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INTEGRATION INTO GLOBAL PRODUCTION AND MARKETING NETWORKS AS A FACTOR OF INFLUENCE ON NATIONAL ECONOMIC DEVELOPMENT

The article analyses the dynamics of international trade by production branch of electrical and optical equipment for the period from 1995 to 2009, trade structure (trade by finished and intermediate products of branch) and its dynamics. The dynamics of indicators of value added, salary and employment in this branch are analysed. Grouping of the countries by the dynamics of the indicators of foreign trade, structure of trade and the indicators of value added of salary and employment is carried out.

Keywords: *knowledge-intensive production; intermediate production; global production and marketing networks; value added; employment; salary.*

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ІНТЕГРАЦІЯ В ГЛОБАЛЬНІ ВИРОБНИЧО-ЗБУТОВІ МЕРЕЖІ ЯК ЧИННИК ВПЛИВУ НА НАЦІОНАЛЬНИЙ ЕКОНОМІЧНИЙ РОЗВИТОК

У статті проаналізовано динаміку міжнародної торгівлі продукцією галузі електричних та оптичних приладів за 1995–2009 роки, структуру торгівлі (торгівля готовою та проміжною продукцією галузі) та її динаміку. Проаналізовано динаміку показників доданої вартості, заробітної плати та зайнятості в зазначеній галузі. Здійснено групування країн в залежності від динаміки показників зовнішньої торгівлі, структури торгівлі та показників доданої вартості заробітної плати та зайнятості.

Ключові слова: *наукоємна продукція, проміжна продукція, глобальні виробничо-збутові мережі, додана вартість, зайнятість, заробітна плата.*
Табл. 2. Літ. 10.

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ИНТЕГРАЦИЯ В ГЛОБАЛЬНЫЕ ПРОИЗВОДСТВЕННО-СБЫТОВЫЕ СЕТИ КАК ФАКТОР ВЛИЯНИЯ НА НАЦИОНАЛЬНОЕ ЭКОНОМИЧЕСКОЕ РАЗВИТИЕ

В статье проанализирована динамика международной торговли продукцией отрасли электрических и оптических приборов за период 1995–2009 годы, а также структура торговли (торговля готовой и промежуточной продукцией) и ее динамика. Проанализирована динамика показателей добавленной стоимости, заработной платы и занятости в указанной отрасли. Осуществлена группировка стран в зависимости от динамики показателей внешней торговли, структуры торговли и показателей добавленной стоимости заработной платы и занятости.

Ключевые слова: *наукоемкая продукция, промежуточная продукция, глобальные производственно-сбытовые сети, добавленная стоимость, занятость, заработная плата.*

Introduction. The modern world economy is characterized by high level of the international production fragmentation. Due to the integration of production processes and their internationalization more and more countries are involved into

global production and marketing networks that stimulates trade by intermediate production and promotes the increase of the level of interrelation of production in different countries. Researchers highlighted various aspects of functioning of global production and marketing networks, their influence on increase of production in participating countries of these networks, major factors of value added creation in different countries, import's content in export of the countries etc. However, despite the considerable scientific interest to the subject of the international fragmentation of production and functioning of global production and marketing networks, quite perspective direction of research remain social and economic effects of internationalization of the knowledge-intensive production.

Analysis of recent researches and publications. The researches on the influence of international fragmentation of production on indicators of economic and social development of countries are carried out in the works by N. Foster and R. Stehrer (2010), E. Dietzenbacher (2012), B. Los, E. Dietzenbacher, R. Stehrer, M. Timmer and G. Vries (2012) and others. In these works international intermediate trade is analysed, the process of value added creation in global production is investigated and marketing networks and certain regularities in the value added creation by different groups of countries are revealed.

The object of this research is international trade products branch of electrical and optical equipment.

The aim of the research is the determination of influence of involvement of the country to global production and marketing structures on the indicators of value added, employment and salary in the knowledge-intensive branches of national production.

The methods of research are systematic and comparative analysis of scientific literature and statistical information.

The main results of research. Due to the integration of production processes and their internationalization more and more countries are involved in global production and marketing networks that stimulate trade by intermediate productions and enhances the level of interrelation of production in different countries. This phenomenon is accompanied by significant increase in trade volumes by intermediate production (parts and components).

For the research we selected 49 countries – namely OECD countries, the EU countries outside the OECD, BRICs and 5 ASEAN countries with the largest GDP (Singapore, Malaysia, Thailand, Philippines, Indonesia).

