

## The Structural Changes of Lithuanian Industry and Tendencies of Export development

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### Abstract

The international competition makes decisive influence on the restructuring process of Lithuanian industry, this can be seen from the evident changes in structure of Lithuanian industry. Lithuanian industrial restructuring provides possibilities for companies entering the global market competition, however, the results depend on the ability to optimize industrial structure and increase its international competitiveness. Here the imperfections of market present in the industry of Lithuania became obvious, especially in the areas of management, progress of science and technologies, information technologies and communications. Strategies of attracting the foreign direct investments, creation of innovations, forming and strengthening of competitive ability, support for education and science, and implementation of scientific research results and technologies became the most important factors for the restructuring and development of industry. The article reveals the results of structural changes of Lithuanian industry, evaluates the indexes of export competitiveness and analyzes the possibilities of export development.

**Keywords:** industry, industry structure, export competitiveness.

### Introduction

The country's industrial activity and industry structure depend on the internal and external factors, which are significant for the formation of industrial policy. Internal factors affecting the industry structure are the competitive market conditions and the impact of the macroeconomic environment. Modern economic theory supports and encourages the open economy and the competitive market; however, the long-term and stable industrial policy that seeks to improve market performance is an important factor in generating industry business environment and promotes the changes in industry structure.

The main external factors that result in industry restructuring are international business globalization and economic integration. Industrial companies actively compete in all countries and continents. Global competition determines the possibilities for the formation of competitive advantage and optimal structure, therefore these change the industry structure.

In considering changes in industry structure, the most common approach is to evaluate the degree of specialization of a country, or region, in trade of output generated within a particular industry (Tikhomirova, 1997). This approach can be applied by considering shares of merchandise exports and imports. Another method of evaluating industry structure is to consider the specialization of a country relative to the global average in the output of a certain industry. This approach was developed by Balassa (1965) and has been widely used by many economists. While the evaluation of the degree of specialization can be considered as a powerful tool for evaluation of the significance of a particular sector of an economy, the most significant deficiency of this approach is that it is difficult to apply for analyzing industry structure as a whole. Transformed RCA indexes determine the product's comparative share in international trade among other products.

Nevertheless, after performing the analysis of scientific literature it became evident that the indexes of competitive ability of Lithuanian industrial merchandises, the results of foreign trade and their dynamics had not been analyzed in depth yet, tendencies of their changes are not duly substantiated. The present article is aimed towards solving this scientific problem.

**Subject of the research** is structural changes of sectors of Lithuanian industry and the competitive ability of production manufactured by Lithuanian enterprises.

**Main aim of the article** is to evaluate the changes in structure of Lithuanian industrial segments, to present the analysis of advantage of the displayed comparative index of commodities' groups, and to discuss the tendencies of their changes.

**Methods of the research** are scientific analysis and summarizing of literature, mathematic calculations, comparative analysis of statistic indexes.

### Analyzing changes in industry structure and export competitiveness

Changes in industry structure in the developed countries are regular, natural process forced by mar-

ket changes, competition, integration and globalization. Ericson (1998) maintains that the restructuring of industry is a crucial problem to economic development opportunities, production reorganization. It should be understood as the fundamental rebuilding of economic capacities, the reorganization of activity and economic integration.

Industry structure is described by the number, size, sales of companies and the characteristics of the environment they operate in, such as the number of buyers and sellers (concentration), product differentiation, business integration and degree of diversification. The possibilities of industrial companies to compete in international markets are reflected by their skills in applying and developing the scientific knowledge, implementing the results of modern scientific researches, innovations, creating and applying modern information technologies, manufacturing and managerial qualification and creative ability of staff. Industrial restructuring results depend on the availability of material, financial resources and their potential.

According to Hunya (1997), restructuring refers to redeployment of assets in order to increase efficiency; it covers mainly the adaptation of companies to market economy. Pohl, Djankov, Anderson (1996) indicate restructuring as a process to maintain profitability in the situation of changing economic environment, technological progress and competition.

Results of restructuring of companies have significant impact on changes in all industry structure. Hannula (2000) maintains that enterprise restructuring means process of adjustment to the market economy, involving rebuilding of enterprise capacities, achievements to maintain profitability and to become internationally competitive.

Bonin (1998) divided adjustment process into defensive-passive restructuring and strategic-active restructuring. Passive restructuring includes improving cost competitiveness without major investment in plant and equipment, including labor shedding, wage reductions and the survival of enterprise. Deep restructuring involves a forward-looking strategic orientation – reorganization of product lines and processes, new product entry, quality improvement, implementing new business plans, which often requires investments in new technology.

