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INTRA-INDUSTRY TRADE AND EXPORT SPECIALIZATION: LITHUANIAN CASE

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Abstract

This paper investigates the extent of intra-industry trade between Lithuania and the European Union and its role in export specialization.

Lithuanian integration into the EU had an influence on the changes of intra-industry trade and export structure. The paper analyses the basic methods of intra-industry trade and export specialization measurement; the pattern of intra-industry trade between Lithuania and the EU, the influence of this form of trade on the changes of export structure. For measurement of Lithuanian intra-industry trade in the paper two approaches are adopted. The Grubel-Lloy index is used to calculate the intensity of intra-industry trade and thus to determine its relative importance compared to inter-industry trade. Secondly, the changes in trade over time are examined using an index of marginal intra-industry trade. Using these methods of measurement and Combined Nomenclature of commodities (CN) are calculated that Lithuania export specialization is based on similar goods with relatively different quality. It was determined that Lithuania has advantages in such CN groups as milk, fish products and other products. The EU has advantages in trade of product fruit, vegetables, coffee and other products.

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

Introduction

The globalization and integration processes are having a major impact on the international trade system. A considerable part of the growth in world trade, particularly among developed countries, is of an intra-industry nature – the simultaneous export and imports of products that very close substitutes for each other in terms of factor inputs and consumption (Tharakan, 1985). Increasing part of intra-industry trade in the volume of global trade is of the importance to the changes of economy, export and import structure of separate countries (Snieska, 2008). This leads to changing nature of international trade and its structure of goods. This is one of the reasons for extensive attention to this form of trade in the economic literature (Bernatonyte & Normantiene, 2007).

The causes of intra-industry trade, and its implications for structural adjustment and the gains from trade, have been the subject of much study. D. Ricardo's theory of comparative advantage and Hecksher-Ohlin theory of proportions of production factors explained the 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. According to alternative theories, monopolistic competition and economies of scale encourage intra-industry between similar countries with equal possibilities, consumer tastes and priorities because it provides additional motivation for specialization of production. Effect of economies of scale helps to explain the trade in similar goods the comparative part of which in the total volume of trade is big enough and still has the tendency of growth (Volgina, 2006).

Most of researches 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 (Tiits & Juriado, 2006, McAleese, 2004 etc.). Many studies suggest 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 an increasing number of studies of intra-industry trade between separate countries and its groups. But these studies focus mainly on the importance of intra-industry trade. While analyzing the importance of intra-industry trade it is necessary to determine its role in export specialization. It is especially urgent problem for Lithuania because in this point there are no studies.

For analyzing the extent of intra-industry trade between Lithuania and the European Union and its role in export specialization it is necessary to measure the share of intra-industry trade in the international trade.

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

Intra-industry trade has risen rapidly in the past three decades and now accounts for more than half of all trade manufactures among the industrial countries. Over time, industrial countries have become similar in their levels of technology and in the ability of capital and skilled labour. Current economic integration process expanded the boundaries of the European Union thus influencing tendencies of changes of intra-industry trade. Lithuanian integration into the European Union had an influence on the changes of intra-industry trade between Lithuania and the members of the EU. For this reason actual problem arises – to estimate the changes of intra-industry trade and the importance of this type of trade in export specialization under existing conditions.

The aim of the research: to examine the trend and extent of intra-industry trade between Lithuania and the EU over 2001-2007 and its role in export specialization. Seeking for this aim, the following research tasks to be accomplished:

- to present the basic methods of intra-industry trade measurement;
- to perform analysis of Lithuanian intra-industry trade between Lithuania and the EU;
- to calculate the export specialization indices;
- to analyze the influence of intra-industry trade on the changes of export structure.

To examine the development of intra-industry trade between Lithuania and the EU, two approaches are adopted. 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. This index as an indicator of the degree of industrial specification helps to study Lithuanian ability to compete in a more open trade setting. Secondly, the article examines changes in trade flows over time. For this purpose, different measures of marginal intra-industry trade are applied.

The object of this research: Lithuanian intra-industry trade.

The methods of research are: analysis and synthesis of the scientific literature discussing the problems of intra-industry trade; the systematic statistical data analysis of Lithuanian foreign trade; comparative analysis of changes of intra-industry trade between Lithuania and the EU using Grubel-Lloyd and marginal intra-industry trade indexes; analysis of export specialization using export specialization indices.