The analysis of influence of dynamics and structure of international trade by high-tech production is made on the example of electric and optical equipment branch. The analyzed indicators include: value added of the branch, quantity of employees in the branch and salary in the branch (the cumulative salary is paid to all the employees in the branch). The analysis of the named indicators will allow making conclusions on the impact of forms of involvement of the country in global production networks on economic and, caused by it, social development inside the country.

According to the size of the indicators of the increase in the volumes of international trade of electrical and optical equipment all the studied countries are divided into the following groups:

- the countries with a high increase of trade volumes (fourfold and more);

- the countries with moderate (twice to fourfold) and low increase of trade volumes (less than twice).

Countries with a high increase of trade volume by high-tech products generally are characterized by a high increase of the indicators of value added, salary and employment in the relevant knowledge-intensive branches of national production (Table 1). Firstly, all the countries of this group (except Russian Federation) are characterized by the reduction in the share of intermediate production in the structure of total exports. Secondly, countries of this group (except India, Russian Federation, Slovakia and Bulgaria) are characterized by the reduction of a part of intermediate production, also, in import of the relevant production. Due to high rates of volume increase of export (and for all the countries in the group, except Russian Federation, the increase in the volume of the export of branch production was higher than an import increase, and consequently higher, as indicated in Table 1, than the increase of foreign trade circulation by this production) and simultaneously the reduction of share of intermediate production in export and import can make assumptions about the orientation of the economy on production and export of products with higher value added.

Table 1. **Countries with a high increase of international trade volumes (electrical and optical equipment, 1995 to 2009)**

Country	The growth of international trade of electrical and optical equipment, times	Change in the share of intermediate products of electrical and optical equipment, %		Growth within the period, times		
		Export	Import	Salary	Employees	Value added
China	15.55	0	-12	6.36	2.28	8.11
Hungary	13.31	-42	-5	5.67	1.70	10.73
Slovak Republic	12.61	-35	1	4.18	1.43	5.67
Romania	12.4	-8	-15	64.52	1.80	55.69
Czech Republic	12.31	-15	-4	4.91	1.47	4.08
India	10.57	-17	21	3.43	1.01	5.39
Poland	9.3	-32	-3	2.73	1.40	3.80
Bulgaria	7.88	-7	1	37.33	0.84	91.29
Latvia	6.44	-14	-16	5.69	0.84	4.27
Turkey	5.38	-10	-8	91.39	1.37	45.86
Lithuania	4.85	-23	-1	2.34	0.31	2.97
Estonia	4.67	-13	-9	7.69	1.88	8.45
Russian Federation	4.48	2	12	14.59	0.67	16.96

Source: WIOD, STAN bilateral trade database by industry and end-use category; own calculations.

The highest increase of all the noted indicators took place in Romania, in comparison with 1995, in 2009 the value added of electric and optical equipment increased 55 times, salary – 65 times, the number of employees – 1.8 time. The largest increase of employees quantity in the branch among the countries of this group took place in China – 2.28 times. Concerning other countries of the group, the increase of employees quantity was more moderately from 1.88 times in Estonia to almost invariable employment rate in India. In Russian Federation, Bulgaria, Latvia and Lithuania employment the reduction is recorded, by 16% for Bulgaria and Latvia, by 33% in Russian Federation and by 69% in Lithuania. Salary in the sector most of all grew in Turkey – 91 times, in Romania as it was already noted, 49 times, in Bulgaria – 37 times, in the Russian Federation – 15 times, for other countries of

the group the increase of this indicator varied from 8-fold increase in Estonia to increase in 2.3 times in Lithuania. Leaders in increasing value added in the branch were Bulgaria with 91 times the increase, Romania – 56 times, Turkey – 46 times, the Russian Federation – 17 times, Hungary – 11 times. For other countries the increase was from 8-fold increase in Estonia and China to 3-fold in Lithuania.

The countries with moderate and low increases of volume of international trade of electrical and optical equipment are generally characterized by lower (as compared with the countries of the aforementioned group) level of increase of the indicators of value added, salary and employment in the analyzed branch (Table 2).

Table 2. **The countries with moderate and low increases of trade volumes of international trade products branch of electrical and optical equipment for the period 1995 to 2009**