Tsouskalis (1993) has pointed out that industrial restructuring involves the creation of the communication and cooperation between the industry contracts covering all areas of scientific research and technological progress to the marketing and distribution.

The governmental industrial policy is important for industrial development. According to foreign authors Curzon Price (1990), Bayliss, El-Agraa (1990), governmental industrial policy is important

to stimulate changes in industry structure, reduce market failures, particularly in the field of R&D and environmental damage, such as risks and costs of innovations, preventing the duplication of effort. The influence of industrial policy on changes in industry structure and competitiveness is analyzed by Jovanovic (1997), Meyer-Stamer (1995).

Sheehan, Tikhomirova (1996) developed an integrated indicator, the index of knowledge composition, for evaluating the structure of industry as a whole with respect to knowledge embodied in the output of different industries. Falvey, Greenaway, Yu (2004) analyzed links between industrial restructuring, exporting and productivity.

Changes in industry structure can be assessed in determining specialization of a country relative to the global average in the output of certain industry. This approach is referred to as the index of revealed comparative advantage (or index of specialization), which reveals the comparative advantage of a nation from its past trade data. Balassa (1965) suggested that in the absence of comprehensive data on factor costs, export performance could be used to reveal the comparative advantage of individual countries. More specifically, the pattern of commodity exports reflects relative costs as well as differences in non-price factors that can be expected to determine the structure of exports.

Balassa restricted his analysis to manufactured goods only, as distortions in primary products, such as subsidies, quotas and special arrangements, would not reflect the real comparative advantage. RCA index shows both post-trade relative prices and prevailing factor as well product market distortions.

Thus, using only export data, the RCA index (also known as the Balassa index) is defined as:

$$RCA_i^A = (x_i^A/X^A) / (x_i^w/X^w)$$

Where:

$x_i^A$  – Country A exports of product  $i$ ;

$X^A$  – Total exports of country A;

$x_i^w$  – World exports of product  $i$ ;

$X^w$  – Total world exports.

The index reveals a comparative advantage (disadvantage) in export of commodity  $i$  by country  $A$  if the value of the index is higher (lower) than one, with respect to the world or a set of reference countries, therefore a set of references can also be used as the denominator, especially for cross-country comparison. Measures of revealed comparative advantage (RCA) have been used to help assess a country's export potential.

RCA\* is calculated modified RCA rate. RCA\* determines the product's comparative share in inter-

national trade among other products. Branch receives the net export earnings, if the indicator value is higher than zero.

$$RCA^*_i = \left( \frac{X_i - M_i}{X_i + M_i} - \frac{\sum(X_j - M_j)}{\sum(X_j + M_j)} \right) * 100$$

where:

$X_i$  – Country A exports of product  $i$ ;

$M_i$  – Country A imports of product  $i$ ;

$X_j$  – Country A exports of all other products except  $i$  ( $j=1$  to  $n$  and  $j \neq i$ );

$M_j$  – Country A imports of all other products except  $i$  ( $j=1$  to  $n$  and  $j \neq i$ );

This ratio ranges from -200 to +200. When the values range from 100 to -100, the formula is transformed:

$$RCA^*_i = \left( \frac{X_i - M_i}{X_i + M_i} - \frac{\sum(X_j - M_j)}{\sum(X_j + M_j)} \right) * \frac{100}{1 - \frac{\sum(X_j - M_j)}{\sum(X_j + M_j)}}$$

$$\text{if } \frac{X_i - M_i}{X_i + M_i} > \frac{\sum(X_j - M_j)}{\sum(X_j + M_j)} \text{ and}$$

$$RCA^*_i = \left( \frac{X_i - M_i}{X_i + M_i} - \frac{\sum(X_j - M_j)}{\sum(X_j + M_j)} \right) * \frac{100}{1 + \frac{\sum(X_j - M_j)}{\sum(X_j + M_j)}}$$

$$\text{if } \frac{X_i - M_i}{X_i + M_i} < \frac{\sum(X_j - M_j)}{\sum(X_j + M_j)} .$$

The RCA index and other modified indices have been widely used in cross-country and product-specific comparisons to assess competitiveness (Prasad, 2004, Lee, 1995, Maule, 1996, Rana, 1988). Amir (2000) used the export competitiveness index to estimate the manufacturing success (or failure) in conquering high growth markets. By incorporating changes in a country's world market share, this index provides a better indicator of export performance of a product or a set of products.

