

## Estimation of Importance of Intra-industry Trade

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The globalization and integration processes opened additional possibilities for development of international trade. A large part of trade consists of intra-industry trade, defined as the exchange of broadly similar goods. 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. Current economic integration process expanded the boundaries of the European Union thus influencing tendencies of changes of intra-industry trade.

The causes of intra-industry trade, and its implications for structural adjustment and the gains from trade, have been the subject of much study. Traditional theories such as comparative advantages or factor endowments state that countries with different resources or factor endowments will trade with each other. But empirical evidences show that countries with similar endowments do more trade these days. Based on new theories, monopolistic competition and increasing returns lead to intra-industry trade among countries, whereas the old comparative advantage is still applied for countries separated by high economic distance. Many studies suggest that more developed countries and more specialized trade structure lead to higher intra-industry trade. To understand why economists have to turn their attention to intra-industry trade and its importance are analyzed in this article. The importance of intra-industry trade arises from its basic character: it does not need to be based on comparative advantage. To a large extent intra-industry trade arises from the facts that products are differentiated and the production of any particular product requires some fixed costs.

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. This leads to changing nature of international trade and its structure of goods. Therefore the influence of intra-industry trade on the nature of international trade is analyzed in this article. Seeking to define the influence of intra-industry trade on the nature of international trade the basic theories of intra-industry trade, differences of inter-industry and intra-industry trade are analyzed in the article. For the analysis of the importance of intra-industry trade its share in international trade is measured. Therefore the methods of measurement of importance of intra-industry trade are analyzed in this article.

Using Grubel-Lloyd index and standard international

trade classification, there was established the nature of international trade between the European Union and its main partners and performed the analysis of Lithuanian intra-industry trade. On the basis of researches the importance of intra-industry trade in respect of international trade nature changes was evaluated in the article.

Keywords: international trade, inter-industry trade, intra-industry trade, Grubel-Lloyd index, export.

### Introduction

International trade today is a dynamically developing part of global economics and the following factors influenced its constant growth: increase of international division of work, globalization and internationalization of production; liberalization of international trade by WTO regulation; transnational competition enabling creation of new branches of economics, renew main capital, etc.

According to the level of the list of articles of goods international trade consists of two flows: inter-industry trade and intra-industry trade. Intra-industry trade (i.e. trade of differentiated products of a single branch between countries) rather than inter-industry trade is an important and constantly growing modern international sector. Under current conditions it constitutes approximately one fourth of global trade, more than 60 % of European trade and 20 % of Japan trade (Ruffin, 1999).

Absence of this interesting phenomenon could be explained using traditional theories of international trade. This was the reason for the analysis of intra-industry trade using various alternative international trade theories. D. Ricardo's theory of comparative advantage and Heckscher-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.

According to alternative theories, monopolistic competition and economies of scale encourage intra-industry trade 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).

Although the tendency of variation of intra-industry trade appeared not long ago, it became particularly intensive in the seventh decade of the 20<sup>th</sup> century between the Western Europe and other countries. Bela Balassa was one of the first in the 1966 to notice this and provide a model of intra-industry trade (Balassa, 1966).

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 (Kalbasi, 2003, Tiits, Juriado, 2006, Ruffin, 1999, McAleese, 2004 etc.).

**The problem.** Although the 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 the international trade. This is particularly important for Lithuania due to the lack of researches in this field.

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 etc (Balassa, 1966; Grubel, Lloyd, 1975; Aquino, 1978; Bergstrand, 1990). All these approaches used have both advantages and disadvantages however, the problem they face while assessing the index of intra-industry trade is that of provision of data. Usually the standard international trade classification (SITC) is used, yet there exist doubts regarding subjection of certain goods to the same branch or other branches (Volgina, 2006).

When the problems of measurement importance of intra-industry trade are analyzed, the economic literature focuses to a great extent on purposefulness of usage of such trading forms. The opinion prevails that horizontal intra-industry trade in differentiated products varying in style, external features enables the countries with similar endowment of production factors to gain benefit from economy of scale specializing in manufacturing certain products (Lancaster, 1980, Dixit, Stiglitz, 1977). Such an approach is mainly used for the analysis of nature of intra-industry trade between developed countries. In the opinion of other authors vertical intra-industry trade in differentiated products, varying in style, external features enables gaining benefits from such trading with the countries having different endowment of production factors, different working power abilities, etc (Falvey, Kierzkowski, 1981; Shaked, Sutton, 1984; Falm, Helpman, 1987. Therefore, this approach of intra-industry trade is used when analyzing the nature of trade between countries of different economic development.

Still, the researches reveal that vertical intra-industry trade is predominant if compared to the horizontal one (Greenaway, 1994). Also, economists distinguish multi-lateral intra-industry trade conducted by one state with a number of countries and bilateral intra-industry trade conducted by two countries (or groups of countries) (Kalbasi, 2003).

An analysis of trade in over 2000 different manufactured goods shows that 64% of trade among EU countries in 1992 was intra-industry in character. Computations for

the period of 1970-1998 shows that the intra-industry share of extra-EU trade has also been growing rapidly (The European Union: Economics and politics, 2004).

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, researches related to such changes are scarce. It is particularly important to Lithuanian intra-industry trade. Therefore, a serious problem arises – what criteria should be used when assessing importance of intra-industry trade under the changed conditions.

