<u>**ОСОБЛИВОСТІ РОЗВИТКУ**</u>
<u>**СВІТОВОГО ГОСПОДАРСТВА ТА МЕВ**</u>

THE POLITICAL ECONOMY OF GLOBAL VALUE CHAINS RESTRUCTURING

ПОЛІТИЧНА ЕКОНОМІЯ ПЕРЕБУДОВИ ГЛОБАЛЬНИХ ЛАНЦЮЖКІВ СТВОРЕННЯ ВАРТОСТІ

ПОЛИТИЧЕСКАЯ ЭКОНОМИЯ ПЕРЕСТРОЙКИ ГЛОБАЛЬНЫХ ЦЕПОЧЕК СОЗДАНИЯ СТОИМОСТИ

Rogach O.
Doctor of Science, Professor, Head of the International Finance Department of the Institute of International Relations of Taras Shevchenko National University of Kyiv. E-mail: mf.roi.@clouds.iir.edu.

Рогач О.І.
Доктор економічних наук, професор, завідувач кафедри міжнародних фінансів Інституту міжнародних відносин Київського національного університету імені Тараса Шевченка. E-mail: mf.roi.@clouds.iir.edu.

Рогач А.И.
Доктор экономических наук, профессор, заведующий кафедрой международных финансов Института международных отношений Киевского национального университета имени Тараса Шевченко. E-mail: mf.roi.@clouds.iir.edu.

Abstract. The article analyzes the international production of multinational enterprises (MNEs). It presents some theoretical approaches to the analysis of international production, such as fragmentation theory, global value chains (GVCs) theory. The article argues that at the present stage of the world economy internationalization, there are two trends in the localization of MNEs global chains. The first trend indicates a slowdown of GVCs growth in the last seven years. The second trend characterizes the restructuring of GVCs. It indicates the backward movement of certain international production fragments to the MNEs home countries. Among the major factors that have slowed the growth of international MNEs production, the article analyzes the political instability and low economic dynamics of some FDI exporting countries. Changes in the location of global value chains are driven by technological, economic and geopolitical factors. Fourth industrial revolution, the robotization of production and new technologies for shale oil and gas in the US are changing the traditional determinants for GVCs localization. They have caused the relocation of many businesses from countries with the cheap labour to MNEs home countries. The article also highlights that the important factors of GVCs restructuring are the fiscal mechanisms implemented by the US administration, including tax reform. But the short-term and long-term effects of such measures differ significantly. Finally, the third important factor in the dynamics and restructuring of multinational enterprise network production is the geopolitical risk and political uncertainty. The trade war between the US and China has had a particularly significant impact on the current global value chains rebuilding.

Key words: *multinational enterprises, international production fragmentation, foreign direct investment, global value chains.*

Анотація. У статті проаналізоване міжнародне виробництво багатонаціональних підприємств (БНП). У ній представлені деякі теоретичні підходи до аналізу міжнародного виробництва, зокрема теорія фрагментації, теорія глобальних ланцюжків створення вартості (ГЛСВ). У статті стверджується, що на сучасному етапі інтернаціоналізації світової економіки існують дві тенденції локалізації глобальних ланцюжків БНП. Перша тенденція вказує на уповільнення зростання таких мереж за останні сім років. Друга тенденція характеризує реструктуризацію ГЛСВ. Остання тенденція вказує на зворотний рух певних фрагментів міжнародного виробництва до домашніх країн БНП. Серед основних факторів, які сповільнили зростання обсягів міжнародного виробництва багатонаціональних підприємств, у статті проаналізовано політичну нестабільність та низьку економічну динаміку деяких країн-експортерів ПІІ. Зміни у розташуванні глобальних ланцюжків створення вартості зумовлені технологічними, економічними та геополітичними факторами. Четверта промислова революція, роботизація виробництва та нові технології видобутку сланцевої нафти та газу в США змінюють традиційні детермінанти локалізації ГЛСВ. Вони спричинили релокацію багатьох підприємств з країн з дешевою робочою силою у країни базування БНП. У статті також підкреслюється, що важливими факторами реструктуризації ГЛСВ є фіскальні механізми, що застосовуються адміністрацією США, включаючи податкову реформу. Але коротко- та довгострокові наслідки таких заходів істотно відрізняються. Нарешті, третім важливим фактором динаміки та реструктуризації виробництва багатонаціональних підприємств є геополітичні ризики та політична невизначеність. Торговельна війна між США та Китаєм мала особливо значний вплив на поточну перебудову глобальних вартісних ланцюжків.

Ключові слова: *багатонаціональні підприємства, фрагментація міжнародного виробництва, прямі іноземні інвестиції, глобальні ланцюжки створення вартості.*

Аннотация. В статье проанализировано международное производство многонациональных предприятий (МНП). В ней представлены некоторые теоретические подходы к анализу международного производства, в частности, теория фрагментации, теория глобальных цепочек создания стоимости (ГЦСС). В статье утверждается, что на современном этапе интернационализации мировой экономики, существуют две тенденции локализации глобальных цепочек МНП. Первая тенденция указывает на замедление роста таких сетей за последние семь лет. Вторая тенденция характеризует реструктуризацию ГЦСС. Последняя тенденция указывает на обратное движение определенных фрагментов международного производства в домашних стран МНП. Среди факторов, которые замедлили рост объемов международного производства многонациональных предприятий, в статье проанализирована политическая нестабильность и низкая экономическая динамика некоторых стран-экспортеров ПИИ. Изменения в расположении глобальных цепочек создания стоимости обусловлены технологическими, экономическими и геополитическими факторами. Четвертая промышленная революция, роботизация производства и новые технологии добычи сланцевой нефти и газа в США меняют традиционные детерминанты локализации ГЦСС. Они вызвали перемещение многих предприятий из стран с дешевой рабочей силой в страны базирования МНП. В статье также подчеркивается, что важными факторами реструктуризации ГЦСС стали фискальные механизмы, применяемые администрацией США, включая налоговую реформу. Но краткосрочные и долгосрочные последствия таких мер существенно отличаются. Наконец, третьим важным фактором динамики и реструктуризации производства многонациональных предприятий являются геополитические риски и политическая неопределенность. Торговая война между США и Китаем оказывает особенно значительное влияние на текущую перестройку глобальных стоимостных цепочек.

Ключевые слова: *многонациональные предприятия, фрагментация международного производства, прямые иностранные инвестиции, глобальные цепочки создания стоимости.*

Introduction

In recent decades international production of multinationals has reached a global scale. Although international statistics do not provide accurate data on the number of these companies, it is estimated that the number of MNEs has exceeded the threshold of 100,000, and the number of their foreign affiliates is estimated at more than 1 million units. The share of multinational firm's gross production in the world GNP is 25%, in the world trade - 65%.

As Narula & Pineli [2019] summarized, the role of MNEs in economic development has been an agenda for research in international business and political economy literature for more than 50 years. The traditional questions of multinational enterprises foreign expansion and their relationships with host countries have recently been complemented by topics of global value chain's benefits distribution and offshoring effects for home and host countries.

Modern MNE's production is different from its 40-year-old prototype. It provides for a complex network hierarchical system of production and market relations, encompassing both enterprises belonging to multinational firms and formally independent companies. The fragmentation of international production has led to significant changes in the division of labor, both at the corporation and country levels. Such network segmentation has led to the emergence of global value chains (GVCs) of multinational enterprises. Global value chains represent an organizational model of the fragmented value creation process that is managed and controlled by the MNEs.

The GVCs characterize the organizational structure of modern networks of international production. Fragmentation of international production gives rise to profound structural changes in contemporary world trade. More and more countries and firms are beginning to specialize in the individual stages, links, value creation functions within individual GVCs, which defines the new specialization of these economic units in the world economy [Baldwin, & Lopez-Gonzalez, 2015].

The flagship MNE's global value chains are often collaborate and combine to perform certain functions or tasks. This is clear evident in the existence of so-called "strategic alliances" [Dunning, 1995]. Such alliances of MNEs create global network production system.

Depending upon the MNEs organizational models and the technological features of industries and products, two types of international production fragmentation process can be distinguished. Vertically integrated multinationals typically fragment the process of final product manufacturing based on the stepwise processing of raw materials, semi-finished products, intermediate products. Such vertically integrated value chains cases are given by the petrochemical, electronic, and electrical industries. Multinational enterprises organize international production systems in these sectors based on sequential technological operations [Baldwin, & Okubo, 2019]. Horizontally integrated MNEs and international firms with widely diversified production lines tend to build another model for fragmentation architecture. These network systems have considerably higher role of participants' specialization in functions involved in value creation or their competencies and unique assets.

Literature review

The concept of fragmentation was pioneered by Jones & Kezkowski [1990]. Although these authors have not developed a formal theory, they have analysed a fragmentation model in which the various "production units" have been linked to the services sector [especially in the fields of transport, communications and information technology]. Further useful theoretical analysis has been provided by the research of Grossman & Rossi-Hansberg [2008], Antras & Helpman [2004]. Grossman & Rossi-Hansberg [2012] proposed the term "trade in task" which characterizes the division of production functions into individual fragments. They developed a model of fragmented production where each country performs one function in the production and sale of goods. As Koe and Jeng point out, "organizationally fragmented and spatially distributed production networks constitute a new form of economic structure for the modern global economy and its uneven developmental consequences" [Coe, & Yeung, 2015: p.1].

The term value chain was first mentioned by Porter in his book *Competitive Advantage: Creating and Sustaining Superior Performance* [Porter, 1985]. Any firm is not just a set of equipment, people, resources. It is based on the sequence and systematicity of certain stages of activity. Each stage creates its value, which is included in the total value of the product [services]. Such systematic and consistent activity, as Porter says, allows the company to create products and services that are focused to consumers. The Porter's value chain is a set of activities that firm takes to create value for its customers. This scientist has proposed a general model of such a chain, which includes the basic elements of typical business activities and the relationship between them [Rogach, 2018].

Porter notes that value chains in the same industry have the same structure, but the main competitors tend to have different features. Such distinction cover product differentiation, different types of semi-finished products, geographical location of production operations and distribution channels. Porter calls such difference as a "key source of competitive advantage" and the activity of value creation firms is the "discrete building blocks" of their competitive power [Porter, 1985].

The concept of "chain" reflects the vertical sequence of events that led to the supply, consumption and maintenance of goods and services. The main accent here is on the product approach. Changes in the comparative advantages of countries move individual fragments of production to other countries [Pla-Barber, Linares, & Ghauri, 2018].

GVCs can also be complex and cover individual fragments of different systems of international production. For example, if several flagship MNEs form a strategic alliance, their global product chains intersect and have joint participants. This can occur when producing related products, or different classes of the same product [Buckley, 2016].

Gereffi, Humphrey & Sturgeon [2005], Lee & Gereffi [2015] and their followers developed an institutional and managerial stream of international production fragmentation research. At the center of their analysis, these scientists put not the development of trade models on tasks, but the structure analysis of fragmented international production, the role of its participants and management in global value chains [Mayer, Phillips, & Posthuma, 2017].

Some theoretical publications in political economy of international production considers both production and exchange of intermediate goods and services in the global networks of MNEs. It integrates new approaches to the international trade theory ["the trade in task" theory] and the latest concepts of FDI [the network concept of MNE, the concept of global value chains]. Based on this, it explains the evolution of the international division of labor and the modern features of venture capital movement, as well as the exchange of goods and services. Such research approach underlies the evolution of international trade and the geographic relocation of industries from one country to another. It generates a distribution of separate, ever smaller functions, tasks between countries. Such distribution is carried out in the global value chains, organized and controlled by MNEs [Johnson, & Noguera, 2012].

As Buckley [2009] showed, the development of operating fragmentation as a key feature of the global value chains was accelerated by two interrelated processes. The first one is a rapid progress of technology, allowing the industry to divide GVCs into small, 'compact' links. The second one is that technological innovation 'squeezed' the distance separating the countries and improved the speed, efficiency and effectiveness of coordination of geographically dispersed production process.

The new paradigm of international trade examines the impact of foreign production [GVCs fragmentation] on the expansion of export-import flows. As Baldwin [2006] argues, that such fragmentation leads to a significant increase in trade of intermediate goods, which represents only separate tasks or functions of global production and marketing.

In the framework of the international business theory [or theories of multinational enterprises] the microeconomic approach predominates in research agenda. In the definition of global value chain, the focus is made on the distribution of tasks between the parties and the control of MNEs over this process. FDI and exports are regarded as complementary but alternative operations of MNEs. Brainard [1997], Helpman, Melitz & Rubinstein [2008] restore the traditional

methodological approach to FDI as a substitute for trade. These views are reflected in the theory of exchange of concentration on proximity developed by them [also known as – "proximity-concentration trade-off theory"]. FDI will reduce the production concentration of the parent company in home, but in return the company will be in proximity to the market of the host country. In handling export instead of FDI, the firm will increase the concentration of production in the home country but will lose proximity of the plant to the market of a foreign country. Under these conditions, higher transport costs and trade barriers and lower investment barriers and the economy of scale at factory level in comparison to corporate level will encourage the firms to choose FDI, not export.

Later Helpman, Melitz & Yeaple [2004] introduced an important new factor in this theoretical model – the heterogeneity of companies in terms of their productive capacity. They proved that firms differ significantly in terms of productive capacity and by this indicator are divided into a group of companies with low, medium and high productivity. Foreign operations are usually carried out by firms with high productivity. The most productive firms will serve the foreign market through FDI, and the least productive – through export from the home country. The empirical studies confirm that in sectors with greater heterogeneity of firms the share of high-productivity firms relative to low-productivity firms is much higher than in other sectors. In such sectors the share of firms that choose FDI rather than export will be higher than in other industries [Castellacci, 2011].

Although the economic literature mainly refers to the global nature of value chains or global production networks of MNEs, some scholars believe that these companies are oriented on the regional market of its country of origin. They don't diversify GVCs on the global markets, because the costs of monitoring and coordination of global operations don't cover the benefits of their implementation [Rugman, 2005]. Rugman & Verbeke [2005], Verbeke & Kano [2012] state that the majority of the 500 largest MNEs have not global but regional structure of their value chains. Thus, regionalization may be a result of two strategies – either serving a starting solution in process of internationalization of the firm or being an intermediate process on the way toward globalization [Rugman, & Chang, 2010].

Political economy studies of global value chains have revealed the fragmented international production effects on the structure of the economy, employment levels, trade balance, and the country well-being [Baldwin, 2006]. Some of these studies proves that fragmentation has the positive impact for all participating countries. However, some studies distinguish short-term and long-term positive effects and highlight the greater benefits for multinational's home country or other industrialized countries from global value chains. Baldwin & Robert-Nicoud [2007] have also explored the theoretical aspects of offshore trade between countries with different factors of production. An important issue has also been the study of benefits from fragmentation, especially between industrialized and developing countries.

Research findings

In the last two decades, significant structural changes have taken place in the organization of multinational enterprise's global value chains. This applies to the dynamics, territorial proportions, and the complexity of the goods and services flows in such value structures, as well as a reverse relocation tendency of some production segments in the context of outsourcing [Rogach, 2019].

GVCs are dynamic and flexible systems. They are mobile enough. Ever since the product fragmentation went beyond national borders and became international 30-40 years ago, there has been a constant adjustment or restructuring of production networks in response to changing comparative advantages of countries, increasing political risks or developing new corporate cost-minimization strategies.

Production networks mobility and flexibility is one of the essential features of modern globalization. None of the countries can be sure of the constant "loyalty" of the MNEs to maintain separate production units [as its own or subcontracted outsourcing] on its territory for a long time.

Moving individual links in global chains from one country to another has become a common trend that is accelerated or slowed by many economic and political factors.

At the present stage of the world economy internationalization, there are two trends in the localization of MNEs global chains. The first trend indicates a slowdown of such networks growth in the last seven years, and the related trend characterizes the increase in the backward movement of certain international production fragments to the MNEs home countries.

After three decades of international production networks rapid territorial and sectoral expansion, the pace of this process has slowdown. This is evidenced by the rather low growth rate of sales, value added and employment of multinational firm's foreign affiliates in 2012-2017. In 2005-2010 sales of foreign affiliates grew by an average of 9,7% per year and affiliate's value added grew by an average of 10,7% per year. In 2012-2017 the average growth of these indicators was much less – 1,5% for both [UNCTAD, 2018].

There are several explanations for this trend. The technological fragmentation in many industries is already sufficiently developed [or even exhausted] and further fragmentation of the value chain does not give additional profit. Some industries, such as electronic, electrical, which were the first to embark on the path of fragmentation, have already reached considerable "maturity" in this process. In the future, it is only possible to move individual segments of production from one country to another, and not to extend the range of supply chain member countries altogether.

However, technological factors obviously have different effects on the dynamics of GVCs in different industrial sectors. There are still many industries that are far from the "maturity threshold" of the production tasks distribution. Other economic sectors [e.g. services] have further potential for segmentation of operations. It is likely that the slowdown in the growth of "mature industries" networked production will be offset by the greater fragmentation dynamics of other industries that later embarked on this path (biotechnology, pharmaceuticals, creative industries, etc.). The modern industrial revolution continues to reduce the communications, transportation and logistics cost, which contributes to the geographical dispersion of all new types of production.

The general economic factors of the world economy post-crisis development in the last 5-7 years have had a significant impact on the GVCs modern economic dynamics.

Low economic dynamics of most EU countries (in recent years even the traditional European locomotive – Germany) as well as the BRICS countries (including Brazil, China, Russia), increasing volatility and economic problems of emerging markets (Turkey, Argentina) and developing countries, have become one of the main factors in slowing down the global chain's expansion.

Brexit adds even more negative expectations to the potential of European MNEs to further increase global value chains. For UK multinationals and international firms in EU countries, entirely new tax, customs, and supply chain constraints are emerging, constraining new investment or even forcing plans to change established production networks.