According to Prasad (2004), RCA indexes are relative measures, therefore results should be treated with caution and with understanding of their limitations. While an analysis of revealed comparative advantage of the manufacturing sector is helpful in analyzing structural change in export specialization, the revealed comparative advantage indices (RCA) do not reflect an industry's export competitiveness in the world markets.

### Main structural changes in Lithuanian industries

During the period of economic transformation in Lithuania the problems of the restructuring process

were highlighted, when, in the environment of competitive market, a big number of manufacturing enterprises, after not being able to compete in the open market, were forced to retreat from it.

The structure of Lithuanian industry that has formed during the last decade is changing insignificantly, and the prevailing sectors consist of traditional branches of industry with low technological susceptibility. The most significant part of sold production of manufacturing consists of food and beverage industries, but its comparative part decreased from 30.3 percent in 1996 to 20.7 percent in 2007. The industry of refined oil products took an important part of industry structure. Its part in 1996-2005 increased from 19.5 to 30.5 percent, but in 2007 accounted for only 19.2 percent of total volume of sales of production. Wearing apparel and dressing industry exported about 90 percent of production to foreign markets. Its share in 1996-1999 increased from 6.1 to 11.5 percent, but in 2007 decreased to 4.2 percent. Twice reduced the overall sales of textile products, but more than twice increased the sales of wood, wooden products and furniture.

According to OECD classification of manufacturing industries based on technology, the industry of office equipment and computers, assigned to the group of high technologies, in 2007 comprised only 0.1 of all sold industry production; industry of electronic communication means (industry of radio, television and communications equipment and devices) comprised 1.4 percent (in 2003 – 3.9 percent), industry of medical, precise and optical equipment – 1.0 percent. Sectors of high technologies industry of average complexity – industry of engine vehicles, trailers and other vehicles – respectively make 1.1 and 2.0 percents of all the production of manufacturing.

Industry of chemistry and chemicals, assigned to the sector of high technologies industry of average-high complexity, is one of the most viable sectors of technology taking a significant comparative portion in the structure of industry. Nevertheless, its production share in 1996-2001 decreased from 8.3 to 4.7 percent, but increased to 11 percent in 2007. The branches of industry of basic metals, metal items and machinery and equipment in 1995-2007 have small shares in the structure of industry and there are tendencies of growth in these sectors from 1.4 to 4.7 percent.

While evaluating the competitive abilities of Lithuanian industry, it is relevant to analyze the structure of Lithuanian industry according to the level of technologies. We see that the traditional branches of industry with low technological susceptibility prevail in Lithuania, these comprise 64 percent of all manufacture production; the sectors of average-low technologies – 19.5 percent, average-high – 14 percent and

industries of high technologies constitute only 2.5 percent of total manufacture production in 2007.

The analysis of changes in Lithuanian industry in accordance with the level of technological deve-

lopment has shown that gradually grow average-high and average-low technology industries, but the parts of high and low technology industries decline in general industry structure (Table 1).

Table 1

**Lithuanian industry structure in accordance with the level of technology and science-intensive industries**

Year	High-tech industry	Average-high-tech industry	Average-low-tech industry	The low-tech industry
1998	4.0	9.4	13.2	73.4
1999	4.7	9.8	12.1	73.4
2000	4.8	7.9	12.2	75.1
2001	4.7	6.6	12.6	76.1
2002	5.0	7.7	13.8	73.6
2003	5.0	8.3	15.5	71.2
2004	4.8	8.6	15.3	71.2
2005	3.5	8.5	16.0	72.0
2006	3.0	9.6	17.7	69.7
2007	2.5	14.1	19.5	63.9

Source: calculated by the author according to the OECD science-intensive industries classification

Increasing part of high-technology industries in the industry structure is an important issue. No less important is the development of traditional industries, concentrating their efforts on the secondary market of innovation – improving already manufactured products and technologies, focusing on the industry, creating higher value added.

**Revealed comparative advantage of Lithuanian industries commodities and their changes**

Industry competitiveness analysis is aimed at effects of the main defined factors. A country’s development level is evaluated by part of manufacturing industry in the overall economic structure, with a particular emphasis on high-tech industries. International competitiveness is achieved when the manufactured goods meet the requirements of the global market.