Methods of measurement of intra-industry trade and export specialization

The development of intra-industry trade in vertically differentiated products is associated with a specialization of countries along quality ranges (Fontagné & Freudenberg, 1997). Therefore, the nature and pattern of export specialization depends on the extent of country's intra-industry trade.

Researches reveal that various methods are used for measuring intra-industry trade. The first works on this matter were presented by Bela Balassa in 1966. He proposed the first index of intra-industry trade that measured the degree of trade overlap (simultaneous import and export of goods within an industry).

Several alternative measures have been developed in the literature to assess the degree of intra-industry trade (Grubel-Lloyd index, The Aquino index, The Bergstrand method etc (Grubel, Lloyd, 1975; Aquino, 1978; Bergstrand, 1990). The index most often used to assess the importance of intra-industry trade was introduced by Grubel and Lloyd in 1975.

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

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

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

The value of 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. A series of low GL_i index of one region or country reflect a centripetal process of industrial agglomeration and high specialization, while a series of high GL_i index values reflect a centrifugal process of industrial dispersion.

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Lionel Fontagne and Michael Freudenberg point out the fact that Balassa index, which is the basis of the GL_i index, is used in trade literature both as an indicator of intra-industry trade and of "revealed comparative advantage". This index allows two interpretations. Firstly, when Balassa index is –1 or 1, there is no intra-industry trade and all trade is inter-industry based on comparative advantage (specialization). Secondly, if the Balassa index is 0, all trade is intra-industry trade and there is no specialization (Fontagné & Freudenberg, 1997).

The limitations of using changes in the standard Grubel–Lloyd index to capture the dynamics of changes in intra-industry trade are widely recognized. In the literature on trade liberalization has been that Grubel–Lloyd index, as measure of intra-industry trade, is negatively correlated with factor market adjustment costs. But adjustment costs are dynamic phenomena and the static Grubel–Lloyd index is not 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 Grubel–Lloyd index, is not appropriate in explaining changes in trade flows over time. They indicated 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. Chris Hamilton and George Kniest offered an index which effectively calculated the proportion of the changes in exports or imports (Hamilton & Kniest, 1991). The most popular measured in recent empirical studies is that proposed by Marius Brulhart (1994), which is transposition of the Grubel–Lloyd index to trade changes:

$$A = 1 - [(\Delta X_i - \Delta M_i) / (\Delta X_i + \Delta M_i)], \qquad (2)$$

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 weigts and indeed shares many the 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 the 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 Grubel-Lloyd index is widespread and used for the analysis of importance of intra-industry trade in separate countries, it will be used in this paper to analyze the trend and extent of this kind of trade between Lithuania and the EU. The changes in trade over time are examined using an index of marginal intra-industry trade.

Researches have employed a number of measures of export specialization. They are used for studying the structure and determinants of country's export and to identify the basis on which to build competitive advantages. Measures of revealed comparative advantage (RCA) have been used to help assess a country's export potential. The most common is the index suggested by Bela Balassa in 1965, which uses the world export share in a given sector to "normalize" the respective export share of each country, being particularly suited to perform static analysis (Balassa, 1965). Using relative export structures, the Balassa index can be written as:

$$B_{ij} = (X_{ij} / X_i) / (X_{wj} / X_w), \qquad (3)$$

Where X_{ij} is country's i export of sector j; X_i – total export of country i; X_{wj} – world export of sector j; X_w – total world export.

If the share of sector j in total exports of country j is higher than the equivalent share of sector j in world exports, then $B_{ij} > 1$ and country j is classified as having a revealed comparative advantage in sector j A value of less than unity implies that the country has a revealed comparative disadvantage in the sector j (Trade indicators & indices, 2003).

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The export specialization index (ES) is a slightly modified RCA index, in which the dominator is usually measured by specific markets or partners. It provides product information on revealed specialization in the export sector of a country and is calculated as the ratio of the share of a product in a country's total exports to the share of this product in imports to specific markets or partners rather than its share in world exports:

$$ES = (X_{ij} / X_{it}) / (m_{kj} / M_{kt}), \quad (4)$$

Where X_{ij} is the value of country's i export of product j; X_{it} – total export of country i; m_{kj} – the value of import of product j in market k; M_{kt} – total import in market k.