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

**The aim of research:** to analyze the influence of intra-industry trade on the nature of international trade.

**The tasks of research** – to analyze the basic theories of intra-industry trade, differences of inter-industry trade and intra-industry trade; to analyze the methods of measurement of importance of intra-industry trade; to perform the analysis of Lithuanian intra-industry trade; to establish the nature of intra-industry trade between the EU and its main partners; to estimate the importance of intra-industry trade in respect of international trade nature changes.

**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 the EU and Lithuanian international trade.

### **Importance of intra-industry trade**

Increasing part of intra-industry trade in the volume of global trade is of importance to the changes of economy of separate countries. The scale of such having trade increased the volumes of production, export and import in various sectors of economy of such countries change. This leads to changing nature of international trade and its structure of goods. This is one of the reasons of an extensive attention to this form of trade in the economic literature.

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 inter-industry trade using various theories and on these grounds to explain the 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 provided 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.

The theory of comparative advantage deals with all the

reasons of international trade that are generated by the 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 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 a country or what can be described by a comparative advantage. Thus trade theorists turn their attention to the Hecksher-Ohlin trade model.

Hecksher-Ohlin model is based on the benefit of trade due to the provision of production factors. This theory has three fundamental features:

- 1) Each country exports goods, production of which consumes more relatively abundant resources of that country, and imports the goods, production of which consumes more relatively scarce resources of that country.
- 2) Trade grounded on production factors endowments benefits abundant factors and hurts scarce factors.
- 3) International trade results in a tendency toward factor price equalization.

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

Yet the empiric researches of Hecksher-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 the influence on distribution of income is that most international trade is intra-industry trade. When international trade takes places 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 the 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 models of monopolistic competition, the preference for variety on the demand side combined with the preference of economies of scale on the production side play a crucial role in the increase of intra-industry trade. Consumers have a preference for the variety. However, only a small number of them are domestically produced. This happens because of increasing returns to scale, which favors the concentration of production by limiting 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 1980). In the opinion of 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 incorporate together differences in factor endowments, decreasing costs and horizontal product differentiation, in order to explain both intra-industry and inter-industry trade (Helpman, Krugman, 1981).

However, it is necessary to note that the extent of intra-industry trade is increasing when distribution of resources between the trades partners change. Following the traditional Stolper-Samuelson effect, the inter-industry trade increases the level of regulation costs. On the contrary, when intra-industry trade is dominant, human capital is mobile between the companies and in this case the regulation costs are substantially lower than in the case of inter-industry trade.

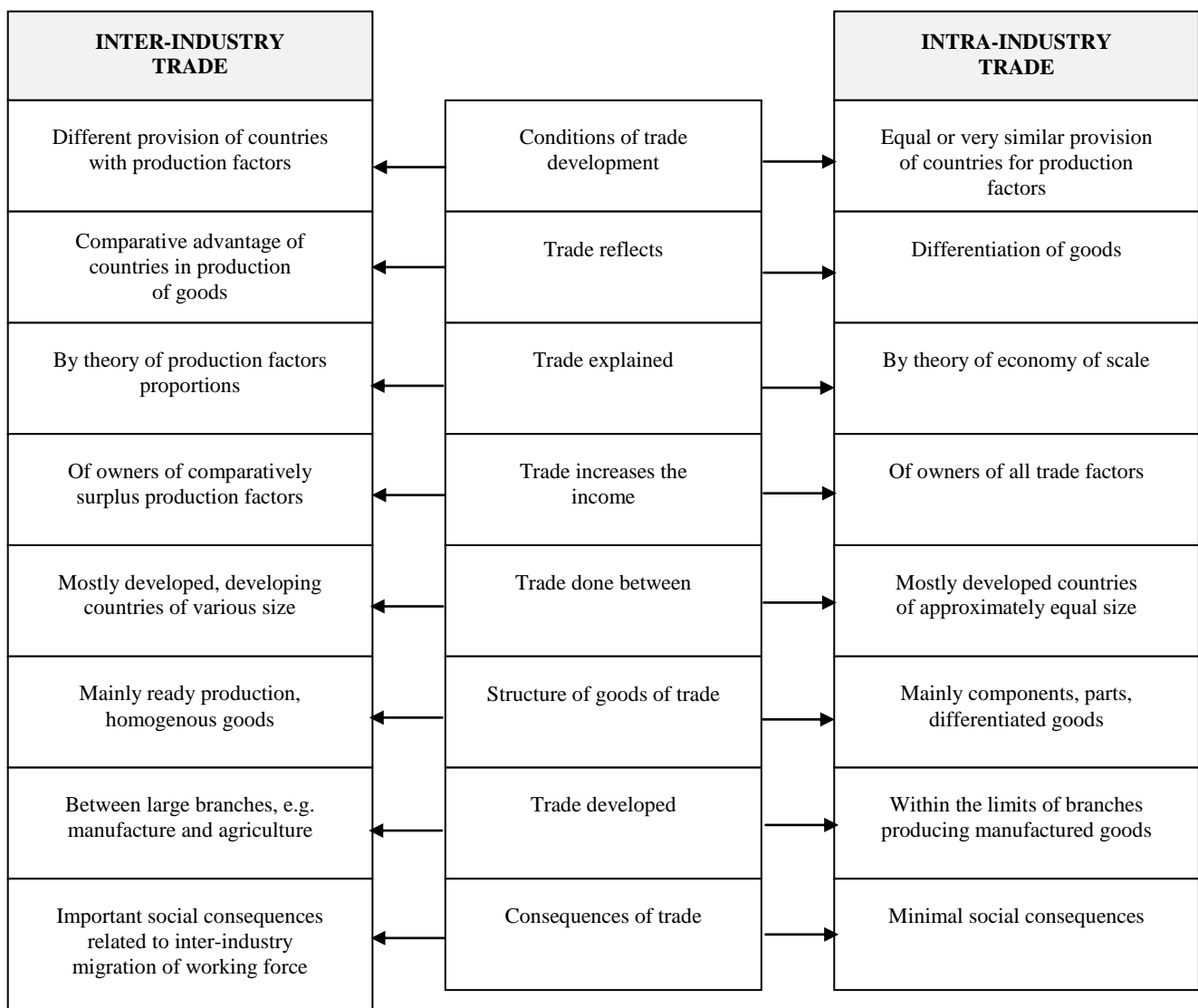
Thus, the said models fail to provide sufficient understanding of intra-industry trade. Therefore, a new approach to intra-industry trade was provided. According to it intra-industry trade is of two kinds – horizontal and vertical. Horizontal intra-industry trade was explained by economies of scale in the presence of product differentiation and monopolistic competition. Horizontal intra-industry trade increases when produced goods are similar in quality and thus the trade is conducted between similar countries (Lancaster, 1980; Krugman 1981; Bergstrand 1990).