Strategic decisions are made by manufacturing companies, so their success in the international market is possible only with the formation of a reasonable understanding of the factors underlying competitiveness. The competitive advantage gained by industrial sector in international markets is reflected by the results of foreign trade, while evaluating the indexes of export and import of groups of commodities. While analyzing the possibilities for groups of commodities to participate in foreign markets, the trade balance results are evaluated and indexes of comparative advantage are calculated.

RCA (revealed comparative advantage) index is called an index of export specialization. According

to this index it is determined what groups of commodities constitute the most important part in the structure of export, the RCA index allows to evaluate the level of import penetration into the domestic market. This index identifies groups of commodities that compete in international and domestic markets in the most successful way, in comparison with import and export data of selected countries.

Analysis of RCA indexes of groups of Lithuanian industrial commodities in 1996–2007 indicates the following tendencies of competitive ability presented in Table 2. In the groups of live animals and animal products the strong specialization of export is obvious in the group of meat and meat products, in the group of milk and dairy products, but since 2003 indicators decreased, suggesting that economic integration has strengthened competition in these products. In the group of prepared foodstuffs the strong competitive abilities in the international market are demonstrated by the RCA indexes of meat and fish products, though during the period of 1996–2007 these indexes had a tendency of increase.

Although the RCA indexes of chemical production are negative, analysis of competitive ability indexes of groups of commodities indicates that the fertilizers, glues and ferments have the background for forming the competitive advantages in the international market in the group of mineral products. Imports of plastic, rubber products to Lithuania exceed the export volume, therefore significant change was not noticed in this group.



The positive indexes of RCA are observed in the group of raw hides and skins, leather, skins and their products. Export of wood and articles of wood significantly surpass the import with the exception of cork, paper and paperboard, but indexes have a tendency of decrease, so in 1996–2007 RCA fell twice, this indicates that the export position is getting weaker.

In the group of textile and textile articles, strong competitive abilities in the international market are characteristic to knitted, tatted and tailored clothing and other ready-made articles of textile. Silk, wool, cotton, vegetable fibers, shoes, carpets and floor coverings have a strong import specialization. During 1996–2007, the RCA index had very little downward trend.

The export volumes are increasing in the group of machinery and mechanical appliances, electrical equipment, their parts. Specialization of export during the analyzed period is increasing in the group of vehicles, aircrafts, vessels and related transport equipment, especially in the groups of aircrafts, spaceships and vessels, boats and floating constructions.

The potential possibilities to compete in international market have optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatuses manufactured in Lithuania.

The analysis of indexes of comparative advantage indicates that the traditional branches of Lithuanian industry prevail in the structure of export: foodstuff, textile articles and clothing, leather, skins and their articles, minerals and articles of chemical industry, wood and articles of wood. In certain sectors of industry, for instance, in the industry of clothing and sewing, the volumes of re-export influence the foreign trade rates. The positions of export are developing in the industrial sectors of optical, precision, medical or surgical instruments and apparatuses.

Study of the RCA rate changes in 1996–2007 showed that the RCA index is decreasing in traditional industries, which are described as strong trade groups in aspect of exports. This is typical for animal products group, where the RCA rate is high, but has a tendency to drop. Stronger decline of RCA is seen in wood and wood products group, although this traditional industry in Lithuania has a positive trade balance.

The trade of chemical products decreased; therefore the volume of imports into Lithuania began to exceed its exports. Part of chemical industry in the overall industry structure is one of the largest and therefore the negative changes in the RCA show declining competitive opportunities in this industry. The analysis reveals the growing competitive advantage in the group of mineral products, because the RCA rate during the period was positive and has a growth tendency. The RCA indicators of groups of textiles and textile articles were sufficiently stable and high in 1996–2007, but these industries form the competitive advantages of low cost, thus may reveal the RCA downward trend. Strong decrease of RCA in footwear, headgear and other articles group represents decline of trade opportunities in the local and international market. RCA indicators are negative in the group of base metals and their articles, but stronger negative changes are visible in groups of stone, gypsum, cement, ceramics and glassware. The negative RCA indicators of high-technology industries show quite low competitive level. Lithuanian industrial policy set out the key strategic actions, creating the favorable business conditions for companies, creating high value-added activities, fostering innovations, with the support of the competitive conditions and high value-added exports. Substantial efforts must be directed to the innovative process improvement, in order to remove barriers such as innovation risk and cost, and improving the legal, economic and administrative environments of innovations development.