Country	The growth of international trade of electrical and optical equipment, times	Change in the share of intermediate products of electrical and optical equipment, %		Growth within the period, times		
		Export	Import	Salary	Employees	Value added
Mexico	3.43	-18	23	4.78	1.37	5.04
Indonesia	3.26	5	-10	9.86	2.59	10.82
Chile	3	-22	-8	-	-	-
Greece	3	-14	-9	2.56	1.63	2.17
Iceland	2.84	11	4	-	-	-
Korea, Rep.	2.77	-16	7	3.06	1.03	3.47
Slovenia	2.77	3	-7	2.45	0.85	2.57
Brazil	2.72	-24	-5	4.54	1.48	3.49
Netherlands	2.61	-4	-1	1.37	0.79	0.91
Israel	2.45	5	-3	-	-	-
Spain	2.29	11	-5	1.32	1	1.29
Cyprus	2.25	31	6	1.87	0.62	2.39
Austria	2.22	-13	-15	1.4	0.93	1.5
Belgium	2.22	0	14	1.08	0.75	0.95
Thailand	2.18	-4	2	-	-	-
Norway	2.14	7	-6	-	-	-
Australia	2.07	-27	-8	1.32	1.14	1.4
Germany	2.02	-4	-6	1.2	0.9	1.19
Denmark	1.95	3	-11	1.88	1.09	2.42
Switzerland	1.9	-7	-16	-	-	-
New Zealand	1.88	-6	-18	-	-	-
Philippines	1.82	-16	2	-	-	-
Malaysia	1.7	5	-2	-	-	-
Finland	1.68	0	9	2.2	1.15	1.83
Italy	1.67	-3	7	1.43	1.02	1.25
Portugal	1.67	-8	-15	1.47	0.82	1.83
Sweden	1.65	-7	0	1.5	0.82	1.57
United States	1.63	-8	-10	2	0.69	1.73
France	1.6	-1	-4	1.26	0.81	0.87
Singapore	1.56	26	-4	-	-	-
Canada	1.5	-23	-6	1.48	0.86	1.15
Ireland	1.47	-8	7	2.15	1.14	2.14
United Kingdom	1.17	-4	-1	1.14	0.56	0.77
Japan	1.12	10	1	0.58	0.6	0.65
Luxembourg	1.05	-9	6	2.18	1.56	2
Malta	0.83	-5	-1	1.67	0.49	1.25

Source: WIOD, STAN bilateral trade database by industry and end-use category; own calculations.

Changes during the study period of the analyzed indicators in the countries of this group took place non-uniform and on the basis of similarity of indices dynamics we will distinguish the following subgroups:

- countries with a moderate and low increase of volumes of trade of branch production and a low increase of the indicators of value added, salary and employment in the relevant science-intensive branch of national production entered all economies of Group of Seven (G7). Economy of these countries is characterized by insignificant increase or, even, decrease of the analyzed indicators of the branch of optical and electric equipment. Also to this subgroup belong, except for the aforementioned G7 Australia, Austria, Belgium, Sweden, Malta, Spain and Portugal;
- countries where took place considerably higher increase of the analyzed indicators than the average for the group. These are Indonesia, Ireland, Finland, Denmark, Luxembourg and Cyprus. The greatest increase among the countries of this subgroup took place in Indonesia where during the analyzed period the increase of the value added and salary in branch was, respectively, 11 and 10 times, the quantity of employees increased 2.6 times. Regarding European economy of this subgroup, the increase of the analyzed indicators was more moderate here;
- countries with considerable change of the share of intermediate production in the total amount of trade by products and a high increase of the indicators of value added, salary and employment in the noted branch. Here belong Brazil, Mexico, South Korea and Greece which part of intermediate production in the structure of export was reduced, and in Mexico also the increase in part of import of intermediate production of branch in the general structure of import (by 23%) took place.

In general, in global production networks of high-tech products some countries act as an initial or intermediate link, others – as a final link of production. And although, in practice, each of the studied countries is both exporter and importer of intermediate and finished high-tech products, we can distinguish countries with certain specialization. And changes in volumes and structure of trade by high-tech products are accompanied by changes of indicators of development of the knowledge-intensive branches of national production in the investigated countries.

Analyzing the foregoing, it is possible to make such **conclusions**:

1. Integration into global production and marketing networks of the knowledge-intensive production for various differently influences indicators of salary, quantity of employees and value added of high-tech products. Thus, the economy of all countries of the Group of Seven is characterized by low increase or even reduction of the noted indicators. The greatest changes in volumes and structure of trade by intermediate and final products, in the indicators of value added, salary and employment took place in almost all countries of the BRIC and new members of the EU.

2. During the study period some countries experienced considerable changes in the form of involvement in global production and marketing networks whereof is evidenced by the change of part of intermediate production in the structure of international trade by the knowledge-intensive production. In turn it influences the change of the indicators of value added, salary and employment, especially brightly it is shown on the example of Brazil, Mexico, South Korea and Greece.

The perspective directions of research in this sphere is the detection of regularities of distribution of value added between the countries depending on the stage of

creation of the knowledge-intensive productions (an initial, intermediate or final link of production), and also the influence of involvement in global production and marketing on the employment and salary indicators in the countries depending on the level of their economic development.

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