Vertical intra-industry trade is explained as simultaneous export and import of products, which are different by quality (Falvey, Kierzkowski, 1981, Falm, Helpman, 1987). They indicated that the share of vertical intra-industry trade increases in an environment where many big firms settle and produce numerous varieties.

Diaz Mora, Sylvie Montout, Jean-Louis Mucchielli and Soledad Zignago established that international and interregional trade increase the size of the market because of bigger variety of goods, therefore, the possibility to gain benefit from economy of production volume is increased. They indicated that the products may only differ in their quality (this is the reason for difference of 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 (Mora, 2002, Montout, Mucchielli, Zignago, 2002).

Takamune Fuji analyzed the importance of intra-industry trade for Japan, vertical and horizontal forms of this trade by using econometric models (Fuji, 2006).

Thus, the models mentioned enable comparing the nature of intra-industry trade with inter-industry trade. The differences of intra-industry trade and inter-industry trade are given in Figure 1. According to the features indicated in Figure 1, the said differences show that the opened big markets of other countries provide a possibility for countries (especially small ones) to reduce the costs of a production unit, increase employment and ensure competitiveness of goods in the international markets.



**Figure 1.** Differences between inter-industry trade and intra-industry trade

Hence intra-industry trade ensures that irrespective of whether the production factors are relatively abundant or scarce, the income of the owners of all production factors increase due to the effect of economy of scale.

On the other hand, inter-industry trade determines ruination of many production branches that are unable to compete with cheaper foreign goods. If the employees working in such branches are of low qualification and are unable to urgently retrain from one branch to another, are unable to change their residence in order to find work, serious social problems arise.

Intra-industry trade is also less harmful from the social point of view. It does not create migration of large groups, engaged in sectors export of which reduced, into other sectors enjoying increasing export.

When analyzing the importance of intra-industry trade, the problem of measurement of its importance appears.

### Methods of estimation of importance of intra-industry

Various methods are used to assess the importance of intra-industry trade. The first works on this matter were

presented by Bela Balassa in 1966. He indicated that intra-industry trade can be measured by value when comparing export of a given good with import thereof. Early works on intra-industry trade measurement included its degrees and the pattern of trade (Aquino, 1978, Greenaway, Milner, 1986).

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  $i$ .

Thus the closer the  $GL_i$  value is to 100, the more im-

portant 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 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.

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 the 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 the larger the possibility that the countries trade in certain amount of differentiated goods within the limits of the groups of goods (branches) and, therefore, the value of this index is larger.

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 the 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 the differences in price reflect the 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 the trade amount of total sector by using unit price of export and import commodity is distinguished (Fuji, 2006).

Regarding the fact that Grubel-Lloyd index is widespread and used for the analysis of importance of intra-industry trade in separate countries, we shall use it in this paper to analyze the importance of this kind of trade to the nature of international trade.

### Influence of intra-industry trade on the nature of international trade

Using the Grubel-Lloyd index and standard international trade classification (SITC) the index of intra-industry trade between the EU and its main partners during the 1999-2005 is calculated (Figure 2).

As we can see from Figure 2, growth tendency is characteristic to the EU intra-industry trade with Japan and Russia, and tendency of reduction with other partners. However, the EU intra-industry trade with its all main partners is predominant if compared to inter-industry trade. Average index of intra-industry trade during the examined period of time varies from 49.34% to 93.97% (Figure 2). This is related to the fact that all examined countries are of similar economic development, capital-labor ratio, qualification level. This is particularly characteristic to the intra-industry trade between the EU and Switzerland, USA and Japan. The value of index of intra-industry trade during the examined period of time was influenced also by differences in the tastes, needs of consumers in different countries, economy of scale achieved by conducting trade in differentiated products.