Table 2

## Revealed comparative advantage (RCA) index of commodities produced in industries of Lithuania in 1996–2007

List of commodities	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
I Live animals; animal products	42.1	50.7	47.7	42.4	36.2	29.1	37.1	35.8	38.5	31.1	34.7	36.6
II Vegetable products	-16.9	-0.6	-4.2	-2.7	-18.3	-0.2	-8.5	6.7	1.4	13.5	10.3	23.6
III Animal or vegetable fats and oils and their cleavage products; prepared edible fats	-16.7	-42.2	-49.3	-46.9	-51.7	-44.8	-34.7	-40.8	-37.4	-32.7	-26.2	-18.2
IV Prepared foodstuffs; beverages, spirits and vinegar; tobacco	4.5	2.5	-2.7	-7.4	2.7	9.5	10.9	11.3	7.2	14.5	16.1	17.1
V Mineral products	-11.1	-1.0	9.6	-4.5	-4.9	5.3	3.5	4.3	13.2	-0.1	1.0	-11.0
VI Products of chemical or related industries	7.3	-0.9	1.7	-2.6	-6.4	-15.9	-12.6	-11.6	-9.0	-4.1	-11.1	-8.5
VII Plastics and their articles; rubber and their articles	-23.7	-24.6	-27.5	-23.5	-22.9	-24.2	-24.7	-26.4	-25.5	-19.8	0.1	19.3
VIII Raw hides and skins, leather, furskins and their articles; saddlery and harness	20.9	24.2	31.0	25.7	27.9	18.8	12.8	8.2	0.5	-1.3	-2.0	-8.0
IX Wood and articles of wood; wood charcoal; cork and articles of cork; straw products	76.3	66.2	57.7	60.1	60.4	57.4	55.3	51.0	40.5	35.2	34.4	32.0
X Pulp of wood or of other fibrous cellulosic material; waste paper, scrap paper or paperboard	-25.3	-18.7	-25.3	-30.4	-32.2	-28.9	-25.1	-29.9	-26.7	-20.1	-12.1	-9.2
XI Textiles and textile articles	31.9	32.7	32.5	35.4	32.0	29.1	29.9	28.1	23.6	23.2	22.8	19.7
XII Footwear, headgear, umbrellas, sun umbrellas, walking sticks, seat-sticks, whips	30.0	14.1	-9.5	2.1	-11.3	-17.5	-27.5	-39.1	-41.7	-43.5	-39.7	-39.7
XIII Articles of stone, plaster, cement, asbestos, mica and similar materials	-4.5	-12.9	-11.4	-11.1	-10.4	-15.6	-17.1	-25.2	-25.0	-25.1	-20.1	-20.6
XIV Natural or cultured pearls, precious or semi-precious stones, precious metals	-7.7	4.3	-13.7	-6.1	2.8	0.3	-25.7	1.1	9.5	14.8	21.5	25.2
XV Base metals and articles of base metals	-18.7	-17.3	-18.9	-15.9	-10.2	-14.6	-15.2	-24.6	-21.6	-21.1	-18.8	-17.4
XVI Machinery and mechanical appliances; electrical equipment; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such	-14.1	-19.4	-22.4	-20.9	-18.1	-21.4	-25.6	-25.3	-20.4	-20.1	-18.2	-15.1
XVII Vehicles, aircrafts, vessels and related transport equipment	-13.6	-15.5	-17.8	-13.0	-10.9	-10.2	-0.6	-0.9	-17.9	-17.0	-15.0	-20.9
XVIII Optical, photographic, cinematographic, measuring, checking, precision, medical or surgical instruments and apparatuses; clocks and watches; musical instruments	-28.0	-25.3	-28.4	-27.6	-14.9	-18.2	-21.0	-15.6	-14.2	-14.5	-7.2	5.8
XIX Arms and ammunition; their parts and accessories	-72.0	-67.9	-46.0	-55.8	-62.0	-52.0	-69.7	-71.2	-59.6	-33.6	-10.6	-19.8
XX Miscellaneous manufactured articles	16.6	8.2	13.9	26.8	41.3	40.6	49.8	53.4	55.0	53.9	52.6	50.7
XXI Works of art, collectors' pieces, and antiques	17.3	76.2	63.7	32.4	77.9	61.4	93.8	75.7	81.6	71.6	37.0	-28.2

Source: calculated by the author according to the data of The Department of Statistics to the Government of the Republic of Lithuania.

