Table 1).

For comparative analysis of intra-industry trade CN sections with the biggest share of export and import in the total export and import of the Baltic States were selected. While analyzing intra-industry trade between Lithuania and Latvia, Estonia according CN we see that huge differences in separate groups prevail (Table 2 and Table 3). Data in Table 2 show that trading in live animals and animals products; products of the chemical or allied industries; base metals and articles of base metals, vehicles and transport equipment dominate between Lithuania and Latvia because trading indices of these branches are the largest. This shows the nature of specialization of international trade.

Table 2

Intra-industry trade by CN sections between Lithuania and Latvia in 2001–2007

CN code	CN sections	Year						
		2001	2002	2003	2004	2005	2006	2007
I	Live animals; animal products	0.42	0.30	0.37	0.36	0.69	0.92	0.87
II	Vegetable products	0.26	0.21	0.41	0.58	0.63	0.80	0.75
IV	Prepared foodstuffs; beverages, spirits and vinegar, tobacco	0.56	0.62	0.70	0.85	0.72	0.78	0.72
V	Mineral products	0.05	0.08	0.03	0.10	0.28	0.31	0.19
VI	Products of the chemical or allied industries	0.62	0.66	0.59	0.99	0.96	0.97	0.97
VII	Plastics and articles thereof; rubber and articles thereof	0.22	0.22	0.25	0.66	0.68	0.63	0.73
IX	Wood and articles of wood	0.98	0.97	0.99	0.99	0.70	0.69	0.86
XI	Textile and textile articles	0.70	0.60	0.57	0.76	0.76	0.77	0.78
XV	Base metals and articles of base metal	0.46	0.39	0.45	0.89	0.92	0.94	0.97
XVI	Machinery and mechanical appliances; electrical equipment;	0.23	0.27	0.25	0.88	0.72	0.68	0.74
XVII	Vehicles, aircraft, vessels and associated transport equipment	0.09	0.36	0.34	0.89	0.79	0.89	0.98
XX	Miscellaneous manufactured articles	0.24	0.25	0.35	0.44	0.54	0.51	0.64

Source: Author’s calculation, Statistics database of Lithuania, January, 2008.

Analysis of intra-industry trade between Lithuania and Estonia shows that trading in plastics and articles thereof; wood and articles of wood during 2007 not only increased if compared to 2001 but also were

the largest (Table 3). This is related to the fact that examined countries are of similar economic development, capital labour ratio, qualification level.

Table 3

Intra-industry trade by CN sections between Lithuania and Estonia in 2001–2007

CN code	CN sections	Year						
		2001	2002	2003	2004	2005	2006	2007
I	Live animals; animal products	0.81	0.88	0.87	0.92	0.80	0.96	0.82
II	Vegetable products	0.35	0.43	0.14	0.31	0.51	0.31	0.31
IV	Prepared foodstuffs; beverages, spirits and vinegar, tobacco	0.76	0.87	0.88	0.91	0.89	0.91	0.59
V	Mineral products	0.16	0.08	0.05	0.09	0.11	0.08	0.10
VI	Products of the chemical or allied industries	0.70	0.59	0.42	0.94	0.80	0.78	0.72
VII	Plastics and articles thereof; rubber and articles thereof	0.53	0.41	0.45	0.84	0.89	0.83	0.95
IX	Wood and articles of wood	0.56	0.94	0.88	0.94	0.90	0.95	0.95
XI	Textile and textile articles	0.99	0.92	0.96	0.82	0.95	0.92	0.86
XV	Base metals and articles of base metal	0.69	0.52	0.81	0.51	0.61	0.71	0.55
XVI	Machinery and mechanical appliances; electrical equipment;	0.75	0.70	0.59	0.88	0.78	0.76	0.76
XVII	Vehicles, aircraft, vessels and associated transport equipment	0.34	0.05	0.22	0.25	0.32	0.38	0.29
XX	Miscellaneous manufactured articles	0.95	0.83	0.76	0.82	0.80	0.65	0.83

Source: Author's calculation, Statistics database of Lithuania, January, 2008.

