РОЗДІЛ 2

Економіка підприємства та організація виробництва

Added Value, as a Criterion for Evaluating the Efficiency of Global Production Chains

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In recent years, the world economy has experienced a growth of gross exports relative to production output, which can to some extent be explained by a more intensive use of global value chains: the number of intermediate inputs being transported from one country to another within the production process is increasing. The article examines the existing approaches to determining the added value that is being formed in global production chains. It is substantiated that such analysis allows to determine where the most added value is formed, and also to form possible directions for the development of a chain's operating elements. It is emphasized that a company or a country should strive to have presence in those sections of global chains where a greater added value is generated. But in addition to building into existing chains, the country's own industrial policy is also important, and it eventually leads to structural shifts in the country's industry.

Keywords: value added, global production chain, tables "expenditures-output", gravity model.

Introduction. In recent years, the world economy has seen a growth in gross exports relative to production output, which can to some extent be explained by a more intensive use of global value chains: the number of intermediate inputs being transported from one country to another within the production process is increasing. At the same time, to evaluate the impact of value chains on growth and incomes, not only gross exports must be considered. The cost of a country's exports can significantly differ from the value added to these exports by the country. There welfare of countries involved in global value chains grows, but at different rates in accordance with the distribution of value added between developed (technology producers) and developing (producing goods on the basis of technologies) countries.

Two key directions for analyzing trade features within GVCs can be identified: analysis of intermediate goods trade (as opposed to gross trade or trade of end-use goods) and analysis of value-added flows. Obviously, increasing the country's involvement in value chains can degenerate into organizing assembly production within the country, which will not necessarily

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help to increase the technical and technological potential of the economy and to increase productivity. Similarly, a growing share of the domestic component in exports can only indicate an increase in the raw material orientation of exports. Thus, developing recommendations for increasing the involvement of domestic companies in value chains requires an integrated approach to the analysis of value added as the main indicator of the global production's efficiency.

Formulation of the problem. In economic theory, the notion of "added value" is well-established and has been in existence for a long period of time. The theoretical foundations of value added (newly created value) were formulated in the works of the classics of economic science and are reflected in two directly opposite theories: the theory of surplus value (founded by A. Smith, D. Ricardo, U. Petit, developed by K. Marx) and the theory of marginal productivity (founder – J.-B. Sey, developed by J.B. Clark). In these theories, attemptswere made to discover the regular processes of formation and distribution of newly created value.

The theoretical foundations of the modern concept of economic value-added are based on the studies of Marshall and Skowell and are described in B. Stewart's "The Quest for Value: a Guide for Senior Managers" [21], as well as in the work of D. Young and S. O'Byrne "EVA and Value-Based Management: a Practical Guide to Implementation"[19]. In the 1970s and 1980s, a need to develop a new financial management mechanism arose among companies in developed countries, since the existing methods of assessing a company's activities could no longer meet the growing demands of managers, for these methods were inadequate for evaluating a company's activities in the long-term scope. In terms of contributing to the national economy, it is the added value that is the final reflection of the activity carried out by a particular economic entity involved in a GVC. Analyzing the essence of this concept as being a criterion for assessing the effectiveness of global production is thus relevant.

The purpose of the study is to analyze and to characterize the existing methods and tools for evaluating added value as an indicator of the effectiveness of global production.

Research results. In the conditions of universal informatization and the intellectualization of all aspects and types of activity in the modern society, the role of value added as a competitive advantage of a country, region, or organization on the international arena is increasing. The higher the added value created in the process of production and sale of goods or services, the more effective the activity of an economic entity. In modern conditions, one of the systemic problems that impede the innovative development of a country's industry and.

A feature of modern theories of value added is the systematic nature of the factors behind its creation. All activities for creating added value are divided into basic (material and technical support, manufacturing, delivery of goods, sales and marketing, maintenance) and support (R & D, human resources management, general management). At the same time, a number of scientists consider the value chain exclusively within a company (AA Thompson, A.J. Strickland), while some go beyond the company, emphasizing the features of chain formation at the level of industries and regions (M. Porter, R. Kaplinski, J. Gerreffi, Morris). Value chain analysis expands its application, not only to consider the production process of forming material value added, but also to assess the relationships between all actors inside the chain and to understand the economic and social benefits and costs of these relationships. Value chain analysis determines where the most added value is formed, which allows to determine the relative importance of the chain's elements and to determine possible directions for their development.

In world practice, using indicators based on national "input-output" tables is the most widespread. D. Hummels, J. Ishii and K.-M. Yi, who published an article entitled "The Nature

and Growth of Vertical Specialization in World Trade" [10] in 1999, are considered to be the founders of this approach. They proposed using indicators of vertical specialization, since the statistics of trade in intermediate goods, or parts and components of finished products, provided, in their opinion, an inadequate picture of the structure of international trade and, correspondingly, the nature of its rapid growth in recent decades. However, over time, shortcomings were identified in the proposed model, namely, regarding the export and import vectors as exogenous, determined independently of each other and from Z. This is possible only in the absence of bilateral trade in intermediate demand goods, that is, when changes in output are not transferred along the entire production chain. However, this can hardly be considered probable in practice. This shortcoming was eliminated through the construction of harmonized international "input-output" tables. The principles of constructing intercountry and interregional models on the basis of input-output tables were laid down in the works of W. Isard [11], V. Leontief, A. Strout [15], and other economists published back in the 1950s and 1960s.