## Conclusions

The restructuring of industry is important problem to economic development, because global competition determines the possibilities for forming competitive advantages and influence structural changes of industry. Modern economic theory supports and encourages the open economy and the competitive market; however, the long-term and stable industrial policy that seeks to improve market performance is an important factor in generating industry business environment and promotes the changes in industry structure.

In considering changes in industry structure, the most common approach is to evaluate the degree of specialization of a country, or region, in trade of output generated within a particular industry, so this approach can be applied by considering shares of merchandise exports and imports. Another method of evaluating industry structure is to consider the specialization of a country relative to the global average in the output of a certain industry. This approach is referred to as the index of revealed comparative advantage (or index of specialization), which reveals the comparative advantage of a nation from its past trade data.

While evaluating the competitive abilities of Lithuanian industry, it is relevant to analyze the structure of Lithuanian industry according to the level of technologies. The traditional branches of industry with low technological susceptibility prevail in Lithuania, these comprise 64 percent of all manufacture production; in the sectors of average-low technologies – 19.5 percent, average-high – 14 percent and industries of high technologies constitute only 2.5 percent of total manufacture production in 2007. The analysis of changes in Lithuanian industry in accordance with the level of technological development has shown that gradually grow average-high and average-low technology industries, but the parts of high and low technology industries decline in general industry structure.

Analysis of RCA indexes of groups of commodities in 1996–2007 indicates that the traditional branches of Lithuanian industry prevail in the structure of export: foodstuff, textile articles and clothing, leather and their articles, minerals and articles of chemical industry, wood and articles of wood. Analysis of competitive ability indexes of groups of commodities indicates that the fertilizers, glues and ferments have the background for forming the competitive advantages in the international market in the group of mineral products. Export of wood and articles of wood significantly surpass the import, but indexes have a tendency to decrease. Specialization of export during the analyzed period is increasing in the group of vehicles, especially in the groups of aircrafts, spaceships and vessels, boats and floating constructions and in the industrial sectors of optical, precision, medical or surgical instruments and apparatuses.

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## Lietuvos pramonės struktūriniai pokyčiai ir eksporto plėtros tendencijos

### Santrauka

Tarptautinė konkurencija daro lemiamą įtaką Lietuvos pramonės restruktūrizacijos raidai – tai rodo akivaizdūs pokyčiai Lietuvos pramonės sandaroje. Pramonės restruktūrizacijos rezultatai priklauso nuo įmonių gebėjimo konkuruoti tarptautinėje rinkoje, išlaikyti ir didinti rinkos dalis, sėkmingai panaudojant produktų kūrimo, gamybos, produkcijos diferenciacijos strategijas siekiant išlaikyti įmonės pelningumą besikeičiančios ekonominės aplinkos, technologinės pažangos ir konkurencijos sąlygomis. Pramonės restruktūrizacijos rezultatai atskleidė Lietuvos pramonėje egzistuojančius rinkos trūkumus, nepakankamą vadybos, mokslo ir techninės pažangos, informacinių technologijų ir komunikacijų lygį. Tiesioginių užsienio investicijų pritraukimo, inovacijų kūrimo, konkurencingumo formavimo ir stiprinimo, švietimo ir mokslo rėmimo bei mokslo tyrimų ir technologijų diegimo strategijos tapo svarbiausiais pramonės restruktūrizacijos ir plėtros veiksniais.

**Straipsnio tikslas** – išanalizuoti Lietuvos pramonės šakų struktūros pokyčius, ištirti prekių grupių santykinio pranašumo rodiklius, įvertinti eksporto plėtros tendencijas.

Pramonės restruktūrizacijos procesas rinkos ekonomikos šalyse vyksta nuolat. Šį natūralių procesą išsivysčiusiose šalyse skatina rinkos pokyčiai, konkurencija, integraciniai ir globaliniai procesai. Restruktūrizacijos galimybės ir rezultatai priklauso nuo turimų materialinių, finansinių išteklių ir jų panaudojimo galimybių. Šalies išsivystymo lygis vertinamas pagal apdirbamosios pramonės lyginamąjį svorį bendroje ūkio struktūroje, ypač akcentuojant aukštųjų technologijų pramonės šakų dalį joje.

