

TRADE SPECIALIZATION PATTERN OF LITHUANIA

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Abstract

This paper analyses the pattern of trade specialization in Lithuania. The pattern of specialization is at the core of the international trade theory. The significance of the international trade lies in the fact that countries are not required to produce all their consumption goods; instead they can specialize in the production of certain goods. Many studies suggest that the more developed the 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. The globalization and integration processes have a major impact on the international trade system. Lithuania's integration into the European Union has opened huge possibilities for Lithuanian international trade. Research shows that it has also influenced changes of trade specialization. At the same time, the research investigating such changes is missing. For this reason the actual problem is to estimate the pattern of Lithuanian trade specialization under existing conditions.

The objective of this paper is to analyze the pattern of trade specialization of Lithuania under existing conditions.

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1. Introduction

Trade among nations can be traditionally explained as coming from the specialization of nations in particular industries as conditioned by the nation's relative factor endowments. The evolution of trade specialization over time is a phenomenon that often reflects deep structural changes in the whole economic system of a country. Countries specialize by exploiting their comparative advantage arising from differences in technology, innovativeness and differences in factor endowments.

The problem. Globalization and economic integration to the EU has highlighted problems of Lithuanian industry and international trade. The global financial and economic crisis had a huge impact on the changes of trade specialization. However, the research investigating such changes is missing. Therefore, the actual problem is to estimate the pattern of Lithuanian trade specialization under existing conditions.

The aim of the research is to analyze the pattern of trade specialization of Lithuania under existing conditions.

Two approaches are adopted in order to examine the pattern of trade specialization of Lithuania under existing conditions. Firstly, the index of relative trade advantage is used to determine the patterns of comparative advantage. Secondly, the Grubel-Lloyd index is used as an indicator of the degree of industrial specialization to predict structural changes in Lithuania.

The pattern of trade specialization has been the subject of many studies. Traditional trade theories explain patterns of regional specialization on the basis of comparative advantage resulting from differences in productivity, such as D. Ricardo's theory, or endowments, such as Heckscher-Ohlin theory of factor endowments, between countries and regions (Husted, Melvin, 2010). But the

empirical evidence shows that countries with similar endowments do more trade these days (Bernatonyte, Normantiene, 2009). Both of these theories imply that the gains from trade accrue as a result of specialization in production of goods that are traded at improved terms of trade. However, actual trading patterns observed in industrialized countries do not show this predicted specialization (Kregel, 2000).

Neoclassical theory envisages that each region will specialize in the production in which it has a comparative advantage, and in this way inter-industry specialization is stimulated. Inter-industry trade refers to the simultaneous exchange of goods belonging to different sectors (Algieri, 2008). Thus, the neoclassical theory analyzes 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.

2. Method

There have been employed a number of methods in the research to measure trade specialization. They are used to study the structure and determinants of country's foreign trade and to identify the basis on which to build competitive advantages (Bernatonyte & Normantiene, 2009). The concept of comparative advantage is widely used in modern economic literature to evaluate the patterns of trade and specialization of countries in commodities which have a competitive advantage (Saboniene, 2009). The indicator of the revealed comparative advantage provides a more concise picture of trade specialization. This indicator was refined and popularized by Bela Balassa and known as the 'Balassa index' (Balassa, 1965).

The revealed comparative advantage (RCA) index is defined by Balassa (B) (1965) as follows:

$$B = (X_{ij} / X_{it}) / (X_{nj} / X_{nt}), \quad (1)$$

where X – export; i – a country; j – a commodity; t – a set of commodities; n – a set of countries.

This index is based on observed trade patterns. It measures country's exports of a commodity relative to its total exports and to the corresponding export performance of a set of countries. If $B > 1$, then a comparative advantage is revealed. The standard deviation of this index across products can be used as measure of the comparative importance of inter-industry specialization and intra-industry trade. In fact, the greater the extent of inter-industry specialization, the greater is value of standard deviation.