Meanwhile, the analysis of intra-industry trade between the EU and Lithuania shows that the value of  $GL_i$  index is close to 100. However, if we compare Lithuanian intra-industry trade with other national partners, we shall see that values of  $GL_i$  index – are lesser (Figure 3).

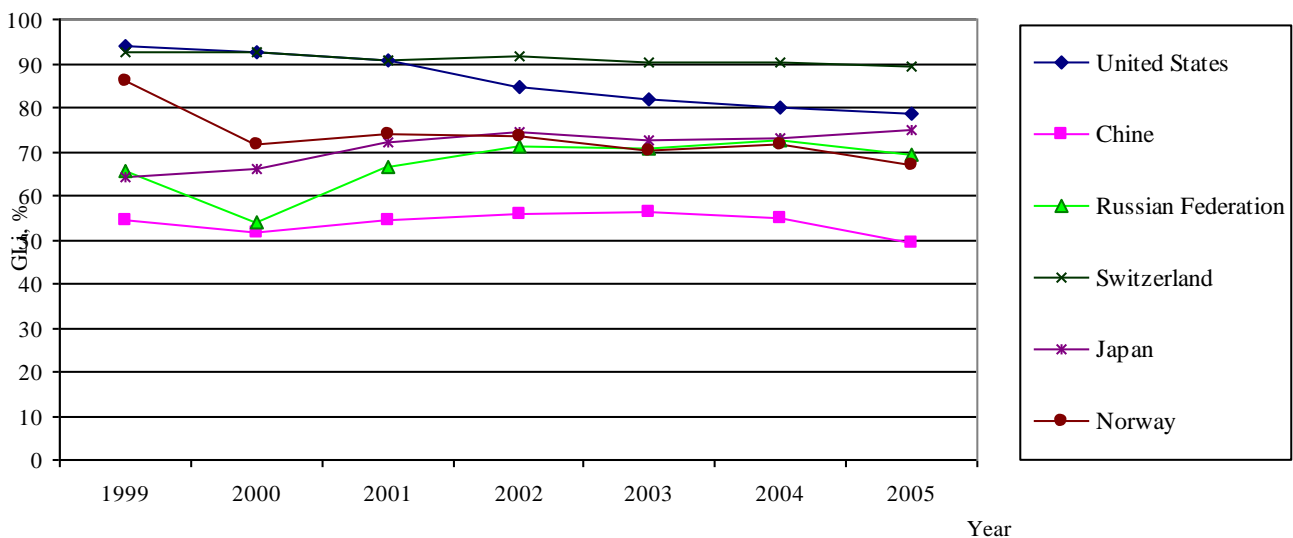


Figure 2. The changes of intra-industry trade between the EU and some main partners

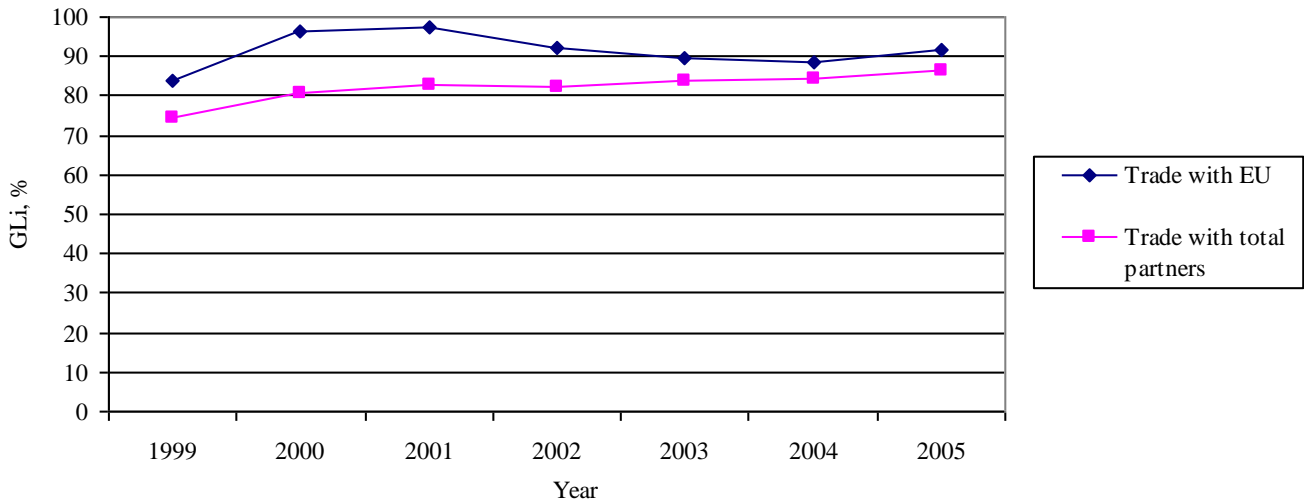
Source: Author's calculation, Eurostat Comext database, January, 2007.

This is related to the fact that the EU is the main Lithuanian trading partner: comparative value of export

to EU during the examined period of time was the largest. This was also characteristic to the import from the EU.

Such tendency was predominant over examined period of time because it was period of preparation for joining the EU. This tendency remained through 2004, when Lithuanian became a member of the EU. In 2005 export of

Lithuanian goods into the EU countries comprised 65.4 % of total export and import from the EU comprised 59.3% of total import (Foreign trade, 2006).