Pramonės struktūros sąvoka nusako pramonės šakų charakteristikas ir sudėtį bei apibūdina aplinką, kurioje pramonės įmonės veikia. Pramonės šakų struktūrą apibūdina įmonių, esančių pramonės šakoje, skaičius, dydis, nuosavybės formos ir pardavimų apimtys bei aplinkos, kurioje įmonė veikia charakteristikos, tokios kaip koncentracija, produktų diferenciacija, įmonių integracijos ir diversifikacijos laipsnis. Strateginius veiklos sprendimus priima pramonės įmonės. Rinkos ekonomikos sąlygomis jų sėkmė yra galima tik formuojant pagrįstą suvokimą apie konkurencingumą sąlygojančius veiksnius. Įmonių restruktūrizacija apima turto persikirstymą siekiant didinti veiklos efektyvumą, o tai lemia įmonių prisitaikymą rinkos ekonomikos sąlygomis. Restruktūrizacijos klausimus analizuoja Pohl, Djankov (1997), Ericson (1998), Hunya (1997), Hannula (2000), Tsouskalis (1993). Bonin (1998) tiria įmonių prisitaikymo prie struktūrinių pokyčių rinkos ekonomikos sąlygomis aspektus.

Užsienio autoriai Curson Price (1990), Bayliss, El-Agraa (1990) teigia, kad pramonės politika turėtų būti nukreipta pramonės struktūrinius pokyčių skatinimui šalinant rinkos trūkumus: inovacinės veiklos riziką, mokslo tyrimų ir naujų technologijų diegimo problemas įmonėse. Pramonės politikos įtaką pramonės struktūros pokyčiams ir konkurencingumui tiria Jovanovič (1997), Meyer-Stramer (1995) ir kt.

Pasiektą pramonės sektoriaus konkurencinį pranašumą tarptautinėse rinkose atspindi užsienio prekybos rezultatai, eksporto ir importo apimtys vertinant pagal atskiras prekių grupes. Analizuojant prekių grupių galimybes konkuruoti užsienio rinkose, įvertinami prekybos balanso rezultatai, skaičiuojami santykinio pranašumo rodikliai.

Atskleisto santykinio pranašumo rodiklis RCA, kurį pasiūlė Balassa (1965), vadinamas eksporto specializacijos rodikliu. Pagal šį rodiklį nustatoma, kokios prekių grupės užima svarbiausią dalį eksporto struktūroje. Straipsnyje panaudotas modifikuotas RCA rodiklis leidžia įvertinti importo prasiskverbimo lygį į vietinę rinką ir identifikuoja tarptautinėse ir vietinėse rinkose sėkmingiausiai konkuruojančias prekių grupes.

Straipsnyje išanalizuoti Lietuvos pramonės struktūriniai pokyčiai 1996–2007 m. pagal pramonės šakų dalis pramonės sandaroje, pramonės struktūrą įvertinta pagal technologijų lygį. Vyraujančią dalį pramonėje sudaro tradicinės, žemo technologinio imlumo pramonės šakos. Didžiausią apdirbamosios pramonės parduotos produkcijos dalį sudaro maisto produktų ir gėrimų pramonė, tačiau lyginamasis svoris sumažėjo nuo 30,3 proc. 1996 m. iki 20,7 proc. 2007 m. Svarbią pramonės struktūros dalį sudaro rafinuotų naftos produktų pramonė. 1996–2005 m. rafinuotos naftos produktų pramonės lyginamasis svoris bendroje pramonės gamyboje padidėjo nuo 19,5 proc. iki 30,5 proc., tačiau 2007 m. sudarė tik 19,2 proc. visos parduotos produkcijos apimtys. Drabužių siuvimo ir kailių išdirbimo pramonės, kuri maždaug 90 proc. produkcijos eksportuoja į užsienio rinkas, lyginamasis svoris 1996–1999 m. išaugo nuo 6,1 iki 11,5 proc., o jau 2007 m. sumažėjo iki 4,2 proc. Du kartus sumažėjo tekstilės gaminių pardavimai bendroje apdirbamosios pramonės produkcijos sandaroje, tačiau daugiau nei du kartus išaugo medienos ir medinių gaminių, taip pat baldų pardavimai.