Thus, changes of the GLi index show not only an increased level of specialization of goods but also the ability of manufacturers to compete under more open trading conditions when the Baltic States became the members of the EU. EU trade policy and implementation of its principles had influence on the new members of the EU export and import marketable structure. It should be noted that since the Baltic States are becoming the members of the EU, a common customs tariff of the EU is valid in Lithuania, Latvia and Estonia. This means that the same customs are applied for goods which are imported to the territory of the Baltic State from the third countries as importing goods to any other EU country. In order to make sure implementation of solid foreign trade policy Lithuania and other members of the EU applies customs tariffs, quantitative limitations, tariff quotas and other means of foreign trade regulation to the third countries, which EU applies. The Baltic States have applied other means of EU foreign trade regulations: antidumping, protective, compensatory, reciprocal means, quantitative limitations, non-tariff limitations (veterinary and other standards), and means introduced as sanctions according to the decisions of the United Nations.

The Grubel-Lloyd indices in Table 1, Table 2 and Table 3 indicate a slightly upward trend in intra-industry trade. However, the Grubel-Lloyd index is most appropriate for measurement over a single period of time, i.e. is regarded as static indicator of intra-industry trade. Analysis has so far been based on indices which measure the extent of intra-industry trade as a proportion of total trade at a given point of time. But changes in the Grubel-Lloyd index may not capture potential adjustment costs, and measures of marginal intra-industry trade can, therefore, be used to complement traditional intra-industry trade analysis.

We have calculated A indices between Lithuania and its trading partners over the periods 2001–2004 and 2004–2007 based on multilateral trade flows at a specified group level (Table 4). The highest share of marginal intra-industry trade is revealed for Estonia and the EU over both periods. For other trade partners the level of marginal intra-industry trade less was relevant over both periods. A generally low level of A indices (close to zero) indicates that most of change occurring in trade flows has been inter-industry by nature and therefore very likely have induced high adjustment costs.

Table 4

Marginal intra-industry trade between Lithuania and its trading partners in 2001–2007

Countries	Year	
	2001–2004	2004–2007
EU	0.89	0.70
Latvia	0.51	0.82
Estonia	0.91	0.94
Other countries	0.76	0.66
World total	0.91	0.78

Source: Author's calculation, Statistics database of Lithuania, January, 2008.

As with the Grubel-Lloyd indices, the A indices are also calculated by CN sections (Table 5). The highest levels of marginal intra-industry trade between Lithuania and Latvia for the period 2001–2004 are found in CN sections: II (Vegetable products); VII (Plastics and articles thereof); IX (Wood and articles of wood); XI (Textiles and textile article) and for the period 2004–2007 the highest A levels are for these CN sections: VI (Products of the chemical or allied industries); XI (Textiles and textiles articles); XV (Base metals and articles of base metal); XVII (Vehicles, aircraft, vessels and associated transport equipment).

As we can see the A indices were below 0.2 for mineral products over 2001–2004 period. It shows

that inter-industry trade in these commodities groups dominate between Lithuania and Latvia.

Data in Table 5 show that the highest levels of marginal intra-industry trade between Lithuania and Estonia for the period 2001–2004 are found in CN sections: I (Live animals and animal products); IV (Prepared foodstuffs, beverages, spirits and vinegar, tobacco); VI (Products of the chemical or allied industries); VII (Plastics and articles thereof) and for the period 2004–2007 the highest A levels are for CN sections: I (Live animals and animal products); VII (Plastics and articles thereof); IX (Wood and articles of wood); XI (Textiles and textiles articles).

Table 5

Marginal intra-industry trade by CN sections between Lithuania and Latvia, Estonia in 2001–2007

CN code	CN sections	Latvia		Estonia	
		2001–2004	2004–2007	2001–2004	2004–2007
I	Live animals; animal products	0.36	0.63	0.86	0.78
II	Vegetable products	0.77	0.65	0.31	0.29
IV	Prepared foodstuffs; beverages, spirits and vinegar, tobacco	0.74	0.60	0.89	0.69
V	Mineral products	0.13	0.34	0.04	0.12
VI	Products of the chemical or allied industries	0.77	0.96	0.92	0.62
VII	Plastics and articles thereof; rubber and articles thereof	0.52	0.78	0.95	0.96
IX	Wood and articles of wood	0.99	0.80	0.84	0.91
XI	Textile and textile articles	0.87	0.81	0.56	0.93
XV	Base metals and articles of base metal	0.48	0.85	0.52	0.59
XVI	Machinery and mechanical appliances; electrical equipment;	0.59	0.67	0.77	0.66
XVII	Vehicles, aircraft, vessels and associated transport equipment	0.71	0.99	0.20	0.30
XX	Miscellaneous manufactured articles	0.27	0.68	0.76	0.60

Source: Author's calculation, Statistics database of Lithuania, January, 2008.