**Figure 3.** The changes of Lithuanian intra-industry trade

Source: Author's calculation, Eurostat Comext database, January, 2007.

When analyzing intra-industry trade between the EU and its main partners according SITC, we see that huge differences in separate groups of goods prevail (Table 1).

Data of Table 1 show that trading in machines and

means of transport, chemical products, and other manufactured goods dominate between the EU and USA, Switzerland, because trading indices of these branches are the largest. This shows the nature of specialization of different countries and international trade.

Table 1

**The changes of intra-industry trade between the EU and main partners according to SITC in 1999-2005, %**

SITC	Year	USA	China	Russia	Switzerland	Japan	Norway
Food, drink and tobacco (SITC 0+ 1)	1999	82.34	47.06	31.0	–	5.0	63.28
	2005	68.15	52.81	25.29	–	5.95	79.62
Raw materials (SITC 2+4)	1999	45.17	92.58	33.81	85.26	–	88.42
	2005	69.24	84.89	32.50	78.26	–	90.29
Mineral fuels, lubricants and related materials (SITC 3)	1999	50.64	–	1.01	31.73	–	11.47
	2005	33.17	–	0.90	57.28	–	8.9
Chemicals and related products (SITC 5)	1999	86.69	86.82	94.06	86.48	82.29	93.36
	2005	78.54	99.61	61.49	86.36	80.35	86.93
Machinery and transport equipment (SITC 7)	1999	99.63	85.89	26.63	82.42	37.39	48.83
	2005	82.32	59.45	8.90	80.99	44.02	43.61
Other manufactured goods (SITC 6+8)	1999	81.94	18.64	87.08	96.01	88.10	89.32
	2005	72.50	24.40	89.90	86.08	93.87	84.47

Source: Author's calculations, Eurostat Comext database, January, 2007.

Meanwhile all the EU trade with China in chemical products is intra-industry trade ( $GL_i$  index in 2005 constituted 99.61% if compared with 86.82 % in 1999). This shows the structural changes of Chinese international

trade structure with the EU because volumes of both, import and export increased. As the data in the Table 1 shows, trade in raw materials, chemical products, food products, drinks, tobacco dominate between the EU and

Norway, while trade in chemical products dominates between the EU and Japan. At the same time the value of index of trade in food products, drinks and tobacco between the EU and Japan is close to 0 (5.95 %) because Japan imports and exports to the EU only a small part of products of this branch. This is related to big transportation costs, differences in tastes, needs of consumers.

The index of trade in mineral fuel between the EU and Russia was almost close to 0 (0.90 %). This is due to the fact that the EU is the biggest importer of these products while it exports almost none of these products to Russia. The EU dependence on import of oil from Russia increased after the last the EU expansion stage because Russia is the main provider of oil for most of the Middle

and Eastern European countries. Exhausting these resources in the Northern Sea, the role of Russia, as provider of products of this branch, increases. This is also related to geographical proximity of Russia, simplicity of transportation and unrest and unstable situation in Near and Middle East. Currently approximately 60 % of oil from Russia is exported to the EU (Russia and the EU: economic friendship, 2006).

When analyzing changes of Lithuanian trade with all trading countries according to separate branches, we see that the indices of trading in food products, drinks, tobacco, raw materials, mineral fuel and other manufactured goods during 2005 not only increased if compared to 1999 but also were the largest (close to 100 %) (Table 2).

Table 2

**The changes of Lithuanian intra-industry according to SITC in 1999-2005, %**

SITC	1999	2000	2001	2002	2003	2004	2005
Food, drink and tobacco (SITC 0 +1 )	78.87	91.30	98.15	98.15	96.77	95.48	90.38
Raw materials (SITC 2+ 4 )	95.24	98.25	100	100	96.0	96.63	97.03
Mineral fuels, lubricants and related materials (SITC 3 )	74.77	80.37	90.08	89.43	4.44	8.0	8.38
Chemicals and related products (SITC 5)	66.67	68.63	59.13	60.61	63.89	68.18	73.87
Machinery and transport equipment (SITC 7)	52.90	63.68	64.49	69.40	72.07	67.64	69.66
Other manufactured goods (SITC 6+ 8)	88.79	95.52	94.94	94.71	93,81	92.17	93.26

Source: Author's calculations, Eurostat Comext database, January, 2007.

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 1999 to 2005 export of the said goods increased, the part thereof in the common Lithuanian export value in 2005 constituted 54,8 % (Table 3).

Thus, the changes of  $GL_i$  index of this branch show

not only the increased level of specialization of this branch but also the ability of produces to compete under more open trading conditions when Lithuania became the member of the EU. After Lithuania became a member of the EU, the consumption of manufactured goods (especially long-term ones) increased. However, having the trading regime with EU and other countries changed Lithuania exports most of manufactured goods (46.63 %), thus, index of trade in these goods is close to 100 % (Table 2).