The second trend in the GVCs development in the last decade has been a marked process of international production networks restructuring. Although, as we have noted, the modification of production chains is ongoing and is not a new phenomenon of MNE's activity, in recent years it has been felt especially clearly and is increasingly gaining ground. The major impact on such restructuring has a reshoring, that is, the return by multinational firms some fragmented processes back home. The relocation of individual production units reduces the quantitative indicators of GVCs growth.

The process of outsourcing is influenced by many factors, such as robotization and automation of manufacturing processes, digitization of the economy, the introduction of 3D printers, the relative equalization of labor costs, the reduction of energy resources in the United States, as well as the result of special fiscal, trading actions.

All models of "trade in task" and fragmentation of international production studied the foreign outsourcing development with the focus on certain key factors – the difference in the wages of workers and the reduction of transport costs. If these conditions exist, as theoretical studies have shown, some of its segments are transferred to locations with cheap labor [Grossman, & Rossi-

Hansberg, 2006]. The MNEs practice fully proved these theoretical findings during last three decades of progress in communications, transportation, a reduction in international management costs, and the involvement of new regions with very cheap labor. The multinational firms' strategies were aimed at relocating production to Asia or other countries with cheap factors of production.

But the Fourth industrial revolution, the robotization of production and new technologies for shale oil and gas in the US are changing these traditional trends of fragmentation.

For example, the shale revolution has already led to a fall in gas and electricity prices in the United States, where the cost of such energy has become lower than in other industrialized countries. The reduction in energy costs in the United States has led to a major restructuring of GVCs in many industrial sectors. The more cheaper energy resources are in the United States [the current level of prices is still not the limit of decline], the more this factor begins to determine the restructuring of global value chains.

There are two aspects of this impact. First, US MNEs compare their economies against cheap labor in China and other developing countries and the benefits of using cheap energy in the US. For a growing number of industrial sectors, this comparison is not in favour of Asian countries. If the fixed costs of production closure in one location and opening it in another location are not crucial or could be offset by low gas and electricity prices, multinationals decide to disinvest abroad and return to the US. There is a fundamental change in logistics, delivery directions and participants in subcontracts, that is, the entire architecture of the GVCs.

The industrial sectors feel different impact of low energy prices. Therefore, it is still difficult to assess whether this factor can completely neutralize the motive for using cheap labor and deprive Asian countries [China, India and others] of their traditional comparative advantages. But cheap labor benefits "destruction" has already begun and is happening with increasing force. In this case, it is possible to predict the negative effects for the expansion of GVCs.

Another aspect of low energy prices impact is the attractiveness for European and Asian MNEs to set US subsidiaries. On the contrary, it has positive effects for the expansion of the GVCs, as energy-intensive manufacturing segments of non-US firms are shifted to the US. This situation, for example, is very clearly observed in the non-ferrous metallurgy [especially the aluminium industry], the petrochemical industry and even in the pharmaceutical sector. In the last ten years, almost all leading non-US multinationals in these industries have decided to open their US subsidiaries motivated by cheap electricity or gas. This is an important factor of their modern competitive strategy.

As already mentioned, robotization and automation also cause the return of assembly industries to post-industrialized countries, especially in the automotive and engineering industries. In recent years, a new industrial revolution has significantly reduced labor costs even in the apparel and footwear industries. US technology leadership in many industrial sectors encourages foreign firms to open branches in scientific and industrial agglomerations. Broetje-Automation (Germany) plans to open aerospace manufacturing robotics facility at Elk Grove Technopark in 2019, and Saab AB (Sweden) will set its military aircraft spare parts facility by 2021.These decisions were motivated by scientific cooperation with the US universities and the introduction of 3D printing into production [Lee, 2019]. In order to bring its production closer to R&D centers and consumers, Danish pharmaceutical MNE Novo Nordisk has decided to acquire an American manufacturer of diabetic drugs in North Carolina in August 2019 [Novo Nordisk, 2019].

Another important factor in the restructuring of the GVCs is the fiscal mechanisms implemented in the US by the Trump administration, including tax reform. But the short- and long-term effects of such measures differ significantly.

US tax reform has had a rather complex multi-vector effect on the dynamics of global FDI. This effect related to accumulated value of foreign direct investment as well as the volume of annual outflows and inflows. In anticipation of the tax reform multinational US firms have accumulated huge resources of retained earnings in their foreign accounts, including offshore jurisdictions [Curcuru, & Thomas, 2014]. According to the U.S. Bureau of Economic Analysis [U.S.BEA], since 2010 the annual repatriation of US MNEs income from abroad has not exceeded $

150 billion a year. During the same period, their retained earnings rose rapidly from $ 1.5 trillion to $ 3.2 trillion in 2016, including $ 2 trillion in cash on their foreign accounts [UNCTAD, 2018]. US tax law allowed it to do and receive tax deferrals.

The US Tax Cuts and Jobs Act (TCJA) 2017 also focuses to encourage companies to stay in the US in two ways: (1) by reducing the corporate tax rate from 35 to 21 percent and (2) by applying a territorial tax system.

One of the goals of US tax reform was to encourage US multinationals to bring their profits back home, while slowing down repatriation of profits from affiliates of non-US MNEs located here. Changing the US investment climate in corporate tax liberalization has started a new wave of tax competition between countries. The previous "foreign earnings liberalization" was used by the United States in 2005 when it generated a huge wave of inflow (US $ 300 billion) in deferred US foreign earnings to this country.

According to the US Bureau of Economic Analysis, the 2017 Tax Cuts and Jobs Act [TCJA] resulted in the repatriation of $ 142 billion profit from US foreign affiliate to their parent companies in 2018. Because US investment position statistics reflect such a negative revenue repatriation, even without hindering new US FDI to acquire $ 83 billion in equity abroad, the country's net investment position this year was negative at $ 58 billion [Nguyen, & Whitaker, 2019]. The decline in foreign assets of US firms in 2018 was due both to a decrease in the value of portfolio investment and to foreign direct investment. If at the end of 2017 the FDI of US firms at market value was $ 8.9 trillion, then at the end of 2018 they decreased by $ 1.4 billion to $ 7.5 trillion. This decrease in FDI may also be related to the US MNEs disinvestment and repatriation of their capital to the US [Nguyen, & Whitaker, 2019].

Finally, another important factors in the dynamics and restructuring of the multinational enterprises network production are the geopolitical risks and political uncertainty. Political factors and risks have always been significantly correlated with FDI flows [Schneider, & Frey, 1985]. For example, the wave of MNE's assets nationalization in developing countries in the 1960s significantly changed the direction and volume of FDI.

A series of political developments in recent years, such as Brexit, economic sanctions against Russia, and the US government's rejection of several key international agreements have greatly increased the level of political uncertainty. Increasing economic nationalism, the threat of trade wars and the introduction of customs barriers have worsened the global investment climate. Surveys of multinational enterprise executives indicate that political uncertainty and geopolitical risks are one of the major obstacles to MNEs investment plans [Liu, 2019].

The trade war between the US and the China has had a particularly significant impact on the current global value chains rebuilding. The intensification of trade disputes has forced many firms to postpone investment decisions to expand export subsidiaries in China. This has led to uncertainty for MNEs about the profitability of their operations in the future and the benefits of geographical manufacturing fragmentation and outsourcing networks in low-cost countries. This was evidenced by the significant slowdown of new global value chains growth. Multinational firms that create supply chains to minimize costs are particularly vulnerable to such risks of uncertainty. For the first time in decades, there has been a fear of relocating some of their foreign units to avoid possible trading tariffs [Ayhan, 2019]. In such circumstances, an increase in foreign direct investment seems a very risky business.

If the most pessimistic trade war scenarios are deployed, one can expect an extremely strong effect of these events on the territorial and functional structure of the global MNEs chains. China declared in late August 2019 the introduction of a new 5-10% duty on $ 75 billion of US goods, and in response, President Trump announced his intention to increase the already imposed duties on Chinese goods in the amount of $ 250 billion from 10 to 15%, and additionally make a new round of increase in customs duties from 25% to 30% for another $ 300 billion commodity group from October 1, 2019 [The Financial Times, 2019].

According to many experts, the initiation of 30% duty on exports to the US will make it impossible to have many logistics schemes for supplying multinational firms from China. In

combination with other factors of the technological revolution mentioned earlier, this will lead to the largest restructuring of the GVCs in 40 years.

Consequently, as a result of technological, economic and financial factors, US reshoring is gaining ground. According to the Reshoring Initiative, in 2015, for the first time in 45 years, the balance of relocation from the US (offshoring])and return to the US (reshoring) of enterprises in terms of created [lost] jobs was achieved, and the following year a positive balance of these processes was observed in the direction creating additional employment. According to this organization, if in the early 2010s, due to the transfer of multinational enterprises abroad, the US lost about 220 thousand jobs annually, then in 2016, for the first time, the overall result (offshoring + reshoring) was positive – 30 thousand new jobs. The next two years highlighted a unique situation for 50 years – such a net positive balance of new jobs reached at least 135 thousand a year. In 2018 1,389 companies announced their intention to return 145,000 jobs to the United States. [Reshoring Initiative, 2019 b].

It should be noted that these data include both plans for US MNEs headquarters to "bring production back home" and foreign direct investment by non-US firms that were accompanied by the transfer of their existing overseas production facilities to this country. In the latter case, such action by the MNEs is not a reshoring, since it means that a foreign firm is simply restructuring its GVCs. For example, Swiss pharmaceutical companies have manufactured components of their medicines in the UK or India, and now their production is being shifted to the United States, where energy costs or process automation make them more profitable. For the US this is inward FDI of Swiss MNE but not a reshoring.

GVCs transformation has led to decrease the share of foreign value added in world exports. In the previous twenty years the proportions of domestic and foreign value added in world exports have steadily changed in favour of the latter, then after the global financial crisis of 2008-2009 such a structural trend is no longer observed. The share of foreign value added in world exports stabilized at 30%. The coming years will show whether this is only a temporary stay, or a sign of more structural changes related to changes in the country's economic policies and new MNEs strategies.

An important political economy aspect of GVCs architecture is the territorial value creation proportions between groups of industrialized and developing countries. The data indicate a significant increase share of underdeveloped economies. However, there are discussions about the duration of this effect and the balance of benefits that countries get from international production fragmentation [Raei, Ignatenko, & Mircheva, 2019]. For example, Porter & Kramer [2019] argues that multinational enterprises should fundamentally revise their strategy of building GVCs in order to better address the needs of underdeveloped countries.

Most proponents of fragmentation theory believe that this process opens more opportunities niche specialization for countries that have advantages in producing individual segments but have not yet acquired competitiveness in the production of others. In this case, the total cost of performing individual tasks in different low-cost production units will be lower than the total cost of integrated [combined] production in one place. Some scholars argue that the benefits from participation in fragmented international production are approximately balanced between all participants. The high flexibility of GVCs and the mobility of production segments reinforce the trend of wage equalization for workers of the same skill level in different countries. This will facilitate the efficient allocation of resources and the equalization of social standards of rich and poor countries [Mankiw, & Swagel, 2006].

Buckley & Ghauri [2004] believe that MNEs are becoming a "global factories". Such global factories will allow to produce goods and services in any country where there is a demand for them, and to avoid long distances transportation of final products. In this context, as these authors emphasize, it is important to determine the determinants of global networks spatial dispersion. This is also important for shaping the economic policies of the host countries. The worst-case scenario for a global factory is to continue concentrating wealth in post-industrial countries and further lagging the poorer regions that will occupy the niche of low value industrial

floors. Fixing high-tech, knowledge-based, high-skilled workforce in developed countries and outsourcing standardized parts and semi-finished products in poor developing countries can capture the trends of the above scenario.

Starting with the early fragmentation models, their authors argue that the process will result in a regrouping of production models between countries. Structural shifts in industry and technological potential will occur in both the country with excess capital and the country with cheap labor. For the country of origin, MNEs fragmentation will lead to technological progress in the capital-intensive sector of the economy. Contrary to expectations, such a country does not experience a fall in the wages of unskilled workers [Strange, & Zucchella, 2017].

Another evidence of the GVCs transformation is the increasing emphasis on high-tech flows of goods and services, the creation of network knowledge and competences, the internationalization of the innovative activities of the branches. The creation of intangible assets is the primary goal of an increasing number of international MNEs production systems. The growth rate of royalties and license fee has averaged 5% over the past five years, three times higher than traditional GVCs dynamics – affiliates sales and value-added growth. [UNCTAD, 2018]. Given that the multinational firm's knowledge creation internationalization is rapidly growing, such a transformation of the GVCs will be observed more clearly in the coming years.

Conclusion

The key feature of a new system of international production by MNEs is a dynamic development of global value chains. According to the degree of geographical coverage of the countries, the value chains can include several neighbouring countries, be regional or global. These value chains of MNEs are in permanent transformation, which covers not only the functional segments of the production structure, but also its geographic dispersion. This determines an important geographical configuration trend of the international production – the emergence of new factors and determinants of its localization.

Thus, the process of global value chains restructuring reflects the contradictory nature of many factors. After a long period of dynamic growth, such MNE's network production systems have slowed down their expansion significantly. The Fourth Industrial Revolution, on the one hand, will continue to reduce economic distance between countries, transport and communication costs of companies, and open new technological possibilities for fragmentation of production processes. This will stimulate further international production mobility and the emergence of new GVCs. On the other hand, a new industrial revolution generates factors that counteract the shifting of production from industrialized countries to low-cost countries or even cause return many manufacturing processes from offshore outsourcing areas. The correlation of such forces of "ejection" and "retraction" will obviously be different at certain stages of the world economy digitalization and the deployment of new robotic production platforms. It will determine the future dynamics of expansion [or possibly even contraction] and restructuring of MNEs global value chains.

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CURRENT STATE AND PROSPECTS FOR THE DEVELOPMENT OF THE NORTH AMERICAN FREE TRADE AREA

СУЧАСНИЙ СТАН ТА ПЕРСПЕКТИВИ РОЗВИТКУ ПІВНІЧНОАМЕРИКАНСЬКОЇ ЗОНИ ВІЛЬНОЇ ТОРГІВЛІ

СОВРЕМЕННОЕ СОСТОЯНИЕ И ПЕРСПЕКТИВЫ РАЗВИТИЯ СЕВЕРОАМЕРИКАНСКОЙ ЗОНЫ СВОБОДНОЙ ТОРГОВЛИ

Yakubovskiy S. O.
Doctor of Economic Sciences, Professor, Head of the Department of World Economy and International Economic Relations, Odessa I. I. Mechnikov National University. E-mail: syakubovskiy@onu.edu.ua

Rodionova T. O.
Ph.D. in International Economic Relations, Associate Professor, Associate Professor at the Department of World Economy and International Economic Relations, Odessa I. I. Mechnikov National University. E-mail: t.rodionova@onu.edu.ua

Tsviakh O. S.
Competitor at the Department of World Economy and International Economic Relations, Odessa I. I. Mechnikov National University. E-mail: arinatsviah@stud.onu.edu.ua

Якубовський С. О.
Доктор економічних наук, професор, завідувач кафедри світового господарства і міжнародних економічних відносин Одеського національного університет імені І. І. Мечникова. E-mail: syakubovskiy@onu.edu.ua

Родіонова Т. А.
Кандидат економічних наук, доцент, доцент кафедри світового господарства і міжнародних економічних відносин Одеського національного університет імені І. І. Мечникова. E-mail: syakubovskiy@onu.edu.ua

Цвях О. С.
Пошукач кафедри світового господарства і міжнародних економічних відносин Одеського національного університет імені І. І. Мечникова. E-mail: arinatsviah@stud.onu.edu.ua

Якубовский С. А.
Доктор экономических наук, профессор, заведующий кафедрой мирового хозяйства и международных экономических отношений Одесского национального университет имени И. И. Мечникова. E-mail: syakubovskiy@onu.edu.ua

Родионова Т. А.
Кандидат экономических наук, доцент, доцент кафедры мирового хозяйства и международных экономических отношений Одесского национального университет имени И. И. Мечникова. E-mail: syakubovskiy@onu.edu.ua

Цвях А. С.
Соискатель кафедры мирового хозяйства и международных экономических отношений Одесского национального университет имени И. И. Мечникова. E-mail: arinatsviah@stud.onu.edu.ua

Abstract. *This research aims to analyze current economic state of the North American Free Trade Area and to identify possible prospects for its development. The article explores the prerequisites for the formation of NAFTA, reasons for revising the agreement and compares the*

differences between the previous and updated agreements, an impact of integration association on the socio-economic status, trade and investment activity of the participating countries, prospects for its development and analysis of its economic cooperation with Ukraine. The empirical analysis shows a significant relationship between the U.S. GDP and foreign trade with Mexico and Canada, unemployment and interest rates. Its results revealed that the U.S. trade with Canada had a positive impact on the U.S. GDP; at the same time the U.S. trade with Mexico had a negative impact on the U.S. GDP, which became the main argument for President Trump in his pressure on Mexico to revise the terms of the NAFTA agreement. The regression analysis also showed that there is an inverse relationship between GDP and interest rate in the United States from 1994 to 2018.

It was determined that the United States-Mexico-Canada Agreement (USMCA) is not fundamentally different from the previous one, but it can create new opportunities, for example, for workers and farmers in the United States, and new difficulties for Canada and Mexico. This agreement tightens labor standards and protection of intellectual property rights, especially in Mexico, thus, probably decreasing the attractiveness of Mexican economy to foreign investors, that is likely to reduce the U.S. investment in Mexico. Thus, Canada and Mexico are expected to receive less benefit from the USMCA for their economies than the United States.