Thus, the analysis of intra-industry trade reveals that after the Baltic States became the member of the EU, having national economics under development, structural changes of their economies have been

taking place. Having Lithuania trade with numerous foreign countries in a free trade regime influences the increase in the volumes of import and export. This is also characteristic to the examined members of the

EU: Latvia and Estonia. Due to that the share of intra-industry trade importance thereof has increased. Intra-industry trade provides more additional benefits from international trade than comparable advantage because trade within a branch enables the countries to gain benefit from larger markets. A country can simultaneously decrease the amount of produced goods and to increase the range of goods useful to the consumers. Thus, the nature of international trade is changing as well as its structure of goods due to increasing specialization within a branch and the variety of produced goods increases.

Conclusions

Globalization and integration processes opened huge possibilities for the development of foreign trade between the Baltic States. It was determined that in 2007 Lithuanian export to Latvia and Estonia accounted for 12.9% and 5.8% of the total exports, while import accounted for 5.5% and 3.7% of the total Lithuanian import. As compared to 2001, export to Latvia and Estonia increased by 240.5% and 422.2%; import – by 858.2% and 799.6%.

Analysis of the basic methods of measurement of intra-industry trade shows that various methods are used for measuring intra-industry trade. To examine the development of intra-industry trade between Lithuania and its trading partners, two methods are used. The Grubel–Lloyd index is used to calculate the intensity of intra-industry trade and thus to determine its relative importance compared to inter-industry trade. But the Grubel-Lloyd index is most appropriate for measurement over a single period of time and changes in the Grubel-Lloyd index may not capture potential adjustment costs. Therefore, marginal intra-industry trade index helps to examine changes in trade flows over time.

On the basis of the Grubel–Lloyd index concentration of intra-industry trade flows between Lithuania and its trading partners has been determined. Analysis shows that growth tendency of intra-industry trade is characteristic between Lithuania and Latvia, Estonia. This is related to the fact that foreign trade among the Baltic States in 2001–2007 highly increased.

On the basis of Grubel-Lloyd index is determined that Lithuanian intra-industry trade is the most important and constantly increasing sector of international trade. Analysis of the calculated intra-industry trade between Lithuania and Latvia using CN shows that Lithuania has advantages in such CN sections of commodities as live animals and animals products; products of the chemical or allied industries; base metals and articles of base metal; vehicles and trans-

port equipments. Latvia has advantages in trade of miscellaneous manufactured articles. Analysis of the calculated intra-industry between Lithuania and Estonia using CN shows that Lithuania has advantages in such CN sections of goods as live animals and animal products; plastics and articles thereof; wood and articles of wood. Estonia has advantages in trade of vegetable products; vehicles, aircraft, vessels and associated transport equipment. These calculation results show not only the increased level of specialization of these products but also the ability of manufacturers to compete under more open trading conditions when Lithuania, Latvia and Estonia became the members of the EU.

On the basis of marginal intra-industry trade calculation it is determined that the highest share is revealed for Estonia and the EU over both periods and Latvia for 2004–2007 period. For other trade partners the level of marginal intra-industry trade was less relevant over both periods. This situation indicates that most of changes occurring in trade flows have been inter-industry by nature and therefore very likely have induced high adjustment costs.

Analysis of the calculated marginal intra-industry by CN sections between Lithuania and Latvia, Estonia shows that Lithuania has advantages in such CN sections as products of the chemical or allied industries; textiles and textiles articles; wood and articles of wood. But marginal intra-industry trade indices are lowest in vehicles, aircraft, vessels and associated transport equipment; vegetable products sections. It shows that inter-industry trade in these commodities sections dominate in trade between Lithuania and Latvia; Estonia. These calculation results show the main directions of nature and pattern of international trade development.