Table 3

**The changes of the share of Lithuanian export in the volume of total trade according to SITC in 1999-2005, %**

SITC	Year						
	1999	2000	2001	2002	2003	2004	2005
Food, drink and tobacco (SITC 0 +1 )	39.40	45.65	49.07	51.61	52.26	54.80	54.80
Raw materials (SITC 2+ 4 )	47.62	49.12	50.0	50.0	52.0	51.68	51.49
Mineral fuels, lubricants and related materials (SITC 3)	37.38	40.19	45.04	44.72	45.96	50.13	45.84
Chemicals and related products (SITC 5)	33.33	34.31	29.57	30.30	31.94	34.09	36.94
Machinery and transport equipment (SITC 7)	26.45	31.84	32.25	34.70	36.04	33.82	34.83
Other manufactured goods (SITC 6+ 8)	44.39	47.76	47.47	47.35	46.91	46.09	46.63
The share of total export	37.23	40.40	41.38	41.04	41.93	42.89	43.34

Source: Author's calculations, Eurostat Comext database, January, 2007.

As we can see from the data in the Table 3, big comparative share in total Lithuanian export volume is constituted by raw materials (in 2005 – 51.49 % and mineral fuel – 45.84 %). This is related to the increased prices of raw materials and mineral products in the international markets. Actually, Lithuania imports considerable part of these products from Russia. This is the reason why the indices of trade in these products are close to 100 %.

Thus, the analysis of intra-industry trade reveals that having joined the EU, and having national economics under development structural changes of Lithuanian economy take place. 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 and its importance has increased. Intra-industry trade provides more additional benefits from international trade than comparative advantage because intra-industry trade 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. By manufacturing a small number of kinds of goods the country can produce bigger volumes of each kind with lesser costs and higher productivity of labor. At the same time the consumers gain benefits from increasing range of choice. 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

The globalization and integration processes have influence on development of international trade. It was determined that in recent year a large part of international trade consists of intra-industry trade. Computations for the period 1999-2005 indicate that intra-industry share of Lithuanian and the EU trade has been growing rapidly. The analysis shows that increasing part of intra-industry trade in the volume of global trade is of importance to the changes of economy of countries. This leads to changing nature of international trade and its structure of goods.

The analysis of the basic theories of intra-industry trade shows that traditional theories can not provide a proper understanding of intra-industry trade. These theories explained the international trade among countries using differences in resources and availability of production factors. However, intra-industry trade fails to reflect the comparative advantage. In order to understand why economists have turned their attention on the analysis of intra-industry trade, we examined the importance of inter-industry trade using various theories and on these grounds there were explained the differences between inter-industry trade and intra-industry trade.

It was determined that intra-industry trade represents international trade within industries rather than between industries. This is more beneficial than inter-industry trade because it stimulates innovation and exploits economies of scale. Hence intra-industry trade ensures that irrespective of whether the production factors are relatively abundant or scarce, the income of the owners of all production factors increase due to the effect of econ-

omy of scale. On the other hand, inter-industry trade determines the ruin of many production branches that are unable to compete with cheaper foreign goods. Intra-industry trade is less harmful from the social point of view also. It does not create migration of large groups, engaged in sectors export of which reduced, into other sectors enjoying increasing export.

On the basis of study many methods of estimation of intra-industry trade were determined. The most appropriate method for measuring the importance of this form of trade is Grubel-Lloyd index. This index as an indicator of the degree of industrial specification helps to study ability of Lithuania and other EU countries to compete in a more open trade setting.

On the basis of Grubel-Lloyd index we determined that growth tendency during examined period is characteristic to the EU intra-industry trade with Japan and Russia, and tendency of reduction with other partners.

On the basis of SITC it was determined that huge differences in separate groups of goods prevail in intra-industry trade between the EU and its main partners. It is found trading in machines and means of transport, chemical products, and other manufactured goods dominate between the EU and USA, Switzerland. At the same time the value of index of trade in food products, drinks and tobacco between the EU and Japan and mineral fuel between the EU and Russia was almost close to 0. This shows the nature of specialization of different countries and international trade.

On the basis of SITC it was determined that Lithuanian intra-industry trade is the most important and constantly increasing sector of international trade.

Thus analysis shows that intra-industry trade provides more additional benefits from international trade than comparative advantage because intra-industry trade enables the countries to gain benefit from larger markets. By manufacturing a small number of kinds of goods useful for consumers the country can produce bigger volumes of each kind with lesser costs and higher productivity of labor. At the same time the consumers gain benefits from increasing range of choice. 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.

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### Prekybos šakos viduje reikšmingumo vertinimas

Santrauka

Globalizacijos ir integracijos procesai atvėrė papildomų galimybių šalių tarptautinei prekybai vystytis. Didelę dalį šalių prekybos sudaro prekyba šakos viduje, kuri sparčiai išsiplėtojo per pastaruosius tris dešimtmečius ir dabar sudaro daugiau negu pusę prekybos pramoninėmis prekėmis tarp išsivysčiusių šalių. Didėjanti prekybos šakos viduje dalis pasaulinėje prekyboje turi svarbią reikšmę atskirų

šalių ekonomikos, eksporto ir importo struktūros pokyčiams. Dėl to kinta tarptautinės prekybos pobūdis ir jos prekinė struktūra. Todėl prekybos šakos viduje įtaka tarptautinės prekybos pobūdžiui analizuojama šiame straipsnyje.