Key words: *NAFTA, USMCA, Free Trade Area, United States, Canada, Mexico, trade and investment flows*

Анотація. *Метою даного дослідження є аналіз сучасного економічного стану Північноамериканської зони вільної торгівлі та визначення можливих перспектив її розвитку. У статті досліджено передумови формування НАФТА, причини перегляду угоди та порівняння відмінностей між попередніми та оновленими угодами, вплив інтеграційної асоціації на соціально-економічний стан, торговельну та інвестиційну діяльність країн-учасниць, перспективи її розвитку та аналіз економічного співробітництва з Україною. Емпіричний аналіз показав значну залежність між ВВП США та зовнішньою торгівлею з Мексикою та Канадою, безробіттям та процентними ставками. Його результати показали, що торгівля США з Канадою позитивно вплинула на ВВП США; в той же час торгівля США з Мексикою негативно вплинула на ВВП США, що стало головним аргументом для президента Трампа в його тиску на Мексику щодо перегляду умов угоди НАФТА. Регресійний аналіз також показав, що існує зворотний зв'язок між ВВП та процентною ставкою в США з 1994 по 2018 рік. Було визначено, що Угода США - Мексика - Канада (ЮСМКА) принципово не відрізняється від попередньої, але вона може створити нові можливості, наприклад, для робітників і фермерів у США, а також нові труднощі для Канади та Мексики. Ця угода посилює стандарти праці та захист прав інтелектуальної власності, особливо в Мексиці, що, ймовірно, знижуватиме привабливість мексиканської економіки для іноземних інвесторів, що, скоріше за все, зменшить американські інвестиції в Мексику. Таким чином, для Канади та Мексики очікується, що вони отримають меншу вигоду від ЮСМКА для своєї економіки, ніж Сполучені Штати.*

Ключові слова: *НАФТА, ЮСМКА, зона вільної торгівлі, США, Канада, Мексика, торгові та інвестиційні потоки*

Аннотация. *Целью данного исследования является анализ текущего экономического состояния Североамериканской зоны свободной торговли и выявление возможных перспектив ее развития. В статье исследуется теория международной экономической интеграции, предпосылки для формирования НАФТА, причины пересмотра соглашения и сопоставления различий между предыдущими и обновленными соглашениями, влияние интеграционного объединения на социально-экономическое состояние, торговую и инвестиционную деятельность стран-участниц, перспективы его развития и анализ экономического сотрудничества с Украиной. Эмпирический анализ показал значительную зависимость между ВВП США и внешней торговлей с Мексикой и Канадой, безработицей и процентными ставками. Его результаты показали, что торговля США с Канадой*

положительно повлияла на ВВП США; в то же время торговля США с Мексикой оказала негативное влияние на ВВП США, что стало главным аргументом для президента Трампа в его давления на Мексику по пересмотру условий соглашения НАФТА. Регрессионный анализ также показал, что существует обратная связь между ВВП и процентной ставке в США с 1994 по 2018 год. Было определено, что соглашение США - Мексика - Канада (ЮСМКА) принципиально не отличается от предыдущего, но оно может создать новые возможности, например, для рабочих и фермеров в США, а также новые трудности для Канады и Мексики. Это соглашение усиливает стандарты труда и защиты прав интеллектуальной собственности, особенно в Мексике, что, вероятно, будет снижать привлекательность мексиканской экономики для иностранных инвесторов, что, скорее всего, уменьшит американские инвестиции в Мексику. Таким образом, для Канады и Мексики ожидается, что они получат меньшую выгоду от ЮСМКА для своей экономики, чем Соединенные Штаты.

Ключевые слова: *НАФТА, ЮСМКА, зона свободной торговли, США, Канада, Мексика, торговые и инвестиционные потоки.*

Introduction. The United States – Mexico – Canada Agreement (USMCA) is an updated comprehensive trade agreement between Canada, the United States and Mexico. The USMCA is the largest regional free trade area in the world, with a population of nearly 500 million people and an aggregate GDP of around $24 trillion, equal to around 27% of world GDP. NAFTA – a preliminary agreement of the countries – became the first agreement in the world that linked through economic relations three countries of North America. It was also unusual in a global dimension because it was the first time that a free trade area linked two rich, developed countries with a low-income, developing country. The USMCA has high competitiveness, which has already been reached in the previous agreement, and also strengthens the positions of the participating countries individually, enabling them to produce goods and services that meet the needs of the world market, while increasing the incomes of their citizens, which is also indicative of ability to withstand competition in international trade. As the USMCA is one of the largest economic blocs in the world, there is a need to analyze the processes and changes that occur within it. Therefore, the topic of scientific work is relevant, because at this moment within this economic union historical change is taking place, which can affect not only economies of member countries, but also the state of the world economy as a whole.

Recent literature review. The free trade area (FTA) is the simplest stage of regional integration, which implies the elimination of tariffs and non-tariff barriers between member countries in order to increase mutual trade. Prerequisites are a similar level of economic development, the geographical proximity of countries, and a high level of interdependence. The benefits of an FTA are increased price competitiveness; productivity increase; increase in investment; promoting economic and political reform. Among the disadvantages should be highlighted: an increase in outsourcing; intellectual property theft; displacement of domestic industry; depletion of natural resources in developing countries.

It should be noted that for Mexico, the FTA with the United States became a way to capture the results of its market-opening reforms of the mid-1980s [M. Villarreal, 2017: 14]. The United States and Canada gained more access to the rapidly growing Mexican market. J. McBride and W. Tyner in their works paid special attention to the analysis of the influence of NAFTA on the economies of the participating countries [J. McBride, 2016: 3; W. Tyner, 2018: 16]. The authors noted overall GDP growth and job support, especially those that depend on trade. The theme of the difference between NAFTA and the updated agreement USMCA was revealed in work by R. Wolfe [R. Wolfe, 2018: 3]. The most significant differences are concentrated in the automotive sector.

In Ukraine the impact of regional integration on the development of national economies is studied in the scientific works of O. Rogach, T. Rodionova, O. Shnyrkov, S. Yakubovskiy [O. Rogach, 2019, 2020; T. Rodionova, 2019; O. Shnyrkov, 2019; S. Yakubovskiy, 2019]. Above

mentioned articles study the prospects for the development of integration unions as well as its member states in the context of globalized world. However, the new realities of changing global economic environment require further exploration of this issue.

The purpose of research is to conduct an economic analysis of the current state of the North American Free Trade Area and to identify possible prospects for its development.

The main results of the research. The dynamics of the main macroeconomic indicators of the NAFTA member countries is studied to identify the impact of their participation in the trading bloc on their economic development. The GDP of all USMCA countries is steadily increasing from 1998 to 2018. Analyzing the data, it should be noted that NAFTA gave a powerful impetus to the economic development of the countries. Over the past twenty years, GDP growth in the United States was U.S. – 102%, in Canada – 135%, in Mexico – 72%. According to the World Bank, in 2018, the United States ranked first in the world in GDP, Canada ranked 10th, Mexico ranked 15th [The World Bank, 2020]. As of 2019, in all three countries there was an increase in GDP: up to $21.4 trillion in the United States, in Canada – up to $1.73 trillion, in Mexico – up to $1.22 trillion [IMF, 2020].

GDP per capita in the United States is also growing steadily. In 2018, it was $ 62.8 thousand, which is almost twice as high as in 1998. Thus, the U.S. ranks among the high-income countries and ranks 12th in the world in GDP per capita. Canada has also seen a per capita GDP growth in the last twenty years. It can be noticed that in the period from 2008 to 2018 it was not as significant as in the previous ten years, but in 2018 it amounted to $ 46.3 thousand, which is 2.2 times more than in 1998. Canada, like the United States, is ranked among the high-income countries and ranked 24th in the GDP per capita ranking. In Mexico, per capita GDP growth is around 86% over the period 1998-2008, but in the next decade the growth rate has not been so significant. In 2018, it was $10.1 thousand. In 2019, per capita GDP growth occurred only in the U.S. and Mexico – up to $65.1 thousand and $10.1 thousand in accordance. In Canada, there was a slight decrease to $46.21 [IMF, 2020].

The dynamics of the U.S. unemployment rate in 1998-2018 tended to fluctuate. In 2008, the figure rose to 5.8%, driven by the global financial crisis that led to the collapse of the labor market. In 2018, the U.S. unemployment rate has dropped to 3.7%, reflecting improved labor market conditions and an overall strengthening of the economy. Canada's unemployment rates have been steadily declining over the past twenty years and are generally quite low. In 2018, unemployment dropped to 6.11%, almost 2% less than in 1998. This indicates the effectiveness of the government's policy of increasing employment in the country. The unemployment rate in Mexico, as in the United States, has tended to fluctuate slightly over the past twenty years. In 2018, the figure was 3.49%, which is the natural unemployment rate in the country. As of 2019, unemployment has continued to decline: in the United States – up to 3.72%, in Canada – up to 5.7%, in Mexico – 3.44% [IMF, 2020].

Thus, the analysis of the data showed that NAFTA for 1998-2018 gave impetus for the sustainable economic development of all three countries, which continues in 2019, as evidenced by the improvement of the dynamics of the main macroeconomic indicators of the countries for the whole studied period.

The United States and Canada have the most comprehensive and closest trade links in the world, supporting millions of jobs in both countries. As the main exporter of Canadian goods and services is the U.S. market, foreign economic relations with the United States are essential for Canada. In turn, American trade with Canada and Mexico substantially supports jobs throughout the country, especially in California, Texas and most of the eastern states of America [Business Roundtable, 2020]. During its existence, NAFTA has stimulated significant productivity gains in the Canadian economy and facilitated its expansion and increased competitiveness.

Over the past 20 years, from 1998 to 2018, the U.S. exports to Canada have increased by $95 billion. According to the World Integrated Trade Solution (WITS), in 1998 its structure was dominated by goods such as consumer goods, vehicles, manufacturing products, semi-finished products, electronics and wood [World Integrated Trade Solution (WITS), 2020]. In 2018, the

structure of exports changed, the top exported goods included consumer goods, fuel, semi-finished products, as well as vehicles.

The U.S. imports from Canada shrank by $70 billion compared to 2008, but overall, over the past 20 years, the numbers increased. This situation could be caused by a significant increase in U.S. imports from Mexico in 2018. In 2018, the U.S. imports from Canada totaled nearly $270 billion, up $96 billion from 1998. In 1998, Canada exported to the United States production facilities, consumer goods, semi-finished products, raw materials, and livestock products [WITS, 2020]. In 2018, the structure of imports includes manufacturing products, consumer goods, vehicles, electronics, and semi-finished products. Two other important items of import are fuel and raw materials, as Canada is the largest energy supplier to the United States. Canada ranks third in the world behind oil reserves after Saudi Arabia and Venezuela and is the only member of the five non-OPEC leaders. And uranium produced in Canada is part of the fuel for the U.S. nuclear power plants. Overall, U.S. exports and imports from Canada have not undergone dramatic changes in 20 years.

The United States is Mexico's largest trading partner, and Mexico is the second largest export market of the United States (after Canada) and the third largest trading partner (after Canada and China). The U.S. trade with Mexico has increased at a faster rate than with Canada. Over the last 20 years, exports between the U.S. and Mexico have grown by $143 billion and imports by more than $195 billion. In 1998, U.S. exports were dominated by consumer goods, electronics, manufacturing, transportation, as well as raw materials and fuel, according to the World Integrated Trade Solution [WITS, 2020]. In 2018, the U.S. exported manufacturing, electronics, consumer goods, vehicles and semi-finished products to Mexico. The structure of U.S. imports from Mexico in 1998 included manufacturing, electronics, semi-finished products, transportation, as well as plastics and rubber. In 2018, the structure has changed a bit – raw materials, livestock products and chemicals have joined the semi-finished products and production facilities. The U.S.-Canada trade balance with Mexico remains negative, moreover, in 2018, compared to 2008, the deficit between the U.S. and Canada is decreasing, while between the U.S. and Mexico it is growing.

International transactions in services are a major component of the current account of the balance of international payments. The United States is the largest exporter of services in the world. According to the Bureau of Economic Analysis, from 1999 to 2018, exports and imports of services between the U.S. and its USMCA partners have increased. During this period, exports of the U.S. services to Canada increased 2.5 times and to Mexico – 2.4 times. Imports from both countries increased almost twice during the same period. Thus, it can be concluded that exports of services from the U.S. to Mexico grew at a higher rate than to Canada. The structure of U.S. exports in 1999 was dominated by travel related services, intellectual property costs, transportation, and business and financial services [Bureau of Economic Analysis (BEA), 2020]. In 2008, the structure remained almost unchanged: first place was occupied by tourist services, second place - costs for the use of intellectual property, then business and transport services. In 2018, the share of business services in the export structure increased.

There were also no changes in the structure of imported the U.S. services. The leading position in 1999 was occupied by tourist services. According to the Bureau of Economic Analysis, in 2018, the main imported services were travel services, business, transportation services, and fees for the use of intellectual property [BEA, 2020]. The balance of the U.S. services with the USMCA member countries from 1999 to 2018 is positive. Canada and Mexico's international trade in services has also become closer. Over the past 20 years, exports have increased by $1.15 billion, and imports have increased by $2.6 billion. However, over the last 20 years, the countries have a negative balance of services, which is growing and amounted to $2.295 billion in 2018.

Since NAFTA was signed, bilateral investment volumes have grown significantly, both in terms of stocks and investment flows. The United States is Canada's largest foreign investor. Countries have some of the largest and most comprehensive investment relationships in the world. American investors are attracted to Canada's strong economic strengths, close to the U.S. market, highly skilled workforce and abundant resources. The United States accounts for more than 50

percent of Canada's total foreign direct investment. According to the U.S. Bureau of Economic Analysis, since 1998, the amount of direct investment in Canada has increased by $303 billion. In 1998, the U.S. investors invested their capital in Canada mainly in the production of oil and chemicals, transportation equipment, food, as well as in the financial, insurance and real estate sectors. In 2018, the most invested areas in Canada were the extraction of minerals, in particular metals, the production of transport equipment, chemicals, food, as well as holding and financial companies. Over the past twenty years, the U.S. investment in Mexico has increased by $88 billion. In 2018, Mexico has received $114.8 billion from the United States. Mainly, the production of vehicles, food and chemicals, trade, financing and insurance was invested this year [BEA, 2020].

According to the Bureau of Economic Analysis, total foreign direct investment in the United States increased to $4.34 trillion in 2018 compared to $4.03 trillion in 2017 [BEA, 2020]. Canada ranked in the top three in terms of investment in the United States in 2018, after Europe, Asia and the Pacific. Over the past twenty years, Canadian direct investment to the United States has grown by more than $380 billion. In 1998, Canadian invested in the production of computers and electronic products, real estate, financial sector and insurance. In 2018, Canada's direct investment was primarily focused on the financial sector and insurance, wholesale and retail, real estate, and chemical industry. Thus, it can be concluded that NAFTA has created a favorable investment climate in both countries over the years, which has increased investor confidence. In 2018, Mexico's direct investments in the U.S. totaled $18.7 billion, almost eight times more than in 1998. According to the Bureau of Economic Analysis of the United States, in 1998, Mexico invested in the United States in food production, depository institutions, and wholesale. In 2018, it was invested in food production, chemicals and metalworking, trade and real estate.

The United States is one of Ukraine's major trading partners. In 2018, bilateral trade amounted to about $ 4.07 billion, but the trade balance between countries remains negative. In 2018, Ukrainian exports to the U.S. totaled $ 1.1 billion; up nearly $ 283 million more than in the previous year. This was mainly due to the increase in exports of ferrous metal products, electric machines and some food products. Overall, U.S. exports tended to fluctuate between 2013 and 2018, but since 2017 they have increased nearly 1.4 times compared to 2018. In the structure of Ukrainian exports in 2018, ferrous metals occupy a significant share (mainly cast iron) - about 63%, ferrous metal products – 12.2%, electric machines – 4.2%, as well as sunflowers and soybeans [State Statistics Service of Ukraine, 2020].

Trade relations between Ukraine and Canada in 2018 received a positive trend towards an increase in bilateral trade. Exports to Canada from 2013 to 2018 also tended to fluctuate. Since 2017, Ukrainian exports began to increase, which is the result of the free trade agreement between Ukraine and Canada, which was signed over a year ago. In 2018, exports totaled $ 74.1 million, 1.5 times more than the previous year. This was due to increased exports of ferrous metals, copper, some food and furniture. Exports in 2018 are dominated by ferrous metals – 27.5%, copper and copper products – 18.6%, as well as tannins, nuclear reactors and boilers and vegetable processing products [State Statistics Service of Ukraine, 2020].

Mexico is one of the main trading partners of Ukraine in Latin America. In 2018, exports grew to $ 155.5 million, almost 20% more than in 2017, due to increased exports of seeds and fruits of oilseeds, ores, slag and ash, as well as tobacco. Ferrous metals account for the largest share in the export structure, 27%, cereals 21.7%, ores and slag 14.7%, as well as oilseeds and products of the flour and cereals industry [State Statistics Service of Ukraine, 2020].

In 2018, Ukrainian imports from the United States rose to $2.96 billion, which is almost $438 million more than in the previous year. Overall, in 2018, Ukraine imported from the United States such goods as mineral fuels, oil and its distillation products - 32.1%, vehicles and electric machinery - 18%, as well as nuclear reactors and auto parts. Imports from Canada have also been increasing since 2015. In 2018, it was $333.1 billion, which is almost 60% more than in 2015. Imports in 2018 were dominated by mineral fuels, petroleum and distillation products – 49.2%, fish and crustaceans – 10%, pharmaceuticals – 7.4%, land vehicles – 6.6%, and nuclear reactors – 6.2%. Imports of goods from Mexico have been steadily increasing since 2016, but their volumes remain

small compared to Canada and the United States. In 2018, it was 169.7 million, up 32.6 million from the previous year. Imports in 2018 are dominated by goods such as vehicles – 29%, electric cars – 16.7%, nuclear reactors and boilers – 14.9%, alcoholic and non-alcoholic beverages and vinegar - 9.4%, and pharmaceuticals production – 4.9%. The amount of Ukrainian exports of services to the United States has been moderately increasing since 2016, reaching $ 947.8 million in 2018, which is almost $ 100 million more than in the previous year. Exports to the U.S. in 2018 are dominated by telecommunications services, computer and information services – 64.9%, transportation services – 17.4%, business and financial services – 12%. Exports to Canada in 2018 were down $ 5.8 million from the previous year, but the balance of services is positive. This year the export structure was dominated by: telecommunications, computer and information services 66.5%, transport services – 17.9%, business services – 11.4% and tourist services – 2.4% . The amount of Ukrainian exports to Mexico has increased slightly to $ 0.283 million in 2018. The structure of exports is as follows: tourist services – 31.7%, transport services – 13.6%, telecommunications services, computer and information services – 11.7%, business services – 10% [State Statistics Service of Ukraine, 2020].