Currently, research aimed at analyzing GVCs is being conducted mainly in two areas:

1) "cleaning" trade statistics from double account, isolating value added flows (trade in value added);

2) decomposing aggregate trade flows into components according to national origin and purpose of the value added in trade.

In the first case, the final external demand for goods and services is in focus, in the second – the aggregate external demand for goods and services, i.e. the sum of the final and intermediate external demand. These are somewhat different, but interrelated tasks: in the first case, to establish the volume, country of origin and destination of the net value added; in the second, to determine the origin and purpose of the value added in the gross export or import of a separately considered country or group of countries. Methodological approaches to solving these problems and the obtained results are described in the almost simultaneously published papers of R. Johnson and G. Noguera [12], B. Meng, J. Fang and N. Yamano [16], R. Stehrer et al. [20]. The methodology is most consistently presented in the works of R. Kupman, W. Powers, C. Wang and Wei Shang-Jin[13, 14].

Practical adaptation of this methodology to specific analytical purposes is widely used in studies of international trade and integration problems and often leads to innovative results. For example, Yu.Escaith and F. Gonguet [8] illustrated the spread of financial shocks through the mechanisms of cross-border intersectoral linkages, which turned out to be very relevant in the light of the financial and economic crisis of 2008. A group of Japanese economists from the Institute of Developing Economies uses a series of Asian "input-output" tables from different years to assess the intensity and length of production chains in the East Asia region, demonstrating that real integration here is much ahead of the formal one [16].

Popularization of special research applications of input-output tables is connected in many ways with the ability to separate the costs of using individual factors of production, labor and capital, from the value added vector, and also to replace it with exogenously specified cost vectors in physical units, for example, of natural resources or energy. Analyzing total labor expenses has become an important area of research on export specialization and competitiveness. So, the World Input-Output Database (WIOD), created with the support of the European Commission in 2013, contains employment vectors classified according to workforce qualification (low, medium, high). WIOD connects data on intermediate and final consumption provided by national statistical agencies and the international trade statistics created on the basis of data provided by Comtrade UN. Since the former do not include

information on the imported products' country of origin and on the exported products' destination country, while the latter doesn't mention the import and export purpose, it is necessary to combine both in order to track the movement of intermediate goods. Specialists of the University of Groningen and the Vienna Institute of International Economic Studies used this data to identify changes in the competitiveness and structure of employment in processing industry sectors in the economies of EU member states [22], which are not detected by usual statistics.

Recently, UNCTAD [23], the World Economic Forum [24] and the "Group of Twenty" have also joined the discussion of creating added value through international trade mechanisms. In September 2013, a joint report of OECD, WTO and UNCTAD on the results of analyzing global production chains and their relationship to trade and investment, job creation and economic development was presented to heads of state and government of the Group of Twenty at the summit in St. Petersburg [18].

In 2016, the United Nations Economic Commission for Europe prepared a "Guide to Measuring Global Production," which follows the logic of the guide "The Impact of Globalization on National Accounts," although more attention is paid to the behavior of multinational enterprises involved in global production. Recommendations and discussions are based on the international reporting standards set out in the System of National Accounts 2008 and the sixth edition of the International Monetary Fund Manual on the Balance of Payments and International Investment Position. Many global production chains consist of individual companies specializing in the production of individual components of a certain final product. That is, there are entire groups of branches, subsidiaries and departments of the same multinational enterprises, which are linked together in global production chains. It is this type of international corporate structure that is mainly considered in the Guide to Measuring Global Production.

The approach to analyzing trade in terms of intermediate goods is well-developed, and a lot of works can be distinguished, which investigate the influence of the intensity of intermediate goods' usage in a chain on gross trade [4; 5; 17]. On the contrary, despite the analysis in such terms being an urgent task, there is not much research on trading value-added, which involves the need to address a number of issues:

- improving the methodology for calculating the amount of added value created by the national economy and "promoted" via international chains;
- carrying out calculations at the highest possible level of detail;
- improving theoretical models of value-added trade.

It seems that gravitational models [3; 6; 9], models of import demand or supply of exports, and models based on the theory of comparative advantages have considerable potential in studying the regularities that determine the value added trade. But we should highlight a number of difficulties faced by researchers who conduct an empirical assessment of the specifications of gravity models for the export of value added.

First, the limited availability of data both on the channels (directions) of the value added movement, and on the volumes of this added value.