Nors prekybos šakos viduje vyravimo tendencija pasireiškė gana seniai, tačiau ypač ji suintensyvėjo 20 amžiaus 7-ajame dešimtmetyje tarp Vakarų Europos ir kitų šalių. Vienas pirmųjų į ją atkreipė dėmesį ir pateikė prekybos šakos viduje modelį 1966 m Bela Balasas. Jis nurodė, kad ryški prekybos šakos viduje plėtra industrinėse šalyse gerokai palengvina prekybos liberalizavimo procesą (Balassa, 1966). Prekybos šakos viduje priežastys ir jos reikšmė bei nauda prekybai buvo daugelio tyrimų objektas. Daugelis atliktų tyrimų rodo, kad kuo labiau išsivysčiusios šalys, tuo labiau specializuota tarptautinės prekybos struktūra ir todėl didesnė dalis prekybos šakos viduje vylia bendroje tarptautinės prekybos apimtyje (Kalbasi, 2003; Tiits, Juriado, 2006; Ruffin,1999; McAleese, 2004 ir kt.). Norint suprasti, kodėl ekonomistai sutelkė dėmesį į prekybos šakos viduje analizę, šiame straipsnyje nagrinėjamas jos reikšmingumas. Analizuojant šios prekybos reikšmingumą, straipsnyje pateikiama įvairių prekybos šakos viduje reikšmingumo išmatavimo metodų. Tai ypač aktualu Lietuvai, nes tyrimų šiuo klausimu nėra.

Vykstantys ekonominės integracijos procesai pastaraisiais metais išplėtė Europos Sąjungos ribas, ir tai turėjo įtakos prekybos šakos viduje kitimo tendencijoms. Tačiau pasigendama tyrimų, susijusių su šiais pokyčiais. Ypač tai aktualu Lietuvos prekybai šakos viduje. Todėl iškyla pagrindinė problema – pagal kokius kriterijus vertinti prekybos šakos viduje reikšmingumą pakitusiomis sąlygomis.

**Tyrimo objektas** – prekyba šakos viduje.

**Tyrimo tikslas** – išanalizuoti prekybos šakos viduje įtaką tarptautinės prekybos pobūdžiui.

**Tyrimo uždaviniai:** išnagrinėti pagrindines prekybos šakos viduje teorijas, tarpšakinės ir prekybos šakos viduje skirtumus; išanalizuoti prekybos šakos viduje reikšmingumo matavimo metodus; atlikti Lietuvos prekybos šakos viduje analizę; nustatyti prekybos šakos viduje pobūdį tarp ES ir pagrindinių partnerių; įvertinti prekybos šakos viduje reikšmingumą tarptautinės prekybos pobūdžio pokyčiams.

**Tyrimo metodai.** Straipsnis parengtas naudojant mokslinės literatūros, nagrinėjančios prekybos šakos viduje problemas, analizę ir sintezę, sisteminę Europos Sąjungos ir Lietuvos tarptautinės prekybos statistinių duomenų analizę.

Analizė rodo, kad prekybos šakos viduje neįmanoma paaiškinti remiantis neoklasikinėmis teorijomis. D. Rikardo lyginamojo pranašumo teorija ir Hechsherio-Ohlino gamybos veiksnių santykių teorija tarptautinę prekybą tarp šalių aiškino išteklių ir gamybos veiksnių apsirūpinimo, jų naudojimo proporcijų skirtumais. Šios teorijos nagrinėjo tik tarpšakinę prekybą, pagrįstą lyginamuoju pranašumu (Husted, Melvin, 2004). Tuo tarpu mainai šakos viduje neatspindi lyginamojo pranašumo. Remiantis alternatyviomis teorijomis monopolinė konkurencija ir gamybos masto sąlygojama ekonomija skatina prekybą šakos viduje tarp panašių šalių su vienodomis galimybėmis, vartotojų skoniais ir prioritetais, kadangi sukuria papildomus gamybos specializacijos stimulus. Gamybos masto efektas padeda paaiškinti prekybą panašiomis prekėmis, kurių lyginamoji dalis bendroje prekybos apimtyje gana didelė (Volgina, 2006).

Straipsnyje analizuojama tarpšakinės prekybos reikšmė remiantis įvairiomis teorijomis ir tuo pagrindu pateikti tarpšakinės ir prekybos šakos viduje skirtumai. Atlikti tyrimai rodo, kad pagal pateiktus požymius (prekybos vystymo sąlygas, prekybos prekinę struktūrą ir kt.) šalims atsivėrusios kitų šalių didelės rinkos sudaro galimybę mažinti produkcijos vieneto kaštus, didinti užimtumą ir užtikrinti gaminamų prekių konkurencingumą užsienio rinkose. Taigi prekyba šakos viduje užtikrina, kad visų gamybos veiksnių savininkų pajamos, nepriklausomai nuo to, ar gamybos veiksniai palyginti pertekliniai, ar negausūs, padidėja dėl gamybos masto efekto. Antra vertus, tarpšakinė prekyba sąlygoja daugelio gamybos šakų, negalinčių atlaikyti pigesnių užsienių prekių konkurencijos, sužlugdymą.

Nors šiame straipsnyje analizuojami įvairūs prekybos šakos viduje reikšmingumo matavimo metodai (Bela Balasso, Lionel Fontagne, and Michael Freudenberg ir kt.), tačiau Grubelio-Loido prekybos šakos viduje indeksas pasirinktas dėl dviejų priežasčių: pirma, jis plačiai naudojamas tokio pobūdžio analizei; antra, šis indeksas rodo šakos specializacijos lygį, ir todėl padeda įvertinti tiek Europos Sąjungos, tiek ir Lietuvos sugebėjimą konkuruoti atviros rinkos sąlygomis.