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Vidaus prekybos pramonės raida tarp Baltijos valstybių

Santrauka

Lietuva, Latvija ir Estija – mažos šalys, todėl jų ekonomikos plėtra didele dalimi priklauso nuo užsienio prekybos. Užsienio prekybos vystymas skatina ūkio struktūrinius pokyčius, padeda šalies gamintojams užmegzti glaudžius ekonominius ryšius su kitų šalių verslininkais, geriau prisitaikyti prie rinkos sąlygų. Statistinių duomenų analizė rodo, kad prekyba pramonės viduje vaidina pagrindinį vaidmenį Lietuvos, Latvijos ir Estijos užsienio prekyboje. Nustatyta, kad pastaraisiais metais Lietuvos prekių išvežimas į Latviją ir Estiją ir prekių įvežimas iš Latvijos ir Estijos padidėjo. 2007 m. prekių išvežimas į Latviją sudarė 12,9%, o į Estiją -5,8% bendrojo Lietuvos eksporto, o prekių įvežimas iš Latvijos ir Estijos atitinkamai -5,5% ir 3,7% bendrojo Lietuvos importo. Palyginus su 2001 m., prekių išvežimas į Latviją ir Estiją padidėjo atitinkamai 240,5% ir 422,2%; o prekių įvežimas iš Latvijos ir Estijos – atitinkamai 858,2% and 799,6%. Todėl iškyla aktuali problema – įvertinti prekybos pramonės viduje tarp Baltijos valstybių vystymosi reikšmę dabartinėmis sąlygomis.

Tyrimo tikslas – išanalizuoti prekybos pramonės viduje tarp Baltijos valstybių vystymąsi 2001–2007 metais. Siekiant šio tikslo analizuojamos pagrindinės prekybos pramonės viduje teorijos, nagrinėjami pagrindiniai matavi-

mo metodai, atliekama prekybos pramonės viduje tarp Lietuvos ir jos prekybos partnerių analizė, pateikiama prekybos pramonės viduje tarp Lietuvos ir Latvijos bei Estijos pokyčių analizė, analizuojama prekybos pramonės viduje įtaka tarptautinės prekybos struktūros pokyčiams.

Nagrinėjant prekybos pramonės viduje vystymosi tendencijas naudojami du matavimo metodai. Grubelio-Loido indeksas yra naudojamas įvertinant laikotarpių intensyvumą ir jos reikšmingumą lyginant su tarpšakine prekyba. Kadangi straipsnyje nagrinėjami prekybos pokyčiai 2001–2007 m., yra naudojamas prekybos pramonės viduje padidėjimo indeksas.

Tyrimo objektas – prekyba pramonės viduje tarp Baltijos valstybių.

Tyrimo metodai – mokslinės literatūros, nagrinėjančios prekybos pramonės viduje problemas, analizė ir sintezė, Lietuvos tarptautinės prekybos statistinių duomenų sisteminė analizė, Lietuvos ir jos prekybos partnerių prekybos pramonės viduje pokyčių analizė naudojant Grubelio-Loido ir prekybos pramonės viduje padidėjimo indeksus.

Naudojant kombinuotos prekių nomenklatūros klasifikaciją (KPN) nustatyta, kad Lietuvos prekyba pramonės viduje yra svarbiausia ir nuolat didėjanti tarptautinės

prekybos dalis. Paskaičiuoti prekybos pramonės viduje indeksai tarp Lietuvos ir Latvijos pagal KPN rodo, kad Lietuva pranašesnė prekiaudama gyvais gyvūnais ir gyvūninės kilmės produktais, chemijos pramonės produkcija, vandens transporto priemonėmis ir kt. Latvija daugiausia prekiauja plastikais ir jų dirbiniais, mašinomis ir mechaniniais įrenginiais. Paskaičiuoti prekybos pramonės viduje indeksai tarp Lietuvos ir Estijos pagal KPN rodo, kad Lietuva daugiau prekiauja mediena ir medienos dirbiniais, plastikais ir jų dirbiniais, tekstilės medžiagomis ir tekstilės

dirbiniais. Estija prekiauja augaliniais produktais, vandens transporto priemonėmis ir kt. Taigi gauti skaičiavimo rezultatai naudojant Grubelio-Loido ir prekybos pramonės viduje padidėjimo indeksus rodo užsienio prekybos pobūdį tarp Baltijos valstybių ir vystymosi galimybes dabartinėmis sąlygomis.

Prasminiai žodžiai: prekyba pramonės viduje, Grubelio-Loido indeksas, prekybos pramonės viduje padidėjimo indeksas, eksportas, importas.