The Balassa index has been subject to several critiques, leading some authors to propose several modified versions. Laursen (1998) suggests a transformation that produces a symmetric outcome, ranging from -1 to 1 with a threshold of 0; Proudman and Redding (1997, 2000) suggest a transformation that results in a constant mean across the different sectors for a given country. As in the Proudman and Redding (1997, 2000) contribution, the product specialization index suggested here has a clear and well-defined link with the original Balassa index.

An alternative specification of revealed comparative advantage, called by the relative trade advantage (RTA) was offered by T. Vollrath in 1991. It is calculated as the difference between relative export advantage (RXA), which equates to the Balassa (B) index, and relative import advantage (RMA):

$$RTA = RXA - RMA, \quad (2)$$

where $RXA = B$; $RMA = (M_{ij} / M_{it}) / (M_{nj} / M_{nt})$; M – import.

The positive value of RTA indicates comparative trade advantages, while negative indicates comparative trade disadvantages. If $RTA > 0$, then a comparative advantage is revealed, i.e. a sector in which the country is relatively more competitive in terms of trade. RTA measures a country's exports and imports of a commodity relative to its total exports and imports.

In our view, RTA index is the best to measure inter-industry specialization between Lithuania

and the EU. This index helps to estimate a sector in which the country is relatively more competitive in terms of trade.

As the biggest share of trade between Lithuania and the EU compose intra-industry trade, this study uses methods of assessment of intra-industry trade. 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 traditional measure of intra-industry trade is used and the Grubel–Lloyd index calculated as:

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

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.

Taking into account that Grubel-Lloyd index is widespread and helps to evaluate the degree of industrial specialization, we estimate that this is the best indicator to analyze the pattern of trade specialization of Lithuania.

3. Results

This study uses relative trade advantage index to measure the pattern of trade specialization between Lithuania and the EU. The nature and pattern of trade specialization between Lithuania and the EU are calculated by using relative trade advantage index and standard international trade classification (SITC) (Table 1).

Table 1. Relative trade advantage indices of Lithuanian trade with the EU in 2006-2012

SITC	Year						
	2006	2007	2008	2009	2010	2011	2012
Food, drink, tobacco (SITC 0+1)	1.03	1.50	1.51	0.98	1.04	1.43	1.52
Raw materials (SITS 2+4)	1.21	1.03	1.49	1.02	1.11	1.22	1.24
Mineral fuels, lubricants and related materials (SITC 3)	3.79	1.93	1.91	1.82	1.90	2.02	2.34
Chemicals and related products (SITC 5)	-0.86	-0.68	0.56	0.33	0.78	0.83	0.93
Machinery and transport equipment (SITC 7)	-0.53	-0.64	0.24	0.43	0.68	0.93	0.95
Other manufactured goods (SITC 6+8)	0.15	0.22	0.20	0.14	0.32	0.38	0.41

Source: Author's calculation, Eurostat comext database, January, 2013.

The RTA for Lithuania presented in Table 1 indicates that the country has achieved revealed comparative advantage in trade with the EU in: food, drink and tobacco and raw materials. Data of Table 1 shows that Lithuania has the highest comparative advantage in trade with the EU in mineral fuels, lubricants and related materials in 2006-2012. Such situation shows that Lithuania has comparative advantages in the trade with low-added value commodities.

Intra-industry trade index between Lithuania and its main partners during the 2006-2012 is calculated by using the Grubel-Lloyd index and SITC (Table 2).

The analysis of intra-industry trade between Lithuania and the EU shows that the value of GL_i index is close to 1 (Table 2). This is related to the fact that the EU is the main Lithuanian trading partner, i.e. share of export of goods to the EU in the total export during 2006–2012 was the largest. This was also characteristic to the import from EU. In 2012 export of Lithuanian goods to the EU comprised 60.5 % of total export and import from the EU –56.8% of total import (Foreign trade in

2012, 2013). As we can see from Table 2, growth tendency is characteristic to Lithuanian intra-industry trade with Latvia, Germany, Poland and Netherlands, but one can see a decrease of these indices in 2008 (Table 2). It is connected to the economic recession in all countries of the EU.