Pasitelkus Grubelio-Loido indeksą (GLi), straipsnyje atlikta

prekybos šakos viduje tarp ES ir jos pagrindinių partnerių 1999–2005 metų laikotarpiu analizė. Nustatyta, kad ES prekybai šakos viduje su Japonija ir Rusija – būdinga didėjimo tendencija, o su kitais partneriais – mažėjimo tendencija. Tačiau su visais pagrindiniais partneriais ES prekyba šakos viduje – vyraujanti, palyginti su tarpšakine prekyba (prekybos šakos viduje indeksas nagrinėjamu laikotarpiu svyruoja nuo 49,34% iki 93,97%). Tai susiję su tuo, kad visos nagrinėjamos šalys yra panašaus ekonominio išsivystymo lygio, kapitalo-darbo santykio, kvalifikacijos lygio. Prekybos šakos viduje indekso dydžiui nagrinėjamu atveju turėjo įtakos ir vartotojų skonių, poreikių skirtumai atskirose šalyse, ekonomija dėl gamybos masto, gaunama vykdančią prekybą diferencijuotais produktais.

Tuo tarpu straipsnyje atlikta prekybos šakos viduje tarp Lietuvos ir ES analizė rodo, kad GLI indekso reikšmė artima 100. Tačiau, palyginę Lietuvos prekybą šakos visais šalies partneriais, matome, kad GLI indekso reikšmės mažesnės. Tai susiję su tuo, kad ES – pagrindinė Lietuvos prekybos partnerė. Nustatyta, kad eksporto į ES lyginamasis svoris bendroje eksporto vertėje nagrinėjamu laikotarpiu buvo didžiausias. Tai buvo būdinga ir importui iš ES. 2005 metais eksporto į ES lyginamasis svoris bendroje eksporto vertėje sudarė 65,4 %. Todėl prekyba šakos viduje vyraujanti tarp ES ir Lietuvos.

Analizuojant prekybą šakos viduje tarp ES ir jos pagrindinių partnerių pagal SITC, nustatyta, kad vyrauja didžiuliai skirtumai atskirose prekių grupėse. Tyrimai rodo, kad tarp ES ir JAV, Šveicarijos dominuoja prekyba mašinomis ir transporto priemonėmis, cheminiais produktais, kitomis pramoninėmis prekėmis, nes šių šakų prekybos indeksai – didžiausi, ir tai rodo atitinkamų šalių specializacijos bei tarptautinės prekybos pobūdį. Tuo tarpu ES beveik visa prekyba su Kinija chemijos produktais – prekyba šakos viduje (GLI indeksas 2005 metais sudarė 99,61%, palyginti su 86,82 % 1999 metais). Tai

rodo Kinijos tarptautinės prekybos struktūros pokyčius prekyboje su ES, nes didėjo tiek eksporto, tiek importo apimtys. Tuo tarpu prekyba tarp ES ir Japonijos maisto produktais, gėrimais ir tabaku indekso reikšmė artima 0 (5,95 %), nes Japonija importuoja ir eksportuoja į ES tik nedidelę dalį šios šakos produktų. Tai susiję su dideliais transportavimo kaštais, vartotojų skonių ir poreikių skirtumais. ES prekyba su Rusija mineraliniu kuru indeksas beveik artimas 0 (0,90 %). Taip yra dėl to, kad ES yra didžiausia šių produktų importuotoja, o pati jų beveik neeksportuoja į Rusiją.

Analizuojant Lietuvos prekybos pokyčius pagal atskiras šakas, nustatyta, kad prekybos maisto produktais, gėrimais, tabaku, žaliavomis, mineraliniu kuru bei kitomis pramoninėmis prekėmis indeksai 2005 metais, palyginti su 1999 metais, ne tik padidėjo, bet ir buvo patys didžiausi (artimi 100 %). Tokią situaciją sąlygojo daugelis priežasčių, visų pirma, maitų maisto produktams ir alkoholiniams gėrimams iš ES šalių panaikinimas, sumažinęs šių produktų kainas, padidinęs jų vartojimą ir importą. Antra vertus, nagrinėjamu laikotarpiu padidėjo ir šių prekių eksportas; jų dalis bendroje Lietuvos eksporto vertėje 2005 metais sudarė 54,8 %.

Straipsnyje atlikta prekybos šakos viduje analizė rodo, kad Lietuvai tapus ES nare, vystantis šalies ekonomikai, vyksta Lietuvos ūkio struktūriniai pokyčiai. Lietuvai prekiaujant su daugeliu šalių laisvosios prekybos režimu, didėja eksporto ir importo apimtys. Todėl padidėjo prekybos šakos viduje dalis, jos reikšmingumas. Taigi atlikti tyrimai rodo, kad keičiasi tarptautinės prekybos pobūdis ir jos prekinė struktūra, nes gilėja specializacija šakos viduje, plėsdama gaminamų prekių įvairovę.

Raktažodžiai: *tarptautinė prekyba, tarpšakinė prekyba, prekyba šakos viduje, Grubelio-Loido indeksas, eksportas.*

The article has been reviewed.

Received in May, 2007; accepted in June, 2007.