The amount of Ukrainian imports from the U.S. in 2018 declined substantially to $ 234.4 million, which is almost 3 times less than in the previous year. Imports from the United States are dominated by: business services – 28.4%, financial services – 24.4%, telecommunications services, computer and information services – 13.6%, royalties and other related services using intellectual property – 12.2% and transportation services – 11.2%. Services imports from Canada have fallen significantly in 2018, almost 5 times. The structure of imports is as follows: business services – 39.7%, transport services – 21.9%, royalties and other services related to the use of intellectual property – 11.1%, telecommunications, computer and information services – 8.7% and tourist services – 5.9%. Imports of services from Mexico in 2018 have almost tripled compared to the previous year and amount to $ 2.1 million, mainly due to an increase in imports of tourist services. The structure of imports in 2018 includes: tourist services – 43.4%, business services – 28.2% and transport services – 3.2%.

The volume of direct investments from the U.S. into the Ukrainian economy in the period from 2013 to 2018 is steadily decreasing. In 2018, the volume was $ 517.4 million; almost twice less than in 2013 and $ 67.8 million less than in 2017. This tendency may be explained by the lack of real investment instruments and mechanisms for attracting investments in Ukraine, as well as by increasing competition for obtaining investments from other developing countries. On the contrary, the volume of direct investments from Canada to Ukraine has increased. In 2018, they totaled $ 49.7 million, up $ 8.6 million from the previous year. This situation is a consequence of the signing of the Free Trade Agreement between the countries and further deepening of relations. All this has led to increased activity of both large and small companies, and therefore increased investment inflows. In 2018 countries have invested in economic activities such as industry (mainly processing), wholesale and retail trade, financial and insurance activities, and real estate transactions in the Ukrainian economy [State Statistics Service of Ukraine, 2020].

Foreign direct investment from Ukraine to the United States from 2013 to 2017 tended to decline, but in 2018 it increased to $ 0.6 million. In 2018, Ukraine invested mainly in professional, scientific and technical activities, which accounted for 94.7% of the total investment [State Statistics Service of Ukraine, 2020]. Thus, it can be concluded that the bilateral trade relations between Ukraine and the USMCA member states for the period 2013-2018 have improved and continue to deepen.

The revised Free Trade Agreement in North America is expected to have a major impact on the U.S. economy. In the industrial and energy sectors, it is expected that USMCA will have a particular impact on the automotive industry. According to the United States Commission on International Trade, provisions relating to other sectors of industrial goods, including chemicals and pharmaceuticals, electronic, energy products, textiles and clothing, will not have a significant impact on the economy as a whole [30]. Since the USMCA provides duty-free access for cars, 75% of the content of which comes from the three participating countries, this will lead to an increase in

the production of automotive parts in the United States. These changes will lead to an increase in the employment rate of people working in the automotive sector. At the same time, prices for passenger vehicles and cars will rise in the United States, which will lead to a decrease in their consumption. It is expected that the USMCA will have a positive impact on the U.S. agricultural sector. The combined impact of all USMCA provisions could increase U.S. annual total exports of agricultural and food products by $ 2.2 billion. (1.1%) [United States International Trade Commission, 2019]. It can be noted that a large number of USMCA provisions on trade in services will not have a significant impact on the production and trade of services in the participating countries. Analyzing the impact of the USMCA on the investment activities of member countries, it can be noted that investment relations between the United States and Canada are not subject to significant changes. However, U.S. investment to Mexico is expected to decline in all areas except five economic sectors, which are allowed to use the rules of the dispute resolution process between investors and the state (oil and gas, electricity, telecommunications, transportation services and some infrastructures). The development of the American coal industry is estimated to increase due to the increase in capital released in Mexico. On the issue of labor, it is expected that the USMCA will lead to higher wages and better working conditions. The Commission suggests an increase in the salaries of Mexicans by 17.2%. This situation will have a moderate impact on the U.S. economy. Thus, the USMCA will stimulate economic growth and create more jobs for American workers. The U.S. GDP may increase by $68.2 billion and will give about 176 thousand jobs. U.S. exports to Canada and Mexico will increase by 5.9% and 6.7%, respectively. U.S. imports from Canada and Mexico will increase by 4.8% and 3.8%, respectively [United States International Trade Commission, 2019].

Empirical results. In order to assess the importance of foreign trade for the United States in the framework of NAFTA the following linear regression model (OLS) is constructed.

Dependent variable: GDP (the U.S. GDP, billion U.S. dollars). The vector of independent variables: TrC – the United States-Canada trade balance, billion U.S. dollars; TrM – the United States-Mexico trade balance, billion U.S. dollars; Unemp – the U.S. unemployment rate, %; IntR – the U.S. interest rate, %.

The model of OLS regression is:

$$GDP = \beta_1 * TrC + \beta_2 * TrM + \beta_3 * Unemp + \beta_4 * IntR \qquad (1)$$

The annual data ranges from 1994 to 2019. The model is testing the hypotheses if growth in the U.S. GDP (GDP ↑) is caused by an increase in the trade balance with Canada (TrC ↑) and Mexico (TrM ↑).

The result of the regression model is:

$$GDP = 0{,}268 * TrC - 0{,}765 * TrM - 0{,}188 * Unemp - 0{,}307 * IntR \quad (2)$$

$$(5{,}585^{***}) \quad (-11{,}510^{***}) \quad (-3{,}557^{***}) \quad (-4{,}357^{***})$$

All standardized beta-coefficients are significant at 1% significance level; $R^2 = 0.953$ (the factors selected for the analysis explain the dependent variable by 95.3%); F = 106.9.

The regression analysis shows a significant causality between the amount of the U.S. GDP and the country's trade balances with Canada and Mexico. For the period 1994-2018, an increase in the trade balance of the U.S. with Canada causes an increase in GDP, as the coefficient of the independent variable TrC is positive. An increase in the trade balance between the United States and Mexico causes a decrease in GDP.

Thus, an important result of the regression analysis is that during the existence of NAFTA, the U.S. trade with Mexico had a negative impact on the U.S. GDP. Negative impact of the US-Mexico trade on the U.S. economy is confirmed by a constantly negative trade balance between the USA and Mexico. While if the presence of a negative trade balance between the USA and Canada is fully compensated by a positive balance of services, the the positive balance in trade in services between the USA and Mexico is significantly less than the negative trade balance. And this

argument became the main one for the President Trump in his pressure on Mexico to revise the terms of the NAFTA agreement.

However, this argument is not indisputable. In particular, Mexico and Canada reported substantially larger U.S. goods surpluses in the same relationship. This reflects the large role of re-exported goods from other countries. The U.S. statistics calculate goods coming into the U.S. territory the third countries and being exported to trading partners, without substantial transformation, as exports from the United States. Canada and Mexico calculate these re-exported goods as imports from the country of origin. In the same way, export data from Canada and Mexico may include re-exported products originating in other countries as part of their exports to the United States, whereas U.S. data indicate these products as imports from the country of origin [Office of the United States Trade Representative, 2020].

The negative coefficient on the Unemp variable indicates that there is an inverse relationship between the U.S. unemployment rate and the country's GDP, that is, by increasing the unemployment rate by one standard deviation, GDP will decrease by -0.188 standard deviations. This result of the model is fully confirmed by recent positive dynamics of GDP and labor market in the United States.

The regression analysis also showed that there is an inverse relationship between GDP and interest rate in the United States from 1994 to 2018. Increasing the interest rate by one standard deviation, GDP will decrease by -0.307 standard deviations. The presence of the inverse relationship between the interest rate and the U.S. GDP, confirmed by the model, has also become an argument for the President Trump in his pressure on the Federal Reserve with a demand to lower the interest rate.

Conclusions. Analysis of the economic efficiency of the integration bloc showed that NAFTA gave incentive to sustainable economic development of the countries. Their GDP and per capita GDP have been growing steadily between 1998 and 2018, the unemployment rate in the three countries remains low, and the inflation rate in the United States and Canada has been quite low over the same period, while in Mexico it has decreased significantly. NAFTA has spurred substantial productivity gains in the Canadian economy. Between 1998 and 2018, trade between the United States and Canada increased. U.S. trade with Mexico increased at a faster pace than with Canada. The U.S. trade balance with Canada and Mexico remains negative. Analysis of trade in services showed that in 1999-2018, U.S. exports to Canada increased 2.5 times, and to Mexico increased 2.4 times. Imports from the two countries almost doubled over the same period. Relations between Canada and Mexico regarding trade in services have also become closer; in 20 years, trade volumes have almost quadrupled. Since 1998, direct investment from the United States to Canada has quadrupled, and to Mexico more than quadrupled. Foreign direct investment in the United States increased, with Canada joining the top three countries investing in the U.S.

Mexico benefited particularly from NAFTA, as its provisions on foreign investment helped consolidate the government's reforms, which contributed to improving the country's investment climate.

The regression analysis showed a significant relationship between the U.S. GDP and foreign trade with Mexico and Canada, unemployment and interest rates. Its results revealed that the U.S. trade with Canada had a positive impact on the U.S. GDP; in the same time the U.S. trade with Mexico had a negative impact on the U.S. GDP, which became the main argument for President Trump in his pressure on Mexico to revise the terms of the NAFTA agreement. The regression results have also proved the assumption, that there were an inverse relationship between GDP and interest rate in the United States from 1994 to 2018.

The volume of bilateral trade in goods and services of the USMCA member countries with Ukraine increased over the period 2013-2018. The relations of countries regarding foreign direct investment are developing less stable. If the flow of investment from Canada increased as a result of the Free Trade Agreement between the countries, the volume of investment from the United States decreased, reflecting the lack of mechanisms to attract investment in Ukraine, as well as increased competition for investment from other developing countries.

Research results suggest that the USMCA, which replaced the NAFTA, will probably spur economic growth and create more jobs in the United States. This agreement tightens labor standards and protection of intellectual property rights, especially in Mexico, thus, probably reducing the attractiveness of Mexican economy to foreign investors, which is likely to reduce the U.S. investment in Mexico. Thus, Canada and Mexico are expected to receive less benefit from the USMCA for their economies than the United States.

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THE ROLE OF INNOVATION CLUSTERS IN BUILDING UP INVESTMENT AND INNOVATION STRATEGIES IN THE CROSS-BORDER COOPERATION CONTEXT

РОЛЬ ІННОВАЦІЙНИХ КЛАСТЕРІВ У РОЗРОБЦІ ІНВЕСТИЦІЙНИХ ТА ІННОВАЦІЙНИХ СТРАТЕГІЙ В КОНТЕКСТІ ТРАНСКОРДОННОГО СПІВРОБІТНИЦТВА

РОЛЬ ИННОВАЦИОННЫХ КЛАСТЕРОВ В РАЗРАБОТКЕ ИНВЕСТИЦИОННЫХ И ИННОВАЦИОННЫХ СТРАТЕГИЙ В КОНТЕКСТЕ ТРАНСГРАНИЧНОГО СОТРУДНИЧЕСТВА

Reznikova Nataliia V.
Doctor of Economics, Professor of the Chair of World Economy and International Economic Relations, Institute of International Relations Taras Shevchenko National University of Kyiv, Ukraine. E-mail: reznikovanataliia@gmail.com

Rubtsova Maryna Y.
Associated Professor, PhD in Economics, Department of International Business, Institute of International Relations Taras Shevchenko National University of Kyiv, Ukraine. E-mail: rubtsovam2017@gmail.com

Yatsenko Olha M.
Doctor of Economy, Professor of the Department of International Trade and Marketing,
Kyiv National Economic University named after Vadym Hetman. E-mail: yacenkoolgakneu@gmail.com

Резнікова Н.В.
Доктор економічних наук, професор, професор кафедри світового господарства і міжнародних економічних відносин, Інститут міжнародних відносин Київського національного університету імені Тараса Шевченка. E-mail: reznikovanataliia@gmail.com

Рубцова М.Ю.
Кандидат економічних наук, доцент, доцент кафедри міжнародного бізнесу, Інститут міжнародних відносин Київського національного університету імені Тараса Шевченка. E-mail: rubtsovam2017@gmail.com

Яценко О. М.
Доктор економічних наук, професор, професор кафедри міжнародної торгівлі і маркетингу,
Київський національний економічний університет імені В. Гетьмана. E-mail: yacenkoolgakneu@gmail.com

Резникова Н.В.
Доктор экономических наук, профессор, профессор кафедры мирового хозяйства и международных экономических отношений, Институт международных отношений Киевского национального университета имени Тараса Шевченко. E-mail: reznikovanataliia@gmail.com

Рубцова М.Ю.

Кандидат экономических наук, доцент, доцент кафедры международного бизнеса, Институт международных отношений Киевского национального университета имени Тараса Шевченко.
E-mail: rubtsovam2017@gmail.com

Яценко О.Н.

Доктор экономических наук, профессор, профессор кафедры международной торговли и маркетинга,Киевский национальный экономический университет имени Вадима Гетьмана.
E-mail: yacenkoolgakneu@gmail.com

Abstract. *Innovation clusters are analyzed in the article from the perspective of cross-border cooperation of regions. Types of clusters are highlighted, capable of adapting to cross -border cooperation, which enables to identify and outline the instruments of economic policy, capable to stimulate deepening of innovation processes in cross -border regions. Specialization and specifics of gaining competitiveness through promoting new comparative advantages are defined as the determining criteria for distinguishing the notions of "cross-border cluster in the conditions of cross -border cooperation" and "cross -border innovative cluster". The innovative cluster's role is analyzed in terms of its being a promoter of creating the innovation ecosystem as a highly coordinated system of dynamics interlinks between economic agents and institutes, resulting in the innovation activity, commercial success of projects and technological modernization of the structure of national economies, which effectiveness is conditional on the conformity of the institutional environment with the needs of R&D, education and business, and with the latter's capability to build the closed loop innovation cycle. The determinants of gravity of regional entities, the dominant principles of cross -border cooperation, the determinants of effectiveness and ineffectiveness of cross -border cooperation of border regions are defined; the multi-category approach to assessment of the cross -border potential is given. The potential of customs tariff and fiscal regulation in stimulating the innovation activity in the conditions of cross -border cooperation is highlighted. The controversial character of "border" is identified from the perspective of opportunities and threats for innovation activities, generated by it. Cross-border cooperation is identified as a trigger for implementation of technological projects and innovation-driven productions.*

Keywords: cross-border cooperation, border region, innovation clusters, business innovation centers, innovation process.

Анотація. *В статті розглянуто інноваційні кластери з позиції транскордонного співробітництва регіонів. Виокремлено типи кластерних утворень, що можуть бути адаптивні при здійсненні транскордонного співробітництва, що дозволило ідентифікувати та виокремити інструменти економічної політики, здатні стимулювати поглиблення інтеграційних процесів в прикордонних регіонах. Спеціалізація та особливості досягнення конкурентоспроможності за рахунок просування нових порівняльних переваг визначено як детермінуючі критерії розмежування понять «інноваційний кластер в умовах транскордонного співробітництва» та «транскордонний інноваційний кластер». Розглянуто роль інноваційних кластерів у сприянні створенню інноваційної екосистеми як високо координованої системи динамічних взаємозв'язків, що виникають між економічними агентами й інститутами, результуючись в інноваційній активності, комерційній успішності проектів й технологічній модернізації економічної структури держави, ефективність якої залежить від ступеня відповідності інституційного середовища потребам науки, освіти й бізнесу і здатності останнього забезпечувати замкнутість інноваційного циклу. Визначено детермінанти тяжіння регіональних суб'єктів, домінантні принципи транскордонної діяльності, детермінанти ефективності та неефективності*

транскордонного співробітництва прикордонних регіонів, а також наведено багатокатегоріальний підхід до оцінки потенціалу транскордонного регіону. Виокремлено потенціал митно-тарифного та бюджетно-податкового регулювання в стимулюванні інноваційної активності в умовах транскордонного співробітництва. Ідентифіковано контроверсійний характер «кордону» з позицій продукованих ним як можливостей, так і загроз для інноваційної діяльності. Транскордонне співробітництво ідентифіковано як тригер реалізації технологічних проектів та інноваційного виробництва.

Ключові слова: транскордонне співробітництво, прикордонний регіон, інноваційні кластери, бізнес-інноваційні центри, інноваційний процес.