The ES is similar to the RCA in that that the value of the index less than unity indicates a comparative disadvantage and a value above unity represents specialization in this market (Trade indicators & indices, 2003). To measure export specialization in trade between Lithuania and the EU, this study uses export specialization index (ES).

Lithuanian intra-industry trade and export specialization: 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 the 2001-2007 (Table 1). Results presented in Table 1 reveal that generally intra-industry trade in Lithuania consist 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. The analysis of intra-industry trade between Lithuania and the EU shows that the value of 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 the import from 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 CIS (Table 1).

Table 1. Intra-industry trade between Lithuania and its trading partners in 2001-2007

Groups of countries	Year						
	2001	2002	2003	2004	2005	2006	2007
ES	0.88	0.87	0.82	0.88	0.91	0.85	0.80
CIS	0.65	0.69	0.66	0.63	0.60	0.71	0.78
EFTA	0.85	0.92	0.65	0.55	0.71	0.59	0.61
Other countries	0.66	0.68	0.76	0.62	0.58	0.64	0.75
World total	0.84	0.64	0.85	0.86	0.86	0.84	0.72

Source: Author's calculation, Statistics database of Lithuania, January, 2009

When analyzing intra-industry trade between Lithuania and the EU according to Combined Nomenclature of commodities we see that huge differences in separate groups prevail (Table 2). Grubel-Lloyd indices reveal that a high magnitude of intra-industry trade exists in the following CN sections: plastics and articles thereof; rubber and articles thereof (CN VII); textile and textile articles (CN XI) and vegetable products (CN II) prepared foodstuffs, beverages and tobacco (CN IV). Low levels of intra-industry trade are observed for works of art, collector's pieces and antiques (CN XXI); vehicles, aircraft and associated transport equipment (CN XVII) (Table 2). Such situation was determined by many reasons, mainly, abolition of customs taxes for food products and alcoholic drinks from the EU States. This reduced the prices of these products, increased consumption and import thereof. On the other hand, during the examined period of time from 2001 to 2007 export of the said goods increased (Foreign trade in 2007, 2008).

Table 2. Intra-industry trade by CN sections between Lithuania and the EU in 2001-2007

CN code	CN sections	Year						
		2001	2002	2003	2004	2005	2006	2007
I	Live animals; animal products	0.82	0.64	0.53	0.83	0.79	0.72	0.63
II	Vegetable products	0.74	0.86	0.90	0.82	0.94	0.70	0.81
III	Animal or vegetable fats and oils	0.21	0.26	0.40	0.44	0.47	0.67	0.70
IV	Prepared foodstuffs, beverages and tobacco	0.85	0.87	0.86	0.87	0.96	0.96	0.99
V	Mineral products	0.09	0.07	0.09	0.09	0.10	0.16	0.26
VI	Products of the chemical or allied industries	0.35	0.40	0.50	0.74	0.77	0.61	0.63
VII	Plastics and articles thereof; rubber and articles thereof	0.24	0.39	0.50	0.52	0.57	0.78	0.97
VIII	Raw hides, skins, leather, furskins and articles thereof	0.68	0.72	0.80	0.91	0.88	0.87	0.81
IX	Wood and articles of wood	0.21	0.34	0.49	0.54	0.56	0.61	0.63
X	Pulp of wood, other fibrous celluloses material; paper	0.10	0.21	0.30	0.39	0.44	0.49	0.48
XI	Textile and textile articles	0.75	0.76	0.80	0.86	0.49	0.50	0.98
XII	Footwear, headgear, umbrellas, walking sticks, whips	0.81	0.70	0.58	0.50	0.40	0.42	0.39
XIII	Articles of stone, plaster, cement; glass, glassware, etc.	0.45	0.43	0.42	0.40	0.46	0.48	0.47
XIV	Natural or cultured pearls, coin, etc.	0.93	0.92	0.91	0.91	0.66	0.66	0.63
XV	Base metals and articles of base metal	0.63	0.61	0.60	0.59	0.57	0.58	0.59
XVI	Machinery,mechanical appliances; electrical equipment	0.48	0.49	0.50	0.53	0.54	0.54	0.49
XVII	Vehicles, aircraft and associated transport equipment	0.30	0.37	0.40	0.44	0.37	0.38	0.33
XVIII	Optical, photographic, medical instruments, etc.	0.51	0.54	0.58	0.59	0.58	0.59	0.66
XIX	Arms, ammunition; parts and accessories thereof	0.34	0.30	0.28	0.20	0.87	0.88	0.70
XX	Miscellaneous manufactured articles	0.50	0.51	0.52	0.53	0.59	0.59	0.64
XXI	Works of art, collector's pieces and antiques	0.38	0.36	0.33	0.34	0.51	0.52	0.30
XXII	Commodities, classified by special requirements	0.15	0.14	0.12	0.10	0.18	0.18	0.24