Secondly, empirical works based on the gravitational model traditionally investigate commodity trade. Speaking of the movement of value added in global value chains, it seems necessary, however, to take into account the volume of trade in services. The reason is that, firstly, services can have a complementary character in relation to (intermediate consumption) goods passing through trade chains. For example, parent companies can provide services to their subsidiaries. Secondly, trade in services can follow the trade in goods (of investment

purpose). Then, the reduction in volume of value added embodied in the goods will be more than compensated by the volume of added value embodied in the traded services.

However, when evaluating the gravity equations of trade in services, it is necessary to pay attention to the following features:

- trade in services is significantly affected by non-tariff barriers;

- (trade) restrictions can be imposed not on certain service industry branches, but on specific service providers;

- regulation of end-user price of services can take place on the importer's market;

- cultural differences may have greater importance for the provision and consumption of services than for selling / buying goods;

- the amount of accumulated direct investment, which to a considerable extent depends on the same factors that influence the volume of trade, can be more significant for trading services than for trading goods.

Another direction that deserves attention is the concept of intellectual capital, proposed by the economists R. Bulyga and P. Kokhno [2]. This concept is largely a continuation of the concept of production factors, with the addition of a new factor, "intellectual capital", which functions in a postindustrial society. Intellectual capital is a concept that includes the totality of components of a company's intangible potential, as well as the system of economic relations for its use aimed at creating business value. According to supporters of this theory, intellectual activity is the only source of added value; routine work only transfers the cost of the means of production to the newly created product. Intellectual capital acts as a multiplier that significantly multiplies the efforts of a worker. It is interesting that the conclusions obtained by the authors of this theory are consistent with the postulates the evolutionary economy's representatives. For example, J. Dosi and L. Soete considered the comparative and absolute advantages, which arise due to gaps in technological development (including innovation activity) between countries, to be the key factors in foreign trade [7]. Thus, a country with a higher level of technology will export a wider range of goods and services, and as a result will have a higher intensity of involvement in global value chains (export of intermediate and final goods).

The conclusions and recommendations for further research. Based on the results of the analysis, it can be concluded that a company or country should strive for the presence in those sections of global chains where higher added value is generated. It is important to consider that at the stage of preproduction there is a global competition, and at the stage of postproduction it is more local. In the development of GVC's, it is extremely important to take into account the current global trends that lead to changes in the economy. Among the market trends are growing demand in emerging markets and demographic shifts; in resource trends – a decline in energy prices; among trends that define capabilities – automation and computerization, improvement of logistics; among trends determining regulation – the possibility of free trade agreements, sectoral policies, as well as environmental restrictions. But in addition to embedding in existing chains, a country's own industrial policy, which ultimately leads to structural shifts in industry, is also important. Thus, further research will be aimed at determining the relationship between the export status of enterprises, their technical efficiency and the magnitude of value added created in an industry, which will help to determine the real potential for Ukrainian enterprises' entering GVCs.

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Додана вартість, як критерій ефективності глобальних ланцюгів виробництва

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У світовій економіці останні роки простежується зростання валового експорту по відношенню до обсягу виробництва, який в певній мірі можна пояснити більш інтенсивним використанням глобальних ланцюжків доданої вартості: зростає число проміжних ресурсів, що вводяться, які перевозяться з однієї країни в іншу в рамках виробничого процесу. У статті розглянуті існуючі підходи до визначення доданої вартості, що формується у глобальних ланцюжках виробництва. Обґрунтовано, що такий аналіз дозволяє визначити, де формується найбільша додана вартість, а також сформувати можливі напрями розвитку діючих елементів ланцюжка. Виділено, що компанія або країна повинні прагнути до присутності в тих ділянках глобальних ланцюжків, де генерується більш висока додана вартість. Але крім вбудовування в існуючі ланцюжки важлива й власна промислова політика країни, яка в цілому призводить до структурних зрушень в промисловості.

Ключові слова: додана вартість, глобальний ланцюг виробництва, таблиці «витрати-випуск», гравітаційна модель.

Добавленная стоимость, как критерий эффективности глобальных цепей производства

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В мировой экономике последние годы прослеживается рост валового экспорта по отношению к объему производства, который в определенной мере можно объяснить более интенсивным

использованием глобальных цепочек добавленной стоимости: растет число промежуточных вводимых ресурсов, перевозимых из одной страны в другую в рамках производственного процесса. В статье рассмотрены существующие подходы к определению добавленной стоимости, формирующейся в глобальных цепочках производства. Обосновано, что такой анализ позволяет определить, где формируется самая большая добавленная стоимость, а также сформировать возможные направления развития действующих элементов цепочки. Выделено что компания или страна должны стремиться к присутствию в тех участках глобальных цепочек, где генерируется более высокая добавленная стоимость. Но помимо встраивания в существующие цепочки важна и собственная промышленная политика страны, которая в итоге приводит к структурным сдвигам в промышленности.

Ключевые слова: добавленная стоимость, глобальная цепь производства, таблицы «затраты-выпуск», гравитационная модель.