Table 2. Intra-industry trade between Lithuania and its trading partners in 2006-2012

Countries	Year						
	2006	2007	2008	2009	2010	2011	2012
EU	0.85	0.80	0.89	0.99	0.98	0.99	0.99
Latvia	0.74	0.75	0.74	0.83	0.87	0.84	0.82
Estonia	0.79	0.93	0.80	0.59	0.78	0.64	0.59
Germany	0.59	0.65	0.63	0.87	0.91	0.92	0.85
United Kingdom	0.91	0.94	0.70	0.59	0.54	0.59	0.56
Poland	0.64	0.59	0.61	0.79	0.87	0.81	0.72
Netherlands	0.97	0.66	0.85	0.94	0.95	0.95	0.99

Source: Author's calculation, Eurostat comext database, January, 2013.

The analysis of intra-industry trade between Lithuania and the EU according to SITC shows that huge differences in separate groups prevail (Table 3).

Table 3. Intra-industry trade between Lithuania and the EU according to SITC in 2006-2012

SITC	Year						
	2006	2007	2008	2009	2010	2011	2012
Food, drink, tobacco (SITC 0+1)	0.97	0.99	0.86	0.95	0.95	0.96	0.97
Raw materials (SITS 2+4)	0.81	0.73	0.83	0.80	0.76	0.75	0.76
Mineral fuels, lubricants and related materials (SITC 3)	0.14	0.20	0.08	0.11	0.20	0.21	0.23
Chemicals and related products (SITC 5)	0.64	0.77	0.86	0.81	0.82	0.85	0.89
Machinery and transport equipment (SITC 7)	0.47	0.41	0.40	0.62	0.56	0.58	0.61
Other manufactured goods (SITC 6+8)	0.81	0.85	0.84	0.97	0.97	0.98	0.98

Source: Author's calculation, Eurostat comext database, January, 2013.

Data of Table 3 shows that trading in food products, drinks, tobacco, other manufactured goods, raw materials, chemicals and related products dominate between Lithuania and the EU because trading indices of these branches are the largest. This shows the nature of specialization of international trade. Data of Table 3 show that Lithuanian trading with the EU in food products, drinks, tobacco, other manufactured goods, chemicals and related products did not only increase during 2012 (compared to 2006) but also was the largest. Such situation was determined by many reasons, mainly, abolition of customs taxes for food products and alcoholic drinks from the EU States. This led to reduction of the prices of these products, increased consumption and import. On the other hand, during the examined period of time from 2006 to 2012 export of the mentioned goods increased (Foreign trade 2012, 2013).

4. Discussion

The paper studies the pattern of trade specialization of Lithuania. The globalization and integration processes and the global financial and economic crisis have a major impact on Lithuanian industry and international trade. Research shows that it has influenced changes of trade specialization. However, the research investigating such changes is missing. Therefore, this is actual and important problem to evaluate trade specialization pattern of Lithuania under existing conditions.

It was found that the nature and pattern of trade specialization has been the subject of many studies. The analysis of the basic theories of trade specialization shows that traditional trade theories explains patterns of regional specialization on the basis of comparative advantage from differences in productivity. It was determined that the neoclassical 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 order to understand the pattern of trade specialization of Lithuania under existing conditions, the methods of assessment of trade specialization were examined and the best method was selected on these grounds. The research indicates that relative trade advantages index is the best for measuring inter-industry specialization in trade between the 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 studying many methods of estimation of intra-industry it was determined that 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 to compete in a more open trade setting.

The authors determined the pattern of trade specialization of Lithuania by using the standard international trade classification (SITC) relative trade advantage (RTA) index. It was found that the biggest flows from Lithuania to the EU are in such groups: food, drink and tobacco; raw materials; mineral fuels, lubricants and related materials. Concentration of intra-industry trade flows between Lithuania and the EU was determined by using Grubel-Lloyd index and SITC. The research showed that huge differences in separate groups of goods prevail in intra-industry trade between Lithuania and the EU. It was found that trading in food, drink, tobacco, raw materials, machines and means of transport, chemical products, and other manufactured goods dominate between Lithuania and the EU. This shows the nature of specialization in trade of examined countries.

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