Source: Author's calculation, Statistics database of Lithuania, January, 2009.

Thus, the changes of GLi index show not only the increased level of specialization of Lithuanian products but also the ability of manufacturers to compete under more open trading conditions when Lithuania became the member of the EU.

Table 3. Marginal intra-industry trade by CN sections between Lithuania and the EU in 2001-2007

CN code	CN sections	Year	
		2001-2004	2004-2007
I	Live animals; animal products	0.63	0.94
II	Vegetable products	0.89	0.81
III	Animal or vegetable fats and oils	0.40	0.69
IV	Prepared foodstuffs, beverages and tobacco	0.87	0.90
V	Mineral products	0.08	0.09
VI	Products of the chemical or allied industries	0.86	0.52
VII	Plastics and articles thereof; rubber and articles thereof	0.18	0.65
VIII	Raw hides, skins, leather, furskins and articles thereof	0.96	0.68
IX	Wood and articles of wood	0.84	0.75
X	Pulp of wood, other fibrous celluloses material; paper	0.60	0.62
XI	Textile and textile articles	0.43	0.68
XII	Footwear, headgear, umbrellas, walking sticks, whips	0.15	0.28
XIII	Articles of stone, plaster, cement; glass, glassware, etc.	0.89	0.53
XIV	Natural or cultured pearls, coin, etc.	0.14	0.54
XV	Base metals and articles of base metal	0.57	0.59
XVI	Machinery, mechanical appliances; electrical equipment	0.57	0.44
XVII	Vehicles, aircraft and associated transport equipment	0.61	0.23
XVIII	Optical, photographic, medical instruments, etc.	0.69	0.74
XIX	Arms, ammunition; parts and accessories thereof	0.48	0.85
XX	Miscellaneous manufactured articles	0.55	0.78
XXI	Works of art, collector's pieces and antiques	0.97	0.31
XXII	Commodities, classified by special requirements	0.04	0.06

Source: Author's calculation, Statistics database of Lithuania, January, 2009

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The Grubel-Lloyd indices in Table 1 and Table 2 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. The 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. Therefore, in this study are calculated A indices between Lithuania and the EU over the periods 2001-2004 and 2004-2007 based on multilateral trade flows at specified group's level. As with the Grubel-Lloyd indices, the A indices are calculated by CN sections (Table 3). The highest levels of marginal intra-industry trade between Lithuania and the EU for the period 2001-2004 are found in CN sections: II (Vegetable products); IV (Prepared foodstuffs, beverages and tobacco); VI (Products of the chemical or allied industries); IX (Wood and articles of wood article) and for the period 2004-2007 the highest A levels are for these CN sections: I (Live animals; animal products); IV (Prepared foodstuffs, beverages and tobacco). As we can see the A indices was below 0.2 for mineral products over examined period. It shows that inter-industry trade in these commodities groups dominate between Lithuania and the EU.

Using the export specialization index and Combined Nomenclature of commodities (CN) is calculated the nature of export specialization in trade between Lithuania and the EU (Table 4).