Aukštųjų technologijų pramonės grupei priskiriama įstaigų įrangos ir kompiuterijos pramonė 2007 m. sudarė tik 0,1 proc. visos parduotos pramonės produkcijos. Elektroninės komunikacijos priemonių pramonė (radijo, televizijos ir ryšių įrengimų bei aparatūros pramonė) sudarė 1,4 proc. (2003 m. – 3,9 proc.), medicinos, tikslųjų ir optinių prietaisų pramonė – 1,0 proc. Vidutinio sudėtingumo – aukštųjų technologijų pramonės šakos – varikliinių transporto priemonių, priekabių ir puspriekabių pramonė, kitų transporto priemonių – atitinkamai sudaro 1,1 proc. ir 2,0 proc. visos pramonės produkcijos. Chemikalų ir chemijos pramonė, priskiriama vidutinio sudėtingumo – aukštųjų technologijų pramonės – grupei, yra perspektyvi pramonės šaka, užimanti nemažą santykinę dalį pramonės struktūroje. Tačiau jos produkcijos lyginamasis svoris 1996–2001 m. sumažėjo nuo 8,3 proc. iki 4,7 proc., o 2007 m. sudarė 11 proc. Metalų, metalo gaminių ir mašinų bei įrengimų pramonės šakos užima nedidelę dalį pramonės struktūroje, tačiau pastebėtos augimo tendencijos nuo 1,4 proc. 1996 m. iki 4,7 proc. 2007 m.



Pramonės šakų struktūros tyrimas rodo, kad Lietuvoje vyrauja žemo technologinio imlumo pramonės šakos, kuriose 2007 m. buvo sukurta 64 proc. visos pramonės produkcijos, vidutinių-žemųjų technologijų pramonės šakose – 19,5 proc., vidutinių aukštųjų – 14 proc., aukštųjų technologijų pramonės sudaro tik 2,5 proc. visos pramonės produkcijos.

Šiame straipsnyje išanalizuoti Lietuvos pramonėje pagamintos produkcijos santykinio pranašumo RCA rodikliai ir jų dinamika, atskleidžianti eksporto plėtros tendencijas. Lietuvos eksporto struktūroje vyrauja tradicinių pramonės šakų produkcija – maisto produktai, tekstilės gaminiai ir drabužiai, odos ir kailių dirbiniai, chemikalai ir chemijos pramonės gaminiai, mediena ir jos dirbiniai. Gyvulių ir gyvūninės kilmės produktų grupėse stipri eksporto specializacija išryškėja gyvų gyvūnų, pieno ir pieno produktų grupėje, tačiau rodikliai nuosekliai mažėja, o tai rodo, kad sustipėjo konkurenciją tarp šių produktų. Paruoštų maisto produktų grupėje stiprios konkurencines galimybes tarptautinėje rinkoje rodo gaminių iš mėsos ir žuvies RCA rodikliai, šios prekių grupės rodikliai tiriamuoju laikotarpiu nežymiai auga. Chemijos pramonės šakų produkcijos konkurencingumo rodikliai neigiami, tačiau sėkmingai tarptautinėje rinkoje konkuruojama su tokiais gaminiiais kaip trąšos, albituminės medžiagos, klijai ir fer-

mentai. Medienos ir medienos dirbinių eksportas gerokai viršija importo apimtį, tačiau 1996–2007 m. RCA rodiklis sumažėjo dvigubai, vadinasi, eksporto pozicijos silpnėja. Tekstilės medžiagų ir dirbinių grupėje stiprios konkurencines galimybes tarptautinėje rinkoje turi megzti, nerti ir siūti drabužiai bei kiti gatavi tekstilės dirbiniai. Tiriamuoju laikotarpiu RCA rodiklis turi tendenciją nežymiai mažėti.

Susiklosčiusios pramonės struktūros tobulinimas, stiprinant tradicinių pramonės šakų ir didinant aukštųjų technologijų pramonės šakų dalį pramonėje, yra aktuali problema, reikalaujanti didelių investicijų į mokslinius tyrimus, švietimą ir technologijas, koncentruojant pastangas į inovacijų rinką, orientuojantis į pramonės šakas, sukuriančias aukštesnę pridėdamąją vertę. Konkurencijos rinkoje didėjimas skatina nacionalines įmones stiprinti savo konkurencinius gebėjimus, o Lietuvos pramonės įmonėms, daugeliu atveju formuojančioms konkurencinius pranašumus žemų sąnaudų, o ne dėl inovacijų, nėra lengva konkuruoti. Stiprėjanti konkurencija skatina pramonės įmones nuolat peržiūrėti produktų kūrimo, gamybos, tobulinimo, produkcijos diferenciacijos strategijas, analizuoti ne tik įmonės, bet ir šakos eksporto apimtį, analogiškų prekių importo konkurenciją.

**Prasminiai žodžiai:** pramonė, pramoninė struktūra, eksporto konkurencingumas.