Аннотация. *В статье рассмотрены инновационные кластеры с позиции трансграничного сотрудничества регионов. Выделены типы кластерных образований, которые могут быть адаптивными при осуществлении трансграничного сотрудничества, что позволило идентифицировать и определить инструменты экономической политики, способные стимулировать углубление интеграционных процессов в приграничных регионах. Специализация и особенности достижения конкурентоспособности за счет продвижения новых сравнительных преимуществ определены как детерминирующие критерии разграничения понятий «инновационный кластер в условиях трансграничного сотрудничества» и «трансграничный инновационный кластер». Рассмотрена роль инновационных кластеров в содействии созданию инновационной экосистемы как высоко координированной системы динамических взаимосвязей, возникающих между экономическими агентами и институтами, и имеющими своим свледствием повышение инновационной активности, коммерческой успешности проектов и технологической модернизации экономической структуры государства, эффективность которой зависит от степени соответствия институциональной среды потребностям науки, образования и бизнеса и способности последнего обеспечивать замкнутость инновационного цикла. Определены детерминанты притяжения региональных субъектов, доминантные принципы трансграничной деятельности, детерминанты эффективности и неэффективности трансграничного сотрудничества приграничных регионов, а также приведен мультикатегориальний подход к оценке потенциала трансграничного региона. Проанализирован потенциал таможенно-тарифного и бюджетно-налогового регулирования в стимулировании инновационной активности в условиях трансграничного сотрудничества. Идентифицирован противоречивый характер «границ» с позиций как открываемых ими возможностей, так и угроз для инновационной деятельности. Трансграничное сотрудничество идентифицировано как триггер реализации технологических проектов и инновационного производства.*

Ключевые слова: трансграничное сотрудничество, пограничный регион, инновационные кластеры, бизнес-инновационные центры, инновационный процесс.

Introduction. A viewpoint commonly expressed today is that the key criterion for assessment of the innovation activities at firm level is cluster formed by interlinked firms located on a rather small distance from each other within one region; they operate in one industry, being incorporated in one production chain, and combine their workforce and communication flows. In the latest decades innovation clusters have been created in various countries. Firms incorporated in these clusters operated in a variety of industries, from high tech ones, such as pharmaceutics, computer technologies, manufacturing of research equipment and mobile phones, to more conventional manufacturing industries, such as car making, apparel or footwear. These firms tend to

interact with each other by exchanging workforce, providing information access, setting links between manufacturers and suppliers, getting access to venture capital or by combinations of these factors.

But not all the innovation companies operate in this way. There are essential differences in the internal structure of the innovation clusters, with some of them putting stronger emphasis on the production and others involved in the shared marketing. With more detailed analysis it becomes obvious that homogenous clusters actually demonstrate the essential degree of heterogeneity from the perspective of organization [17].

One of the quite recent assumptions is about the existence of various types of clusters, with some of them incorporating firms not linked with other innovation enterprises in the same region in spite of the relatively close location. It follows that they are located on the region's territory, but not involved in the regional innovation activities. Moreover, some of these firms are very small. In such microfirms the importance of an individual innovator or inventor working in a firm is reemphasized.

Compared with other forms of cooperation, the special role in the cluster's success is conditional on creating a well-structured chain for dissemination of technologies, new knowledge and innovations. The gradual adoption of the network principle of the global economy organization allows, to an essential degree, for integrating the advantages of hierarchical and market mechanism. The networking of entities in the conditions of horizontal integration enables them to have the supplementary synergetic effect manifested in the considerably higher competitiveness of these entities and the whole system than the one occurring if business entities operated independently. The effective combination of internal competition and cooperation inside a cluster in the process of product making creates "cluster mechanism" for competitiveness enhancement. The awareness of the clusters' role in the innovation-driven economic development was gradually spreading across domestic economies to reach the global level.

The purpose of the article. The assessment of cluster potentials in attracting investment and generating innovations at mesolevel of cross-country cooperation, namely in the conditions of cross-border cooperation, acquires significant importance (Cross-Border Cooperation (CBC)).

Recent literature review. The United Nations Economic Commission for Europe highlights the following basic characteristics of clusters[14]:
- proximity of companies, enabling them to have financial benefits from production cooperation, capital exchange and mutual learning processes;
- specialization of clusters, enabling companies to concentrate on specific activities with keeping intact the interests of all the project participants;
- cooperative involvement of large numbers of entities in a cluster;
- combination of cooperation-based and competitiveness-based components in networking of cluster participants;
- the importance of reaching certain "critical qualitative and quantitative" mass to achieve the effect of internal dynamics and development;
- reliance on the long-term operation of a cluster;
- involvement of cluster participants in the processes of organizational, marketing and technological innovations. Although clusters were designed as competitiveness enhancers of regional economies, they did not feature a clear focus on innovation. As a form of production concentration, an innovation cluster is created mainly due to the availability of required nature resources.

However, as shown by P. Maskell [10], with the material culture becoming more and more complex, production competencies acquire higher importance. Innovation clusters of our days differ from the earliest ones in terms of their stronger focus on exports of technologies and products compared with industrial clusters. Newly built clusters tend to be designed to develop cutting-edge production technologies or create new markets and new products. The closed chain that emerges (from creation of a product to its mass-scale manufacturing and introduction on the global market)

gives evidence that "intra-cluster" advantages have been recognized internationally. If a newly built cluster is to be competitive, its creators must be focused on the global market, because viable clusters with operation limited by regional level are an exception rather than a rule. The problem of creating an effective cluster is associated with its orientation on the manufacturing of goods that are best on the globe. This, in turn, will require building a reliable chain of engineers, suppliers, personnel. An important problem of a cluster may be absence of a well-established contact with customers on foreign markets and lack of guarantees for the stable product sales. Even successful clusters achieve the positive effect by concentrating resources and promoting goods through the cluster brand. However, even multisectoral clusters can often be exposed to pressures of unstable conjunctures of the global market. Also, clusters may face the problem of the relative closure of some large companies that often are unable to cooperate with new suppliers or absorb new products and technologies. The tendency to consider a cluster as a local phenomenon, with overlooking its focus on the global level, seems to be erroneous [8]. It will never do well without cooperation of its participants and expanding of horizontal links if even the necessary infrastructure is available. The development of horizontal links within a cluster is often substituted by creating infrastructure for the territories were clusters operate, which is often done at the expense of cluster participants. Another problem faced by the clusters created by a government initiative is the bureaucratic apparatus designed to supervise their development. Practices show that the cluster infrastructure, if created on the basis of greenfield project but without assessment of the territorial potentials, may be doomed to failure and will end up with financial losses for investors. For public officials it may often be difficult to assess the knowledge concentrated in small innovative firms forming the cluster core, to get awareness of the market capacities, and to use effectively the available resources. Cluster managers who receive investment from the government but not always meet its expectations are often engaged in active lobbying of their own interests irrespective of the cluster perspectives. The bureaucratic element in a cluster is exposed to significant pressures from "trendy" movements of science (informatics or biotechnology). It is, however, rather difficult to become a leader on such markets, whereas the chances to fail are almost guaranteed. On the other hand, a refusal to be involved in government-based clusters can have negative effects for their performance.

According to G. Popescu [12], in spite of the growing popularity of clusters worldwide and their increasing support, clusters are too risky as an instrument: because the initiatives on cluster creation tend to be time-consuming and expensive, the risks are also essential. Besides this, when such cluster initiative is implemented, more than the half of its budget will be coming from the public budget, and in most cases the cluster can hardly move to self-sufficiency. Bearing this in mind, it is commonly believed that supporting already created clusters would be more effective than creating new ones. A cluster can become low effective due to the improper quality of the organizational structure chosen for it. When enterprises are organized into clusters, their integration process has to rely on assessment of the company's development potentials as part of the specifically created cluster rather than on successful industries or companies. This assessment should include analysis of the company's financial and economic performance, its organization, its information and intellectual capital. Other problems can be caused by lack of companies required for the full-fledged development of innovation activities in a cluster. Besides that, a cluster may incorporate the companies that are ill-suited for the effective innovation activities [7].

Most part of the clusters in the last decades specialized only on manufacturing of consumer goods, and they were often created to enhance the economic competitiveness in selected territories or regions. At the beginning of this century industrial clusters were launched more and more often, engaged in logistics, ecology, information design, manufacturing of bio-medical drugs. The innovation focus of clusters was becoming increasingly stronger: now it had to be the core parameter of the competitiveness of clusters. With the cluster's evolution the structure of its participants gradually transforms. As the cluster is a system that develops, it is difficult to predict its sustainability in the long run. The clusters that are successful nowadays (on account of science and technology progress or the current conjuncture of the global market) may lose their prospects and pace of development. Because a rapidly growing cluster often faces various kinds of limitations and

barriers, implementation of collaborative investment projects can be spread over a long period of time. As clusters existing in the global economy of our days differ by performance and development pace, this can provoke a number of new risks for the policy, because it can lose the effectiveness. Cross-Border Cooperation (CBC), a key priority of the European Neighbourhood Instrument, seeks to reinforce cooperation between EU Member States and Partner Countries along the external EU borders [6].

Main research results. From epistemological perspective, problems of $_{cross}$ -border economic cooperation have interdisciplinary background and two principle components: the set of theoretical, methodological and practical issues of the region's economy development (with focus on the hierarchical vertical of power "center – regions", historic, ethnic & demographic, religious, ecological, natural resource specifics of a region in the national labor division system), and issues of international economic cooperation and integration (which are related with issues of optimizing the specialization models, enhancing competitiveness of actors engaged in international economic relations at all the levels etc.).

Cross -border regionalization as the spatially integrated form for political cooperation is characterized by rise of new regions; its problems are solved by crossing national and administrative borders, with the awareness of interrelations, interdependence and mutual interests formed despite of these borders (Figure 1).
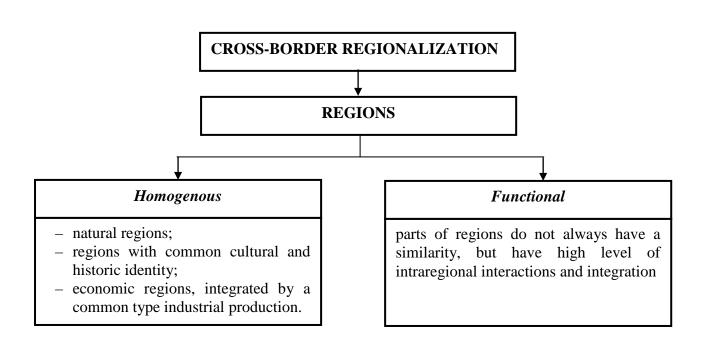
Figure 1. Cross-border regionalization pattern
Source: developed by the author

Determinants bringing regional entities together can be the following: political benefits from mutual cooperation; the need for integration to achieve the objectives; identity of values, laying the ground for the value-based integration; general history or its key points; geography, laying the basis for integrating the territorial entities into a region; economic compementarity of business or industrial entities operating within the boundaries of a territory [19].

Dominant principles of cross-border cooperation can be the following: basic institutional-legal principles (independence, sovereignty and territorial integrity; equality of participants; voluntariness; autonomy; legitimacy; administrative identity); basic economic-legal principles (solutions of common problems; coherence of interests; focus; systemic nature; comprehensiveness; hierarchy; spatial optimality) [18; 19].

Determinants for the effectiveness of cross-border cooperation between border regions can be the following: geopolitical factors (neighborhood with peaceful states or hostile states, with the threat of border removal resulting from warfare); geo-economic factors (capability to overcome technological asymmetries by integrating in global value added chains; capability to pursue expansionist trade and investment actions; capability to exploit the domestic market capacity and diversify the economic structure); institutional factor (the higher is the inclusiveness of institutions and the weaker is the extractive character of their operation, the easier the structural defects and infrastructural inadequacies of a domestic economy and can be mitigated, and the higher are the ability of economic entities to adapt to the challenges of cross-border cooperation); structural factors (in view of the resource potential, mineral and human one: the existing specialization of a region can be either a cooperation driver or a cooperation constraint).

Determinants of ineffectiveness of cross-border cooperation between border regions can be the following: poor social-economic development of cross-border regions; differences in administrative and territorial systems of bordering countries; national legal framework for cross-border cooperation, if incomplete or not harmonized with the existing standards; inadequate authorities of territorial communities in cross-border relations; immature system for government support to cross-border cooperation; limited financial resources of local budgets; inadequate participation of border regions in international development programs; poor awareness of essential business results of entities engaged in cross-border cooperation.

In view of the above, a cross-border region can act as: the locality concentrating economic resources and generating financial flows (resource-based competitive advantages); the institutional core for national economies (institutional competitive advantages); the epicenter generating knowledge and innovations (innovation-based competitive advantages) [15; 19; 20].

Cross-border regions at national, supranational or global level can demonstrate the "actor" capacities conditional on their legal, institutional and socio-economic structure:

1) the capacity to articulate own interests and future development strategies;

2) the capacity to have impact on economic processes;

3) the capacity to interact with other non-government entities from the countries engaged in cross-border interactions;

4) the capacity to hold negotiations (para-diplomacy);

5) the capacity for self-presentation.

In the country-specific realities, investment and innovation strategies cannot be built by modeling "on blank space" on a given territory. Otherwise, the argument on the possibility of creating absolutely new (even very "advanced") approaches by ignoring global practices that proved efficient by decades of the productive work of leading companies would be wrong. A vital problem, therefore, is finding out the common and the specific in the investment and innovation strategies of countries, in order to enhance the effectiveness of cross-regional projects.

Cross-border cooperation should be considered in the context of building the advanced institutional environment and creating the "high tech" model as the long-term development

framework of the Ukrainian economy. Proven mechanisms for practical utilization of its capacities can be found in global practices, which may involve a shared support, by two or more countries, of high tech investment and innovation projects, building of transnational cross-industry high tech clusters, networks of technoparks, business incubators, support to trial and design bureaus, advanced companies focused on innovation or cross-industry science and technology centers.

Cluster form of organization enables for creating a specific form of innovation, the aggregate innovation product. A. Markuzen distinguishes between five types of innovation clusters [9]: (i) new industrial systems, built now in form of industrial districts; (ii) systems of "center – network" type, built around several central corporations which operation is focused on the innovation-driven development; (iii) the industrial platform for daughter companies, built in all the countries irrespective of the innovation performance; (iv) the government oriented system, built as a supplier of new technologies, and (v) a mixed type, built on the basis of technoparks. However, we consider it appropriate to propose the author classification of innovation clusters.

Our analysis of innovation clusters from the cross-border perspective makes us believe that cluster formations need to be distinguished and classified into the following types: innovation clusters of border regions in the conditions of cross-border cooperation; cross-border innovation clusters; transformational flexible clusters of natural regions; because this classification enables to find out the specifics of relations between the participants of each cluster type and differentiate the tools designed to deepen integration processes in border regions. The typology of innovation clusters in the cross-border cooperation context is shown in Figure 2.

Figure. 2. Typology of innovation clusters from the cross-border perspective

Source: developed by the authors

Building and operation of innovation clusters in border regions is essentially similar to regional innovation clusters as a whole. We believe that the phase "in the conditions" implies that innovation clusters in border regions can use some additional advantages for cross-order cooperation, such as a wider opportunity for Euroregions to promote innovation clustering of border regions through financing, participation in cross-border cooperation projects etc.

We suggest that in the conditions of cross-border cooperation an innovation cluster in a border region differs from a cross-border innovation cluster by several attributes. When it is assumed that a cross-border innovation cluster is a cluster integrating participants from a cross-border region (located on various sides of the border between two or more countries), the following differences need to be emphasized:

First, these types of clusters differ by specialization. When considering the background for building up an innovation cluster in a border region in the conditions of cross-border cooperation, we believe that it will be appropriate to define the specialization of Ukrainian border regions, and that the specialization of adjoining regions must not be identical to the specialization of the border regions of Ukraine [16; 17]. Once cross-border innovation clusters are considered, a cross-border area will have to be seen as the single area, with the single specialization of regions and equivalent selection of potential participants in such cluster.

Apart from specialization, there are other differences distinguishing the concept of "innovation cluster" in the conditions of cross-border cooperation from a cross-border innovation cluster. In particular, the competitiveness aspect needs to the considered. When a cluster is being built, including

an innovation one, we believe that it is supposed to enhance competitiveness in border regions. When cross-border innovation clusters are expected to be built in a country, this competitiveness will supposedly enhance the performance of two border regions: one is on the Ukraine's side and the other one is on the side of a country bordering Ukraine. However, when an innovation cluster in the conditions of cross-border cooperation is considered, this competitiveness will promote the development of economic potential in a Ukrainian border region. It should be noted that differences between the analyzed types of clusters will be caused by different legal frameworks regulating their operation, including taxation and custom one. Basically, innovation clusters in border regions in the conditions of cross-border cooperation are considered by us as the primary phase of cluster relations in a border area, because in future they may develop into the final phase, which is a cross-border innovation cluster.

A peculiarity of cross-border clusters is that the intensity of network interactions in a cluster is limited by the border erecting additional barriers for free movement of goods, workforce or capital. Other barriers for cooperation may be different mentalities, languages, cultures or historical backgrounds.

Strategies for promoting the innovation process at regional level in the context of cross-border cooperation objectives. The regional innovation policy can, therefore, constitute the first and important step in building up the national innovation system in Ukraine, with due consideration for not only domestic specifics of regional mosaics, but international experiences as well. The important factors to be born in mind in elaborating the national strategy are as follows:

- potentials of the border regions where the innovation policy will be conditional on export orientation on neighboring external markets (orientation to export markets can be a strong innovation driver given the depressed domestic demand);
- potentials of the regions that are remote from the center and often have specific specialization;
- potentials of the depressive regions with urgent need to fight the crisis either through new technological decisions on cost reduction (given the preserved industry structure) or through creating radically new goods and establishing new companies manufacturing them (in parallel with liquidating the industries either provoking the crisis condition or failing to mitigate its negative effects; it should be added that in Japan the crisis regions are seen as drivers of the innovation process);
- the existence of cross-regional differences in economic specialization (there are regions with the well-established standardized production, and there are regions where the economy is based on large capital investment, which essential parameters are vast material assets, massive production output and turnover, huge social burden and high impact on budgets); the existence of structural differences between regions, in particular ones associated with opportunities for small and medium business (given the weaker pressure from "national champions") as the fundament for the whole regional economy.

Given the economic openness and global liberalization, an effective system for market relations cannot be built unless the hierarchy of the economic mechanism is cardinally changed: from companies to the overall economic system, from elaborating the development strategy at all the levels to the effective use of the array of advanced management methods.