Table 4. Lithuanian export specialization index in 2001-2007

CN code	CN sections	Year						
		2001	2002	2003	2004	2005	2006	2007
I	Live animals; animal products	3.02	3.01	2.96	2.17	2.14	2.07	2.00
II	Vegetable products	1.06	1.09	1.11	0.93	1.23	1.36	1.44
III	Animal or vegetable fats and oils	0.15	0.23	0.26	0.29	0.32	0.44	0.59
IV	Prepared foodstuffs, beverages and tobacco	1.31	1.10	0.90	0.87	0.65	0.45	0.34
V	Mineral products	9.70	9.80	9.90	9.98	9.87	9.84	9.82
VI	Products of the chemical or allied industries	0.53	0.58	0.62	0.67	0.68	0.67	0.66
VII	Plastics and articles thereof; rubber and articles thereof	0.43	0.42	0.40	0.41	0.80	1.20	1.26
VIII	Raw hides, skins, leather, furskins and articles thereof	2.01	1.80	1.20	0.97	0.94	0.90	0.86
IX	Wood and articles of wood	8.35	6.71	4.00	2.96	2.76	2.54	2.42
X	Pulp of wood, other fibrous celluloses material; paper	0.43	0.41	0.40	0.38	0.50	0.60	0.63
XI	Textile and textile articles	1.19	1.22	1.23	1.26	1.28	1.30	1.34
XII	Footwear, headgear, umbrellas, walking sticks, whips	0.64	0.44	0.36	0.29	0.28	0.26	0.27
XIII	Articles of stone, plaster, cement; glass, glassware, etc.	0.58	0.50	0.44	0.40	0.45	0.48	0.50
XIV	Natural or cultured pearls, coin, etc.	0.57	0.87	0.98	1.22	1.68	1.89	2.20
XV	Base metals and articles of base metal	0.66	0.58	0.56	0.54	0.55	0.57	0.60
XVI	Machinery, mechanical appliances; electrical equipment	0.51	0.52	0.51	0.53	0.55	0.57	0.59
XVII	Vehicles, aircraft and associated transport equipment	0.47	0.50	0.51	0.55	0.52	0.51	0.53
XVIII	Optical, photographic, medical instruments, etc.	0.52	0.54	0.56	0.59	0.87	0.98	1.05
XIX	Arms, ammunition; parts and accessories thereof	0.13	0.12	0.13	0.11	0.88	1.08	1.32
XX	Miscellaneous manufactured articles	2.35	2.44	2.78	2.96	2.70	2.90	2.81
XXI	Works of art, collector's pieces and antiques	0.55	0.53	0.50	0.48	0.43	0.46	0.47
XXII	Commodities, classified by special requirements	0.34	0.23	0.14	0.09	0.50	0.65	0.75

Source: Author's calculation, Statistics database of Lithuania, January, 2009

The export specialization index presented in Table 4 indicates that Lithuania has achieved comparative advantage in trade with the EU in these CN sections: I (Live animals; animal products); II (Vegetable products); IX (Wood and articles of wood); XI (Textile and textile articles. Data of Table 4 show that Lithuania has the highest comparative advantage in trade with the EU in mineral products. Such situation shows that Lithuania has comparative advantages in the trade with low-added value commodities.

Thus, the analysis of intra-industry trade and export specialization reveals that after Lithuania becoming the member of the EU, having national economics under development, structural changes of economics takes place. Having Lithuania trade with numerous foreign countries in a free trade regime influences the increase in the volumes of import and export. 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

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structure of goods due to increasing specialization within a branch and the variety of produced goods increases.

Conclusions

The globalization and integration processes are having a major impact on the international trade system. Lithuanian integration into the EU opened huge possibilities for Lithuanian foreign trade. It was determined that in recent years export of Lithuanian goods into EU countries and import from EU comprised the biggest share of all export and import. Lithuanian integration into EU had an influence on the changes of intra-industry trade between Lithuania and the members of EU. The analysis shows that intra-industry trade is an important and constantly growing modern international sector.

Researches indicate that for analyzing the extent of intra-industry trade between Lithuania and the EU and its role in export specialization it is necessary to measure the share of intra-industry trade in the international trade. The 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 the EU, two approaches are adopted. 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. This index as an indicator of the degree of industrial specification helps to study Lithuanian ability to compete in a more open trade setting. Secondly, the article examines changes in trade flows over time. For this purpose, different measures of marginal intra-industry trade are applied.

Researches have employed a number of measures of export specialization. They are used for studying the structure and determinants of country's export and to identify the basis on which to build competitive advantages. It was determined that export specialization index (ES) is the best of measuring export specialization in trade between Lithuania and the EU. This index helps to estimate a sector in which the country is relatively more competitive in terms of trade.

On the basis of exports and imports structure by combined nomenclature (CN) are determined that Lithuanian intra-industry trade is the most important and constantly increasing sector of international trade. Analysis shows that growth tendency of intra-industry trade is characteristic between Lithuania and the EU. This is related to the fact that the EU is the main Lithuanian trading partner.

The analysis of the calculated intra-industry indexes of Lithuania and the EU using CN shows that Lithuania has advantages in such CN sectors as plastics and articles thereof; rubber and articles thereof; textile and textile articles; vegetable products and prepared foodstuffs, beverages and tobacco. EU has advantages in trade of vehicles, aircraft, associated transport equipment; works of art, collector's pieces and antiques. This confirms that Lithuanian export specialization is based on similar goods with relatively different quality.

The analysis of the calculated marginal intra-industry by CN between Lithuania and the EU shows that Lithuania over both periods has advantages in such CN sections: vegetable products; prepared foodstuffs, beverages and tobacco. But the marginal intra-industry trade indices are lowest in mineral products; footwear, headgear, umbrellas, walking sticks, whips sections. It shows that inter-industry trade in these CN sections dominate between Lithuania and the EU. These calculation results show the main directions of nature and pattern of international trade development.

Using the export specialization index and CN it was determined the nature of export specialization in trade between Lithuania and the EU. Research indicates that Lithuania has achieved comparative advantage in trade with the EU in these CN sections: live animals; animal products; vegetable products; wood, articles of wood; textile and textile articles. It was found that the highest comparative advantage Lithuania has in trade with the EU in mineral products. Such situation shows that Lithuania has comparative advantages in the trade with low-added value commodities.

References

1. Aquino, A. (1978). Intra-industry trade and inter-industry specialization as concurrent sources of international trade in manufactures. Weltwirtschaftliches Archiv, 114, 275-295.
2. Balassa, B. (1966). Tariff reductions and trade in manufactures among the industrial countries. American economic review, 56, 114-121.
3. Bernatonyte, D., Normantiene, A. (2007). 'Estimation of Importance of Intra-industry Trade', Inzinerine Ekonomika-Engineering Economics, vol. 3 (53), 25-34.

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4. Bergstrand, J. (1990). The Hecksher-Ohlin-Samuelson model, the Linder hypothesis and the determinants of bilateral industry trade. Economic Journal, 100, 134-145.
5. Brulhart, M. (1994). Marginal intra-industry trade: Measurement and relevance for the pattern of industrial adjustment. Weltwirtschaftliches Archiv, 130, 600-613.
6. Exports and imports by CN section in 2001-2007. Statistics database of Lithuania// http:www.stat.gov.lt/en/pages/view/?id=2084.
7. Fontagné, L., & Freudenberg, M. (1997). Long-term trends in intra-industry trade // http://team.univ-paris1.fr/teamperso/fontagne/papers/Long-termIIT5.pdf.
8. Foreign trade in 2007. (2008). Vilnius: statistics department of the government of the Republic of Lithuania.
9. Grubel, H.G., Lloyd, P.J. (1975). Intra-industry trade: the theory and measurement of international trade in differentiated products. London: Macmillan.
10. Hamilton, C., & Kniest, P. (1991). Trade liberalization, structural adjustment and intra-industry trade. Weltwirtschaftliches Archiv, 127, 365-367.
11. Husted, S., & Melvin, M. (2004). International Economics. 6 th. Ed. New York: Addison-Wesley.
12. Krugman, P.R. (1981). Scale economies, product differentiation and the pattern of trade. American Economic Review, 70, 950- 959.
13. McAleese, D. (2004). Economics for business. UK: Prentice Hall.
14. Snieska, V. (2008). 'Research into International Competitiveness in 2000-2008', Inzinerine Ekonomika-Engineering Economics (4), pp. 29-41
15. Tiits, M., Juriado, J. Intra-industry trade in the Baltic Sea region // http://www.ibs.ee/component/option.com/docman/task.doc.view/gid.14/temid39/html.
16. Tharakan, P.K. (1985). Empirical analyses of the commodity composition of trade. Current issues in International trade: theory and policy. London: Macmillan.
17. Trade indicators & indices (2003). // http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/EASTASIACIFIC.
18. Volgina N.A. (2006). Meždunarodnaja ekonomika. Moskva: Eksmo.