Considering the realities of the investment and innovation process, it can be concluded that the modern innovation system cannot be limited by internal or domestic R&D. Hence, the potential opening up opportunities for sub-regional or cross-border cooperation can offer the singular or, in many cases, the sole way for implementing technological projects or developing industries with high information capacities.

However, change in the priorities needs to be accounted for, even in the innovation activities, because the innovations' quality and capacity to address strategic objectives of development rather than the innovation "output" parameters have the largest importance. Also, regulatory approaches

change, taking on the more explicit dynamic forms in response to the growing innovation and information component of the economic process in the countries pursuing cross-border cooperation policies. This distinguishes the new principles of regional and macroeconomic impact on the innovation process from the ones that were most common in the world quite recently, in the late industrial era, and were used as advanced means of impact on the real sector, to bring national economies up to highly competitive international orbit (the approaches regarded as advanced beginning with 70s of the past century, which can be referred to as the linear model of impact, are shown in Figure 3).
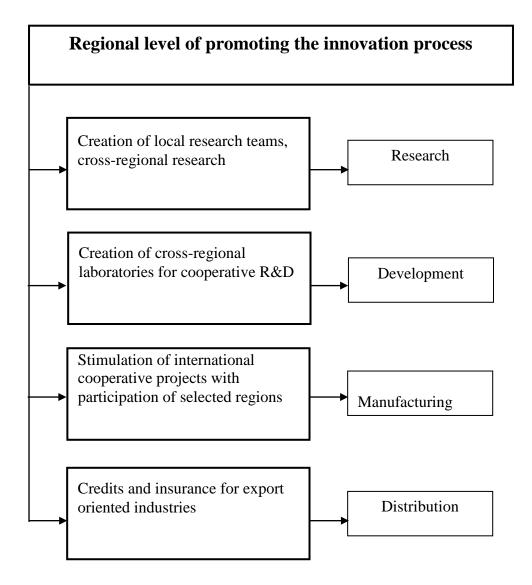
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   ├──▶│ Creation of local research   │─────▶│    Research       │
   │   │ teams, cross-regional research│      │                  │
   │   └──────────────────────────────┘      └──────────────────┘
   │
   │   ┌──────────────────────────────┐      ┌──────────────────┐
   ├──▶│ Creation of cross-regional   │─────▶│   Development     │
   │   │ laboratories for cooperative R&D│    │                  │
   │   └──────────────────────────────┘      └──────────────────┘
   │
   │   ┌──────────────────────────────┐      ┌──────────────────┐
   ├──▶│ Stimulation of international  │─────▶│  Manufacturing    │
   │   │ cooperative projects with    │      │                  │
   │   │ participation of selected regions│   └──────────────────┘
   │   └──────────────────────────────┘
   │
   │   ┌──────────────────────────────┐      ┌──────────────────┐
   └──▶│ Credits and insurance for    │─────▶│  Distribution     │
       │ export oriented industries   │      │                  │
       └──────────────────────────────┘      └──────────────────┘
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Figure. 3. The system for promoting the innovation process at regional level in the late industrial era (linear model)

Source: constructed by the authors

The regional dimension in promoting the innovation process constitutes only one organic "phase" in the regulatory mechanism of innovation; adapting the system logic of the total impact on the innovation process effectiveness, it permeates the economic practice at various phases of reproduction and innovation cycles. This logic of implementing the institutional authorities at meso level is shown in Figure 4.
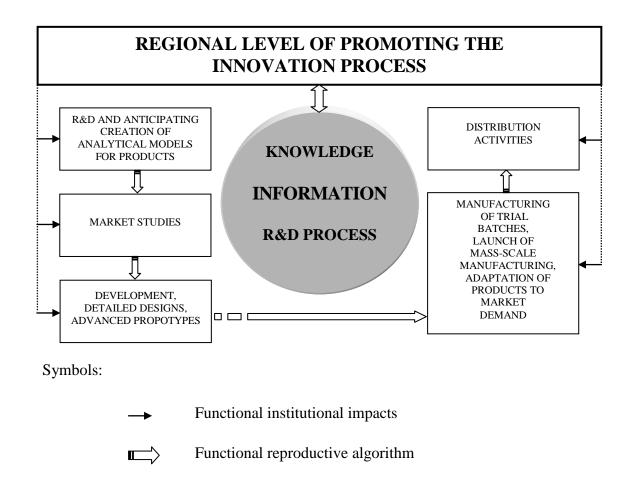
Figure 4. System for promoting innovation process at regional level in the information era (the model of autonomous matrix)
Source: constructed by the authors

At the same time, it can be argued that the most effective means of impact on the conditions for implementation of cross-border cooperation can be used at national level of the socio-economic life. A separate problem that is largely concerned with the competencies of national governments and regional administrations is a wide range of efforts to create an attractive image of the national economic system and national companies, in order to widen opportunities for international transactions in implementing cooperative projects on merging, removal of artificial barriers for investment projects, reassuring foreign investors in the political stability, public transparence of companies, continuity of trade liberalization and reliability of the system for protection of intellectual property rights.

Also, the institutes of national level are supposed to act as initiators of cooperation with regional administrative offices by rendering them the required organizational and financial assistance in seeking for and promoting of innovation projects and projects initiators, analyzing the needs of business entities, first and foremost small and medium enterprises (SME) with innovation capacities; in actions aimed to strike the balance between the supply of and the demand for SME services. There have been intensive efforts across the European continent on the expert review of SME capacities at local, regional, national and transnational level, sponsored from European funds [20]. The priority is given to innovation strategies (RTP/RIS/RITTS initiatives), training of entrepreneurs (LEONARDO, ADAPT etc.), cross-region cooperation of enterprises (RECITE, ECOS/OUVERTURE) and related projects or initiatives combining several projects, new sources of

jobs, projects on information society (RISI), rural area development (LEADER), agreements on territorial employment.

International organizations (associations, unions etc.) engaged in shared financing of innovations, providing stimuli to cross-country cooperation of companies in the information field, coordinating innovation management, thus pushing up local and regional development, constitute a "follow up" of national institutions for promotion. Their operation reflect intentions to optimize national economic systems in conformity with the sovereign interests of countries handing over the respective responsibilities to them, on the one hand, and mobilization of tools that cannot be freely accessed at country level.

An illustrative example of such international organizations is international non-profit organization "The European Business and Innovation Center Network" (EBN), created in Belgium and established in Brussels in 1984 by the General Directorate of the European Commission "Regional Policy" (DG REGIO); EBN success is based on the triad: SME, innovation and local development. According to official documents, the EBN's objective is to develop and coordinate the network of associated members, business innovation centers (BIC), and to expand its operation in the EU regions and beyond (now EBN has nearly 150 full members and more than 50 associated members). Because BIC are designed as tools for local and regional economic development, their objective is to render assistance to the territories undergoing industrial restructuring and to lesser economically developed EU areas [2; 3; 4; 5]. The BIC purpose is to provide services for companies, with special emphasis on SME as a whole and the ones with "innovative image of operation" and good capacities for growth.

An important area in intensification of regions' development using the potential of international cooperation is targeted effort of institutes (national and international ones) in setting up cross-regional cooperation. Launched in the framework of geopolitical organization ASEAN, such projects were subsequently regarded as mechanisms designed to stimulate economic and cultural cooperation between countries of South-East Asia. Foreign capital flowed to South-East Asia countries embodying economic and political stability in the region, such as Indonesia or Vietnam. It was due to regional and sub-regional projects that the two countries left far behind many developing countries by rates of economic growth.

A specific feature of "functional load" at meso level is emphasis on the development of transport and communication systems and transit status (whenever possible). It should be noted that international sub-regional level constitutes an implicit functional component of global transport communications, which adds to technological capacities of transport routs and communications and provides important organizational and institutional means of positive impact.

Conclusions.

Building up investment and innovation strategies in the context of objectives related with cross-border cooperation requires, inter alia, utilization of the innovation cluster capacities. An innovation cluster in a border region in the conditions of cross-border cooperation is defined by us as the system for close relations, voluntary integration of research and education institutions, business sector, general public, power offices, supplementary institutes and foreign partners in a given sector (several sectors) of the regional economy, which covers the whole innovation chain from the birth of a scientific idea to its practical implementation (manufacturing of finished innovative product etc.), to enhance the competitiveness of a border region and increase living standards of the population due to the synergetic effect from the utilized opportunities of cross-border cooperation.

Considering the realities of the investment and innovation process, it can be concluded that the modern innovation system cannot be limited by internal or domestic R&D. Hence, the potential opening up opportunities for sub-regional or cross-border cooperation can offer the singular or, in many cases, the sole way for implementing technological projects or developing industries with high information capacities.

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THE INFLUENCE OF DEVELOPED COUNTRIES CENTRAL BANKS' UNCONVENTIONAL MONETARY POLICY ON THE ECONOMY OF UKRAINE

ВПЛИВ НЕТРАДИЦІЙНОЇ МОНЕТАРНОЇ ПОЛІТИКИ ЦЕНТРАЛЬНИХ БАНКІВ РОЗВИНЕНИХ КРАЇН НА ЕКОНОМІКУ УКРАЇНИ.

ВЛИЯНИЕ НЕТРАДИЦИОННОЙ МОНЕТАРНОЙ ПОЛИТИКИ ЦЕНТРАЛЬНЫХ БАНКОВ РАЗВИТЫХ СТРАН НА ЭКОНОМИКУ УКРАИНЫ.

Derkach T.V
Doctor of Economics, Associate Professor, Head of the Department of Management, International Humanitarian University. Odessa. E-mail: rubinodessa@gmail.com.
Alekseievska H.
PhD student of the Department of World Economy and International Economic Relations, Odesa I. I. Mechnikov National Universi. E-mail: g.alex@onu.edu.ua.

Деркач Т. В.
Доктор економічних наук, доцент, завідувач кафедри менеджменту Міжнародного гуманітарного університету. Одеса. E-mail: rubinodessa@gmail.com.
Алексеєвська Г.С.
Аспірантка кафедри світового господарства і міжнародних економічних відносин Одеського національного університету імені І. І. Мечникова E-mail: g.alex@onu.edu.ua.

Деркач Т. В.
Доктор экономических наук, доцент, заведующий кафедрой менеджмента Международного гуманитарного университета. Одесса. E-mail: rubinodessa@gmail.com.
Алексеевская Г.С.
Аспирантка кафедры мирового хозяйства и международных экономических отношений Одесского национального университета имени И. И. Мечникова E-mail: g.alex@onu.edu.ua.

Abstract. *In the period of globalization, the economic shocks that occurred in one country quickly spread to other countries. So the actions of the developed countries' Central banks have a significant impact on other countries, in particular emerging markets countries. The paper considers an example of the impact of the European Central Bank, the Federal Reserve and the Bank of Japan's unconventional monetary policy on the Ukrainian economy. The purpose of the study is to assess the impact of the ECB, the Fed and the Bank of Japan's unconventional monetary policy on the financial indicators of Ukraine. The analysis is based on the event study methodology and constructing econometric models using the one least-squares method. The event study method allows to evaluate whether the time series of the studied indicators moves around a certain date. As a result, it was determined that the ECB's unconventional measures had the greatest impact on Ukrainian financial indicators, and the Bank of Japan had the least impact. Non-traditional measures of banks under study affected exchange rates and the yield of two-year government bonds. ECB and Fed's Unconventional monetary policy had an impact on the MSCI stock index, and the ECB policy also affected the interbank three-month rate. On the whole, the first rounds of*

unconventional monetary policy of the central banks under study have the main influence on the financial indicators of Ukraine.

Key words: *unconventional monetary policy, the European Central Bank, the Federal Reserve, the Central Bank of Japan, financial indicators.*

Анотація. *У період глобалізації економічні шоки які відбуваються в одній країні досить швидко поширюються на інші краïн. Так і дії центральних банків розвинених краïн світу мають значний вплив на інші краïни, зокрема краïни з ринком, що розвивається. В роботі розглянуто приклад впливу нетрадиційної монетарної політики Європейського центрального банку, Федеральної резервної системи і банку Японії на економіку Украïни. Метою дослідження є оцінка впливу нетрадиційної монетарної політики ЄЦБ, ФРС і банку Японії на фінансові показники Украïни. Аналіз базується на методі дослідження подій і побудові економетричних моделей методом 1 МНК. Метод дослідження подій дозволяє оцінити, чи рухаються часові ряди досліджуваних показників навколо певної дати. В результаті було визначено, що найбільший вплив на украïнські фінансові показники мали нетрадиційні заходи ЄЦБ, найменший вплив чинили дії банку Японії. Нетрадиційні заходи обраних банків впливають на зміну обмінних курсів і прибутковість дворічних державних облігацій. Нетрадиційна монетарна політика ЄЦБ і ФРС також впливала на фондовий індекс MSCI, і політика ЄЦБ ще впливає на міжбанківську тримісячну ставку. В цілому основний вплив на фінансові показники Украïни мали перші раунди нетрадиційної монетарної політики досліджуваних центральних банків.*

Ключові слова: *нетрадиційна монетарна політика, європейський центральний банк, федеральна резервна система, центральний банк Японії, фінансові показники.*

Аннотация. *В период глобализации экономические шоки происходящие в одной стране достаточно быстро распространяются на другие стран. Так и действия Центральных банков развитых стран мира оказывают значительное влияние на другие страны, в частности страны с развивающимся рынком. В работе рассмотрен пример влияние нетрадиционной монетарной политики Европейского центрального банка, Федеральной резервной системы и банка Японии на экономику Украины. Целью исследования является оценка влияния нетрадиционной монетарной политики ЕЦБ, ФРС и банка Японии на финансовые показатели Украины. Анализ базируется на методе исследования событий и построении эконометрических моделей методом 1 МНК. Метод исследования событий позволяет оценить, движутся ли временные ряды исследуемых показателей вокруг определенной даты. В результате было определено, что наибольшее влияние на украинские финансовые показатели имели нетрадиционные меры ЕЦБ, наименьшее влияние оказывали действия банка Японии. Нетрадиционные меры выбранных банков влияют на изменение обменных курсов и доходность двухлетних государственных облигаций. Нетрадиционная монетарная политика ЕЦБ и ФРС также оказывала влияние на фондовый индекс MSCI, и политика ЕЦБ еще влияет на межбанковскую трехмесячную ставку. В целом основное влияние на финансовые показатели Украины имели первые раунды нетрадиционной монетарной политики исследуемых центральных банков.*

Ключевые слова: *нетрадиционная монетарная политика, европейский центральный банк, федеральная резервная система, центральный банк Японии, финансовые показатели.*

Introduction. In recent decades, the integration of countries into the global economy has accelerated. International shocks affect all countries without exception. But the strength of the impact depends on how vulnerable each individual country or region is to environmental changes. [*Kireyev, A., & Leonidov, A.*: 2015]

The implementation of unconventional monetary policy by the developed countries' central banks was a necessary measure in economically unfavorable conditions. Such actions by central banks of developed countries have various positive domestic effects. At the same time, the other

side of these unconventional measures is the cross-border effects and reaction of the developing countries' economies. Since, during the period of non-traditional measures, developed countries made huge injections of liquidity into financial markets, which significantly increased their balance sheets.

Large-scale operations by the ECB, the Fed and the Bank of Japan (BOJ) were selected to analyze the impact of unconventional monetary policy on emerging markets. These banks today still use these methods. Ukraine was chosen as an example of a country with an emerging market.

It is assumed that the unconventional monetary policy of the ECB, the Fed and the Bank of Japan have had a significant impact on emerging markets, including Ukraine. Ukraine is a small open economy, which means that exports and imports account for most of the GDP.

The purpose of research is to assess the impact of the unconventional monetary policy of the ECB, the Fed and the Bank of Japan on the financial indicators of Ukraine.

Recent literature review. In the world scientific and economic community at the moment, there is no unambiguous position about which exactly cross-border consequences has unconventional monetary policy.   In particular, the issue of the nature of the impact of quantitative easing and other non-standard measures that were used central banks of developed countries on emerging markets is considerable debate.   Sayuri Shirai [*Shirai S.*:2019], Ben Charoenwong, Randall Morck, and Yupana Wiwat [*Charoenwong B., Morck R., and Wiwat Y.*:2019] studied the influence of the unconventional monetary policy of the Central Bank of Japan.   Koichiro Kamada, Tetsuo Kurosaki, Ko Miura, and Tetsuya Yamada examine how public information causes shocks and how much it affects the financial market [*Kamada K., Kurosaki T., Miura K., and Yamada T.*:2018]. Jai Won Ryoua, Saang Joon Baakb, Won Joong Kima analyze QE and QQE shocks based on their announcements on the economies of Japan and Korea using the vector autoregressive model [*Ryoua J. W., Baakb S.J., Kima W. J.*:2019].

Atsushi Inoue and Barbara Rossi study how unconventional monetary policy affects the exchange rate [*Inoue A., Rossi B.*:2019]. Tatjana Dahlhaus Garima Vasishtha examine the impact of US monetary policy news on portfolio flows to emerging markets The results show that the impact of unconventional shock on portfolio flows is generally economically small, but varies significantly across countries [*Dahlhaus T., Vasishtha G.*:2019].

Ana Paula Serra and Eurico Ferreira study the impact of the unconventional monetary policy of the Fed, the ECB and the Bank of England on the financial markets of developing countries. Using the event study methodology, the author comes to such conclusions that the announcement of unconventional monetary policy measures is significant for European stock markets [*Serra A. P. Ferreira E.*:2019].

David Bowman Juan M. Londono Horacio Sapriza examines the actions of US unconventional monetary policy and its impact on government bond yields, exchange rates, and stock prices in emerging economies [Bowman D, Londono J.M., Sapriza H.:2014]. Daniel J. Lewis proposes a new method for identifying announcement-specific decompositions of asset price changes into monetary policy shocks using intraday time-varying volatility [*Daniel J. Lewis:* 2019].

Yakubovkyi S.O, Alekseievska H.S. [*Якубовький С.О. Алексеєвська Г.С.: 2017*] and Kyfak A., Rodionova T [*Alekseievska H., Kyfak A., Rodionova T., Yakubovskiy S*: 2019] studied examples of applying unconventional monetary policy in the EU and the USA.

Falagiarda M., McQuade P., Tirpak M studied the impact of ECB unconventional policies on the economies of countries such as the Czech Republic, Hungary, Poland and Romania, and also explored various transmission channels of the secondary effects this policy. The authors conclude that the ECB's policy has a significant impact on emerging markets [*Falagiarda M., McQuade P., Tirpak M.*:2015].

Stann Carsten and Theocharis N. Grigoriadis in their study argue that the ECB's unconventional monetary policy had a significant impact on the economies of Eastern Europe and Russia [*Stann Carsten M., Grigoriadis Theocharis N.*:2019].

Data and methodology. In order to assess the impact of unconventional monetary policy measures by the ECB, the Fed and the Bank of Japan on the Ukrainian economy was using press

releases from these banks. Based on these data and use event study methodology was created database of unconventional monetary policy announcements for selected central banks for the period from January 1, 2008 to December 31, 2019. They are independent variables that take the values 1 on the day of the announcement of unconventional monetary policy and 0 on other days. The dependent variables are the exchange rate national currency to the euro, yen and US dollars., the stock market index, measured by the MSCI index of the Ukraine, a three-month interbank lending rate, a yield of 2 years sovereign bonds from 26 August 2011., due to the availability of data, and spreads on credit default swaps for 3, 5 and 10 years for the US dollar, euro and Japanese yen. The control variables included: the marginal lending rate of the ECB, the federal funds rate of the Fed and the Bank of Japan political rate; the European benchmark volatility index VSTOXX, for the United States - S&P 500 Low Volatility index, for Japan the NIKKEI Stock average volatility index and the Central Bank rate of Ukraine. All financial data was obtained from Thomson Reuters DataStream.

The effects of statements by the ECB, the Fed, and the Bank of Japan about non-standard monetary policy on financial variables are measured by ordinary least squares (OLS) regression. Metrology is based on an article by Stann Carsten M., Grigoriadis Theocharis N. (2019) [*Stann Carsten M., Grigoriadis Theocharis N.*:2019], their article focuses on the impact of ECB's unconventional monetary policy on emerging markets and the sampling period included 2009-2017. In this article was added next two years of observation 2018 and 2019. Our study focuses only on Ukraine and examine the influence of two more banks that used unconventional monetary policy.

General view of the regression:

$$Y_t = c + \beta_1 UMP_{j,t} + Y_{t-1} + \beta_2 IR\_NBU_t + \beta_3 IR\_CB_{j,t} + \beta_4 Vol\,Index_{j,t} + \varepsilon_t \quad (1)$$

Where *Yt* is a dependent variable (exchange rate, stock market index, three-month interbank lending rate, yield on 2-year sovereign bonds, spreads on credit default swaps for 3, 5 and 10 years). *UMP* - announcements of unconventional monetary policy, *Y(t-1)* - a lagged dependent variable, which was included due to the fact that investors are considering changes in the past for decision-making. *IR_NBU* is the rate of the national bank of Ukraine, *IR_CB* is the rate of the central bank whose monetary policy was studied, *Vol Index* is the volatility index. *j* - the central bank that applied unconventional measures. Also $\mathcal{E}$ is error term; *c* is a constant term; β - coefficients. This model was built separately for each bank and for each instrument of unconventional monetary policy.

Main research results. One of the factors determining the impact on the Ukrainian economy of unconventional monetary policy is the presence of economic relationships between countries. One such indicator is the level of trade relationships. Main part Ukrainy's exports fall to the countries of the European Union, the smallest to Japan.
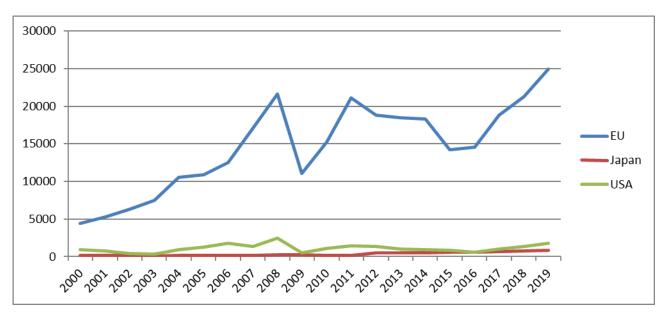
Fig.1 Ukraine's exports to the EU, USA and Japan 2000-2019 (mil.USD)
Source: [IMF]

In export and import trends, an increase was observed until 2009. That says the growth of horny relationships between countries. In 2009, when the effects of the crisis affected the whole world, both indicators were reduced. There was also a decrease in 2015 due to lower prices for the main Ukrainian export items (metals, grain) and a significant devaluation of the national currency.
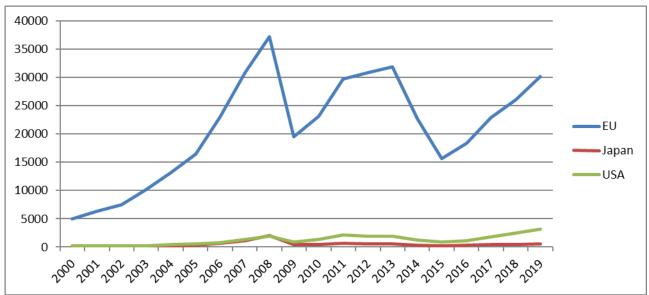

Fig.2 Imports of Ukraine from the EU, USA and Japan 2000 -2019 (mil.USD)
Source: [IMF]

The highest level of interconnection is observed between Ukraine and the EU countries, in trade in these countries in 2019 accounted for more than 35%, in the USA up to 10% and Japan a little more than 3%. Accordingly, it is assumed that the ECB's unconventional actions will have a stronger impact on the Ukrainian economy.

The results of assessing the impact of the ECB's unconventional monetary policy on Ukraine's financial indicators are presented in Appendix 1.

ECB unconventional measures such as FRFA, LTRO, FOR, CBPP2, CBPP3, ABSPP, PSPP, OMT, CSPP did not affect the financial variables of Ukraine.

The exchange rate was influenced by the Long-Term Refinancing Operations Program (TLTRO). As a result of this program, the exchange rate strengthened during the days the program was announced.
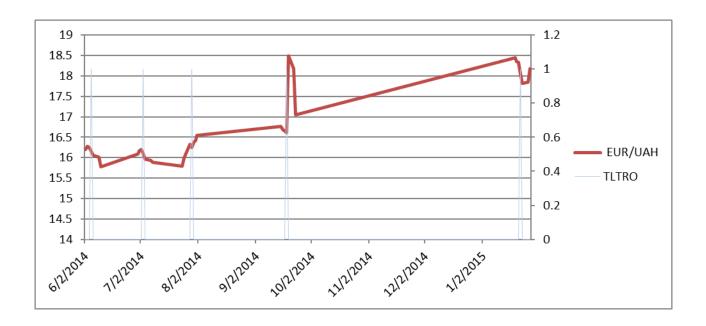

Fig3. Days of TLTRO policy announcement (05.06.2014, 03.07.201429.07.2014, 18.09.2014, 22.01.2015, 07.03.2019 and exchange rate.
Source: [Reuters' Datastream]

Figure 3 shows the tendency to revalue the exchange rate on the days when the program was announced. On the days before the announcement of the program, the devaluation of the exchange rate was visible, on the day of announcement the revaluation was observed, and in the next few days the tendency to revaluation continued, except for the announcement on September 18, 2014, the rate rose by 2 hryvnias from 16 to 18 UAH on the next day. According to the result of the model, the level of influence of this program is low because the coefficient is 0.23.

Asset purchase programs CBPP1 and SMP influenced on financial market indicator MSCI. In response to SMP announcements, stock indices in Ukraine grew by 12 percent, and during the implementation of CBPP1 policy fell by 10 percent (see appendix 1).

The first bond purchase program (CBPP1) influenced the interbank interest rate, as a result of which the rate decreased by 1%. This can be explained by the fact that one of the channels of unconventional monetary policy is the liquidity channel. Large banks in Ukraine are mainly owned by banks in the eurozone. These banks can receive liquidity from their parent bank and use it to replace liquidity available in the local money market. This may lead to lower demand for funds in the local money market and lower rates in the money market. As was observed in the Ukrainian market during the announcement of CBPP1 policy

The following were investigated Fed unconventional monetary measures. The results are presented in table 1

Table 1

The Impact of Fed Unconventional Monetary Policy

Dependent variable	Unconventional methods of monetary policy				
	LSAP1	LSAP2	LSAP3	FG	MEP
USD/UAH	-0,100 (0,090)*	0,009 (0,933)	-0,004 (0,949)	-0,013 (-0,183)	-0,006 (0,960)
MSCI	-0,741 (0,724)	1,084 (0,650)	0,657 (0,660)	0,481 (0,767)	7,824 (0,0056)***
INTERBANK 3M	0,017 (0,925)	0,050 (0,816)	-0,051 (0,708)	0,175 (0,234)	-0,011 (0,962)
2Y - ZERO YIELD	-	-	-0,503 (0,0247)*	-0,070 (0,899)	-0,462 (0,661)
CDS 3Y (USD)	34,387 (0,727)	-1,92 (0,986)	-28,4004 (0,683)	19,111 (0,801)	-26,008 (0,843)
CDS 5Y (USD)	34,232 (0,716)	-0,098 (0,999)	-20,600 (0,756)	19,523 (0,788)	-21,929 (0,862)
CDS 10Y (USD)	33,975 (0,708)	-2,013 (0,984)	-24,173 (0,707)	19,295 (0,783)	-18,780 (0,877)

Note: The numbers in the parentheses beside the Wald statistics are the P-values: ***, **, * represent the 1%, 5%, and 10% significance levels, respectively.

Source: author's calculations [Reuters' Datastream; Fed policy announcements]

The unconventional monetary policy of the United States affected the exchange rate, in particular, this is the first round of asset purchases conducted in 2008-2009. The exchange rate has responded to this policy by revaluing the national currency; this is also seen in Fig4.
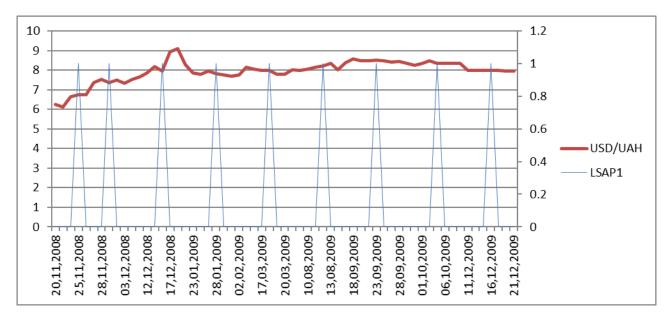

Fig4. LSAP1 Policy Announcement Days and Exchange Rate USD / UAH
Source: [Reuters' Datastream]

The level of influence of this independent variable is not high, and is 0.1 UAH.
And also the MEP policy, the twist operation that started in August 2011, was influential on the stock market index, measured by the MSCI index, which according to the results shows an increase

of 7%. Operation Twist is a tool aimed at changing the shape of the yield curve by simultaneously buying and selling long-term and short-term government bonds.

The results of the impact of non-traditional monetary policy programs of the Bank of Japan on the financial variables of Ukraine are presented in table 2

Table 2

The Impact of BOJ Unconventional Monetary Policy

Dependent variable	Unconventional methods of monetary policy			
	CME	QQ1	QQ2	NIR
JPY/UAH	-0.133 (0.0432)**	-0.051 (0.596)	-0.013 (0.702)	-0.029 (-0.212)
MSCI	2,805 (0,110)	0,874 (0,735)	0,055 (0,953)	0,177 (0,961)
INTERBANK 3M	10,052 (0,821)	-33,196 (0,440)	-51,81 (0,321)	-49,489 (0,991)
2Y - ZERO YIELD	0.27168 (0.0004)***	-0,157 (0,833)	-0,139 (0,6134)	0,163 (0,876)
CDS 3Y (JPY)	-0,889 (0,945)	-0,637 (0,937)	-1,132 (0,8732)	-0,991 (0,970)
CDS 5Y (JPY)	-0,933 (0,942)	-0,889 (0,963)	-0,9879 (0,888)	-0,947 (0,972)
CDS 10Y (JPY)	-0,976 (0,940)	-1,170 (0,9512)	-0,815 (0,907)	-0,891 (0,973)

Note: The numbers in the parentheses beside the Wald statistics are the P-values: ***, **, * represent the 1%, 5%, and 10% significance levels, respectively.

Source: author's calculations [Reuters' Datastream; BOJ policy announcements]

As well as the unconventional policy of the ECB and the USA, the measures of the Bank of Japan influence the exchange rate of the Ukrainian hryvnia and the Japanese yen. The national currency in the days of the announcement of the policy is strengthened by 0.1 UAH. This influence is not very significant.

Also, all the studied central banks have an impact on the yield of two-year government bonds. According to the analysis, as a result of the ECB's quantitative easing policy, in particular purchases of government bonds (PSPP 2014-2018), and the Fed's third round of purchases assets (LSAP3 2012-2014), government bond yields was reduced by 0.5%. And as a result of the Japan's comprehensive monetary easing policy (2010-2013) the yield on government bonds decreased by 0.2%. This influence probably passed through the liquidity risk premium channel. The fall in yields in the United States and the countries of the euro zone implies a relatively higher return on comparable assets of developing countries, including Ukraine. In this regard, investor interest in these countries is increasing, which may cause an increase in the volume of purchases of their government bonds. But the impact of the banks under study is not obvious, because Ukraine has huge economic instability due to the war in the eastern part of the country, the political crisis and the restructuring of external debt.

Conclusion. Ukraine has the closest relationship with the countries of the European Union. And this research confirms the hypothesis that the actions of the ECB are the most influential on the financial indicators of Ukraine.

The analysis shows that the exchange rates of the Ukrainian hryvnia to the euro, US dollar and Japanese yen were isolated from the influence of Central Bank announcements. This is confirmed by a minor influence. This is because the monetary policy in Ukraine only in 2015 actually switched from a fixed exchange rate regime to inflation control. The change of regime included the transition to a floating exchange rate.

Unconventional monetary policy announcements also had an impact on government bond yields and stock indices, but the Ukrainian stock market is underdeveloped, and this effect is small.

On the whole, the results confirm the hypothesis of the secondary effects exerted by the unconventional monetary policy of developed countries on emerging markets. The main influence was on the first programs of unconventional monetary policy of the ECB, the USA and the Bank of Japan. In those periods when unconventional measures were only introduced and it was difficult to regulate them and predict their consequences.

APPENDICES

Appendix I. The Impact of ECB Unconventional Monetary Policy

	FRFA	COLL	LTRO	TLTRO	FOR	CBPP1	CBPP2	CBPP3	SMP	PSPP	OMT	ABSPP	CSPP
EUR_UAH	0,002 (0,977)	0,004 (0,951)	0,011 (0,886)	-0,230 (0,077)*	0,027 (0,705)	0,117 0,555)	-0,004 (0,983)	0,061 (0,593)	-0,006 (0,973)	0,106 (0,286)	-0,0064 (0,675)	-0,056 (0,567)	0,075 (0,623)
MSCI	2.376 (0,193)	0,453 (0,761)	0,864 (0,552)	-2,196 (0,357)	2,012 (0,128)	−10.564 (0,0037) ***	2,940 (0,420)	-1,227 (0,560)	12,427 (0,0007) ***	0,026 (0,988)	-0,227 (0,935)	-0,935 (0,608)	-0,104 (0,975)
INTERBANK 3M	0,049 (0,766)	-0,166 (0,216)	-0,144 (0,2697)	0,216 (0,314)	-0,182 (0,126)	-1,066 (0,001)* **	-0,143 (0,663)	0,021 (0,908)	-0,075 (0,817)	-0,151 (0,359)	-0,022 (0,928)	0,087 (0,593)	0.081 (0.965)
2Y - ZERO YIELD	0,211 0,817	0,276 (0,560)	0,425 (0,511)	-0,181 (0,808)	-0,051 (0,932)	-	0,094 (0,928)	-0,395 (0,517)	0,259 (0,887)	-0,574 (0,072)*	0,028 (0,972)	-0,325 (0,538)	0,025 (0,975)
CDS 3Y	0,634 (0,994)	-8,773 (0,909)	18,380 (0,806)	48,144 (0,696)	3,322 (0,9612)	91,354 (0,627)	3,787 (0,984)	33,725 (0,757)	-3,428 (0.985)	13,90 (0,883)	4,175 (0,977)	28,772 (0,760)	4,224 (0,976)
CDS 5Y	0,397 (0,996)	-9,507 (0,899)	17,801 (0,808)	34,238 (0,776)	3,202 (0,961)	91,641 (0,617)	2,199 (0,990)	28,27 (0,791)	-2,586 (0,988)	11,653 (0,899)	4,062 (0,977)	24,799 (0,787)	4,51 (0,974)
CDS 10Y	0,382 (0,996)	-9,232 (0,891)	13,885 (0,843)	24,44 (0,832)	2,193 (0,972)	66,39 (0,706)	1,465 (0,993)	21,427 (0,833)	-1,41 (0,993)	7,067 (0,946)	4,080(0,976)	24.551 (0,815)	4,860 (0,971)

Note: The numbers in the parentheses beside the Wald statistics are the P-values: ***, **, * represent the 1%, 5%, and 10% significance levels, respectively.

Source: author's calculations [Reuters' Datastream; ECB policy announcements]

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УДК 332.7: 336.7

CREDIT RISKS MITIGATION AND BANKING COLLATERAL VALUATION IN UKRAINE

КРЕДИТНІ РИЗИКИ ТА БАНКІВСЬКА ОЦІНКА ЗАСТАВНОГО МАЙНА В УКРАЇНІ

КРЕДИТНЫЕ РИСКИ И БАНКОВСКАЯ ОЦЕНКА ЗАЛОГОВОГО ИМУЩЕСТВА В УКРАИНЕ

Yakubovsky V.V.

Doctor of technical sciences, professor of the international business department of the Institute of International Relations of Taras Shevchenko National University of Kyiv. E-mail: vyakubovsky@ukr.net

Якубовський В. В.

Доктор технічних наук, професор кафедри міжнародного бізнесу Інституту міжнародних відносин Київського національного університету ім. Тараса Шевченка.E-mail: vyakubovsky@ukr.net

Якубовский В.В.

Доктор технических наук, профессор кафедры международного бизнеса Института международных отношений Киевского национального университета им. Тараса Шевченко.   e-mail: vyakubovsky@ukr.net

Abstracts. *Contemporary international requirements and mechanisms which are oriented to credit risks abatement and assurance of financial sector functioning are reviewed with particulars of their implementation in national banking sector.*

As is demonstrated general reasons for the new generation of regulatory measures of crisis resilience in financial sector are grown up from the last global economy crisis which demonstrated vulnerability of the main credit institutions and their failure to absorb considerable financial market fluctuations.

To improve financial systems stability is the main goal of measures and instruments proposed by the international Basel Committee on Banking Supervision as well as Directives and Regulations of the European Union, which should be implemented at the national level.

One of the underlining aspect in this new international regulatory documents is recognition of the assets valuation key role in the whole methodology of risks mitigation. Main approaches to consider time effect on assets valuation results are analyzed in this context.

Based on these last international regulatory documents in this direction special Resolution No. 351of the National Bank of Ukraine has been issued for banks credit risks assessment. Much less attention in this Resolution is given to assets valuation which is linked to some extent with outdated national valuation standards. This situation requires active measures to be provided for updating basic national documents in this area as is underlined.

Key words: *credit risks, credit institutions, banking collateral, assets valuation, risks mitigation, international regulations, valuation approaches, time effect, valuation methodology.*

Анотація. *Розглянуті сучасні міжнародні регуляторні документи, які визначають вимоги до зменшення кредитних ризиків та забезпечення стійкого функціонування банківського сектору в контексті їх застосування у вітчизняній банківській системі.*

Продемонстровано, що головна причина появи нового покоління регуляторних документів цього напрямку полягає в негативних наслідках останньої глобальної економічної

кризи, яка висвітлила слабкості діючої фінансової системи в цілому, неспроможність її ключових іституцій протидіяти негативному впливу ринкових флуктуацій.

Підвищення стійкості функціонування всієї фінансової системи як раз і стало головною метою прийнятої Міжнародним Базельським Комітетом з Банківського Нагляду низки документів, які є основою відповідних Директив та Регламентів Європейського Союзу.

Одним з ключових аспектів цих міжнародних документів регуляторного характеру є визнання значного місця в забезпеченні стійкого функціонування банківського сектору вартісної оцінки заставного майна. В цьому відношенні в роботі розглянуті та проаналізовані існуючі підходи до урахування часового фактору при визначенні вартості різних активів.

Спираючись на ці міжнародно прийняті документи, національний банк України прийняв спеціальну постанову за № 351, яка встановлює детальний порядок визначення рівня кредитного ризику по активним банківським операціям. В той же час питанням методології вартісної оцінки залогового майна в даному документі приділено недостатньо уваги. Багато в чому це пов'язано з загальним відставанням національної регуляторної бази вартісної оцінки матеріальних та нематеріальних активів, що визначає необхідність подолання цієї прогалини та актуалізації національних стандартів оцінки.

Ключові слова: *кредитні ризики, інститути кредитування, кредитне забезпечення, оцінка активів, зниження ризиків, міжнародне регулювання, підходи оцінки, методологія оцінки, часовий ефект.*

Аннотация. *Рассмотрены современные международные регуляторные документы, определяющие требования к снижению кредитных рисков и обеспечению устойчивого функционирования банковского сектора в контексте их применения в отечественной банковской системе.*

Показано, что основная причина появления нового поколения регуляторных документов данного направления вызвана негативными последствиями последнего глобального экономического кризиса, выявившего слабости действующей финансовой системы в целом, неспособность ее ключевых элементов противодействовать негативному влиянию рыночных флуктуаций.

Повышение устойчивости функционирования всей финансовой системы как раз и явилось основной целью принятого Международным Базельским Комитетом Банковского Надзора ряда документов, которые стали основой соответствующих Директив и Регламентов.

Одним з ключевых аспектов этих международных документов регуляторного характера является признание существенной роли в обеспечении устойчивого функционирования банковского сектора стоимостной оценки залогового имущества. В этих рамках рассмотрены различные подходы к учету временного фактора при определении стоимости активов различных видов.

Опираясь на эти международно принятые документы, национальный банк Украины принял специальное Постановление № 351, устанавливающее порядок оценки кредитных рисков по активным операциям украинских банков. Значительно меньшего внимание в этом базовом национальном документе уделено вопросам методологии стоимостной оценки залогового имущества. Во многом это связано с общим заметным отставанием национальной нормативной базы стоимостной оценки материальных и нематериальных активов, что определяет необходимость принятия соответствующих мер по устранению все возрастающего пробела и актуализации национальных стандартов оценки.

Ключевые слова: *кредитные риски, институты кредитования, кредитное обеспечение, оценка активов, снижение рисков, международное регулирование, подходы оценки, методология оценки, временной фактор.*

Introduction. The general statement that the stable functioning of the banking sector is one of the dominant features of the efficient functioning of the entire economy has been clearly confirmed by the last global economic crisis of 2007-2009. Significant liberalization of mortgage lending of residential real estate, initiated by the White House in the 1970s, including the simplification of procedures and requirements of insurance, securing loans and the valuation of collateral assets, gradually led to a significant increase in the number of unsecured or so called "toxic" loans.

According to the Harvard University Joint Center for Housing Studies, at the beginning of the century their share reached almost 20% of total mortgage loans. In absolute terms the number of high-risk loans exceeded 13 million with a total value of more than USD 2 trillion [10, p. 43]. It quickly transformed this "bubble" into a large-scale financial crisis that directly engulfed 165 major international and national banking institutions.

As is well known the overall effects of the crisis have been spectacular. The Dow Jones Index has fall down more than a half with unsecured loans loss totaling around USD 2.8 trillion by 2011 in Europe and America only. The most vulnerable to the global crisis with its sharp decline in commodity turnover were countries with export-oriented and transitional economies including Ukraine. By the level of devaluation, which amounted to 42% in the second half of 2008, the Ukrainian hryvnia ranked second in the world after the Icelandic krona with industrial production in the country falling over 34%.

A meticulous analysis of the main causes and effects of the crisis, carried out by a specially established reputable National Commissions of the United States and the International Monetary Fund, have revealed the list of the most important ones. Among them [8, 9]:

• systematic disruption of financial regulation and control, which has had a material adverse effect on the stability of the functioning of financial markets;

• significant weaknesses in corporate and credit risk management in many influential financial institutions;

• the combined negative effect of excess borrowing, risky investing and lack of transparency that were inherent for the entire financial system;

• inconsistency and low standards of mortgage lending and mortgage derivatives;

In this respect a reliable valuation of mortgaged property is recognized as being essential for the overall reliability of financial sector.

Given the magnitude of the global financial crisis which reached a global level, and based on its root causes revealed, international and national institutions have developed and implemented a number of regulative solutions to mitigate the adverse negative effects and prevent recurrences of such drastic events in the future.

Based on this, the **purpose** of the article is to analyze the measures provided by the relevant international and national regulatory documents and the instruments based on them, aimed at reducing credit risks and strengthening as a result the stability of financial systems as a whole, as well as the peculiarities of their implementation at the national Ukrainian level with respect to the collateral valuation.

Recent researches and publications analysis. Based on the mandate received from the G20 Summits of 2008-2012, the International Basel Committee on Banking Supervision has developed and adopted in a post-crisis period a set of documents, commonly known as Basel III in the development of the previous Basel I and Basel II documents.

The Basel III documents provide for a gradual transition to a new level of regulatory requirements for credit institutions. First of all it concerns the requirements for equity and the provision of high quality and liquidity of credit security or collateral [2, 3].

In its latest document, which came out at the end of 2017 and is considered to be a transition from Basel III to Basel IV, the Basel Committee finalized the regulatory changes, limiting to a large extent the permissible risk weighted assets. These restrictions are structured according to the type of credit institution and its rating level.

Fundamental measures proposed by the Basel III documents are oriented to:

• improve the ability of the banking institutions to absorb stresses;
• increase the level of risk management and corporate governance standards;
• increase transparency and openness of banking activities.

In addition to a significant increase in banking system-wide operational standards, Basel III envisages a gradual transition to a new level of specific requirements for credit institutions. First and foremost, they relate to equity requirements and the provision of high level of credit collateral liquidity.

At its core, the documents of the Basel Committee on Banking Supervision are internationally agreed standards, developed and adopted by consensus with the participation of representatives of the central banks and supervisory authorities of the most economically developed countries in the world.

Therefore, their status is not legally binding, being mainly of advisory type. Hence in this sense, it seems appropriate to investigate the implementation of these main provisions both at international and national levels.

Main results description. The implementation of the Basel III recommendations in the EU countries has been primarily done through the adoption of Directive 2013/36 / EC (CRD) and Regulation 575/2013 / EC (CRR) on the capital requirements of credit institutions [5,6]. These documents are already mandatory for implementation in all EU countries and should be considered as a single package. If Directive 2013/36/EC on capital requirements establishes general provisions on access to capital and a set of preventative management actions that financial institutions should support, then Regulation 575/2013/EC details the requirements themselves in a structured manner.

The main objective of the new package of European regulatory requirements for credit institutions is to establish a uniform, standard-based approach to responsible lending to reduce solvency, liquidity and excessive leverage risks, as well as to increase their resilience in the face of financial crises as a whole. Fully based on fundamental provisions, including main indicators of the Basel III international agreement, these documents set minimum requirements for banking and investment institutions which are involved in credit operations.

Another important European regulatory document oriented at reducing credit risk is Directive 2014/17/EC [7]. This document, commonly known as the Mortgage Lending Directive, aims to provide the borrowers with greater transparency and awareness of lending conditions and to set higher standards for the provision of support services. In particular, the Directive points to the need to use the most reliable and recognized mortgage valuation standards, which include the International Valuation Standards IVS, the European Valuation Standards EVS and the Royal Institute of Chartered Surveyors RICS standards.

These European regulatory documents stipulate that the value of the collateral assets must not be higher of their market value. In order to apply the most prudent approach, the concept of mortgage value is introduced. This concept was first accepted as a valuation basis in the previous Directive 2006/48/EC and afterwards it was transposed into Regulation 575/2013/EC.

In explaining the notion of mortgage value, both International and European Valuation Standards indicate that when used as a valuation base, mortgage value should be considered for a longer term than the market value which should be determined for a fixed point of time (Fig.). It follows that the collateral value of the property, as a rule, cannot exceed its market value and it should exclude the influence of any speculative elements.

In the most concentrated and detailed form, the requirements for assets valuation are set out in a special Regulation of the European Union 2018/345/EC, which was issued in November 2018. This extended document, which is primarily intended to valuate assets in resolution procedures and to regulate credit institutions insolvency, sets out the full scope of requirements for assets valuation methodology.

In particular, in addition to the market value, mortgage value and fair value, the following new basis of value are introduced:
    - hold value;
    - disposal value;

- franchise value.

It is emphasized also that, overall, the valuation methodology should be preferably based on income approach through cash flow discounting. In this context it is probably for the first time when possibility of value range determination is indicated in addition to its point value.

To its full extent, the methodological basis of banking valuation of property and liabilities are described today by two European documents:

- Consolidated Document of the Association of Mortgage Banks of Germany HypZert / VDP- "Mortgage Lending Value"[*Grimman,* 2016: 245],

- European Banking Authority Guide - "EBA Handbook on Valuation for the Purpose of Resolution" [11].

These two documents are most detailed and therefore significant in content. As is stated in particular separate attention should be given to the time effect in collateral assets value. The fact is that, as is well known, under the influence of external (economic cycles, inflation, demand, etc.) and internal (wear, aging, damage, etc.) factors, the market value of mortgage property changes over time. This creates significant problems in determining the level of collateral value, since the terms of the loan agreements are often several years, especially when lending is related to real estate.

Being addressed to this issue, the most common today are 3 approaches based on the following concepts:

• *Mortgage Lending Value*, MLV, most widely used in Germany;

• *Investment Value*, IV with more global implementation;

• *Adjusted Market Value*, AVM, mainly used in UK and Spain.

Comparative testing of these three approaches, carried out by the *Property Industry Alliance Working Group*, has favored the latter, i.e. the AVM approach [12].

In addition to these three, a more structured approach has been proposed recently which is based on the Long-Term Sustainable Value or L-TSV concept. This concept is grounded on an income approach and introduces such new parameters as:

• *sustainable cap-rate;*

• *sustainable rent-rate,*

Both these parameters take into account long-term changes in the market value of assets. Accordingly, well known and widely used Williams-Gordon-Shapiro modified formula has a modified form that also takes into account inflation impact and assets physical deterioration:

$$V_0 = Y_1/(i_{rf} + i_{rp} (g+\pi) + d)$$

V_0 – Long-Term Sustainable Value;

Y_1- Net Operating Income for the next Year;

i_{rf} – Risk-free Yield;

i_{rp} – Property Risk Premium;

g – Yearly Income Growth Rate;

π- Inflation Rate;

d - Depreciation Rate.

An example of the application of this approach to German residential real estate valuation using historical data for the period 1991-2017 and projected statistical estimates for the near future demonstrated the feasibility of its further wider testing and utilization [*Fischer,* 2019: 12].

International experience and practical activity in strengthening the financial system has not been overlooked by the domestic banking sector. The basic document of the national level in this respect is, of course, the widely known Resolution of the National Bank of Ukraine No. 351 dated of June 30, 2016 [1].

The main content of this Resolution, including a number of amendments to it, is the provision on determination of the credit risk level on active banking operations. This Resolution describes in details the methods and procedures for determination of this criterion and sets the level of its compliance.

In general, this Resolution is entirely based on the principles and recommendations of the Basel Committee on Banking Supervision and takes into account requirements of the relevant European Union policy documents in this area.

At the same time, much less attention has been given to the issues of assets valuation trustworthy. The content of the Resolution in this respect is limited to:

• basic principles for accepting assets in loan collateral;

• determination of the asset types to be accepted as a collateral and their liquidity ratios;

• requirements for monitoring the availability and conditions of such collateral;

• general requirements for the valuation bodies.

Methodologically, the content of these domestic regulatory document, with all the editorial changes, is limited to the provision of "the implementation by banks of collateral valuation at a value that does not exceed market (fair) value and ensures its sale to a third-party buyer." It also points to the need to "re-evaluate the value of collateral ... on a regular basis, in particular, real estates, businesses, land and machinery equipment - at least once a year ...".

There is, evidently, a significant gap between existing international practices and the national valuation requirements for property, property rights and obligations, which are described above. In doing so, we should take into account that, in practice, the valuation of mortgaged property is performed with the reference to the market value.

This certainly casts doubt on the validity and reliability of the results obtained in assessing both the quality of banks' assets and their stress testing results, as the market value is usually higher than the mortgage one or similar type of valuation basis which reflect long-term effect. Accordingly, the value of assets, when the market value is used as a basis for valuation, exceeds its level in comparison with the case of the utilization of mortgage or similar value basis. It means that final results of assets value assessment will be shifted to a non-conservative side.

At the same time, the overall sustainability problems of Ukrainian banking sector remain significant. According to the recent data from The World Bank Group, the share of non-performing or "toxic" loans in the banking sector in Ukraine is the highest among the major post-Soviet countries being equal in 2017 to 54.5 % or more than a half of a total loans number [13]. All this also necessitates the continued adoption of sound regulatory measures.

At the same time, it should be emphasized that the problems of a significant lag in the methodology of valuation are of general type. A simple acknowledgment of this is the fact that, as of today, the national valuation standards which were issued initially in 2003 -2006, and still remain unchanged to this day. Even the very concept of mortgage value is not defined in these standards being classified among other types of valuation basis apart of the market value. Coming from this, regulatory measures necessary should cover not only national banking sector but all assets valuation activity in a country.

Concluding remarks. The recent global economic crisis has revealed significant deficiencies in the functioning of the financial system, its low ability to dampen crisis phenomena. Based on the joint decision of G-20 Summits 2008-2012 a number of international regulatory instruments aimed at strengthening the banking sector were introduced. They include first of all documents of the International Basel Committee on Banking Supervision - Basel III and European Union policy documents, which set out new principles and approaches, as well as criteria for ensuring a more stable functioning of banking institutions including their ability to counteract crisis events.

One of the main outcome from this documents is recognition of core importance of collateral assets valuation. At the same time from a methodological point of view it's important to consider time effect on assets valuation results with respect to the loan agreement duration. Different existing approaches to take into account this effect are reviewed which gave a priority to adjusted market value (AMV) and long-term sustainable value (L-TSV) concepts.

Relying on international documents issued, the National Bank of Ukraine in its Resolution No. 351 also presented regulations for assessments of credit risks in financial institutions. At the same time methodological guidance for collateral assets valuation are covered in this Resolution in

sufficiently. Partly it is caused by outdated general national valuation standards published in 2003-2006. From this it became evident necessity to provide sufficient measures for filling in enlarging gap in valuation guidance documents at national level.

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ЗМІСТ

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СУЧАСНА СИСТЕМА МІЖНАРОДНОГО ПРАВА

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