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Complementarity of Trade between Ukraine and the People's Republic of China as an Indicator of the Effectiveness of Bilateral Cooperation

Introduction. *The People's Republic of China is Ukraine's major trade partner in the Asia-Pacific region and its second global trade partner after the Russian Federation. To understand the existing level of bilateral trade and its efficiency and impact on Ukrainian economy, it is necessary to utilize not only quantitative parameters but also analytical indicators of external trade, such as the comparison of trade patterns, in order to determine the level of consistency of trade and the prospects of possible cooperation.*

Purpose. *To analyze the status of contemporary bilateral trade cooperation between Ukraine and China, to measure the consistency of Ukrainian-Chinese trade by using the direct and reversed trade complementarity indexes, and to determine the role and position of China among Ukraine's major trade partners in the Asia-Pacific region.*

Results. *Quantitative analysis of commodities trade was conducted. General trends of trade between Ukraine and the China were outlined. The result of the calculation of direct and reversed trade complementarity indexes were used to provide valuable insight into the possible prospects of bilateral trade, and problems and threats to economic security were uncovered due to the changes in trade patterns of Ukraine by comparing them to the respective parameters of partners in the Asia-Pacific region.*

Conclusion. *The trade between Ukraine and China is growing steadily despite negative trends in the Ukrainian economy. However, the structure and quality of trade are decreasing, and the gap between Ukrainian exports to China and imports from China to Ukraine is constantly growing. It is evident that China is becoming a competitor to Ukraine on the global market and is less interested in Ukrainian exports. Possible actions to prevent and avoid severe competition and improve trade relations were proposed.*

Keywords: *international trade; bilateral trade; Ukraine-China trade; trade complementarity index.*

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Комплементарність торгівлі між Україною та Китайською Народною Республікою як індикатор ефективності двостороннього співробітництва

Китайська Народна Республіка є головним торговельним партнером України в Азіатсько-Тихоокеанському регіоні та другим торговельним партнером у світі після Російської Федерації. Для розуміння наявного рівня двосторонньої торгівлі з Китаєм, її ефективності та впливу на українську економіку необхідно використовувати не тільки кількісні параметри, а й аналітичні показники зовнішньої торгівлі, такі як порівняння торговельної номенклатури з метою визначення рівня відповідності структури торгівлі та перспектив можливої співпраці. Метою статті є аналіз стану поточного двостороннього торговельного співробітництва між Україною та Китаєм, вимір відповідності структури українсько-китайської торгівлі за допомогою прямого та зворотного індексів комплементарності торгівлі, визначення ролі й позиції Китаю серед основних торговельних партнерів України в Азіатсько-Тихоокеанському регіоні. В статті проведено кількісний аналіз торгівлі товарами між Україною та Китаєм, окреслено загальні тенденції торгівлі. Результати розрахунку прямих та зворотних індексів комплементарності торгівлі були використані для того, щоб визначити можливі перспективи двосторонньої торгівлі, проблеми та загрози для зовнішньоекономічної безпеки України внаслідок змін у вітчизняній структурі торгівлі, порівнюючи її з відповідними параметрами країн-партнерів в Азіатсько-Тихоокеанському регіоні. Було встановлено, що торгівля між Україною та Китаєм постійно зростає випереджальними темпами попри негативні тенденції у вітчизняній економіці. Структура та якість торгівлі зменшуються, і розрив між комплементарністю експорту до Китаю та комплементарністю імпорту з Китаю в Україну постійно зростає. Встановлено, що з кожним роком Китай є менш

зацікавлений в українському експорті. Запропоновано можливі заходи щодо запобігання та уникнення жорсткої конкуренції та поліпшення торговельних відносин.

Ключові слова: міжнародна торгівля; двостороння торгівля; українсько-китайська торгівля; індекс комплементарності міжнародної торгівлі.

Problem statement. The rapid development of globalization processes, along with the economic crisis in Ukraine and degradation of traditional patterns and directions of external trade, intensifies the demand to have a reliable trade partner that will maintain Ukraine's national interests and contribute to the sustainable economic development of our country. Such relations can only be built on the solid assumption that bilateral trade with this partner will be mutually beneficial and will not compromise Ukrainian economic security. In this context, the most important aspect of cooperation is the consistency of the external trade portfolios of the two possible partners. The necessity to have a reliable instrument to measure trade complementarity with major partners determines the importance of the following article.

Analysis of the recent research and publications. Complementarity of trade was the subject of research of foreign scientists, such as J. Pearlman [1], M. Mikic and J. Gilbert [2], X. Gong and C. Gu [3]. Among the Ukrainian researchers, a significant contribution in addressing the issues of trade complementarity and its impact on trade activities and external economic security was made by A. Mokii, N. Naumenko, R. Enverov [4]. The particular connection between complementarity and bilateral trade between Ukraine and the People's Republic of China (PRC) was outlined in the works of Z. Makohin [5].

Objectives of the article. To analyze the status of the contemporary bilateral trade cooperation between Ukraine and the PRC, to measure the complementarity of Ukrainian-Chinese trade patterns in order to evaluate the

possible downsides and threats in the growing cooperation with this specific partner, and to provide recommendations for improving bilateral trade relations.

Presentation of the main research material. Over the past 20 years, the People's Republic of China has been the most rapidly developing manufacturer in the global economy. In 2015 it reached the position of the primary producer and exporter of commodities, controlling approximately 12% of world trade, and still continues to modernize its industry, advance on new markets, and expand both economically and politically on every continent including Europe [6].

For Ukraine, the importance of the PRC is enhanced by the fact that this country is Ukraine's major trade partner in Asia. In the past fifteen years, bilateral trade between Ukraine and PRC was constantly growing. According to the data provided by the State Statistics Service of Ukraine, the share of the PRC in the geographical structure of the foreign trade turnover of Ukraine was 5.73% on average in 2004-2018 (3.32% average share of total exports from Ukraine to PRC and 8.15% average share of total imports to Ukraine from PRC). In 2004-2018 total trade turnover (excluding trade in services) between Ukraine and PRC increased from 1.56 bln USD to 9.81 bln USD. By 2013, there was a clear trend towards a steady increase in the total volume of trade with the PRC that was interrupted by the economic and political crisis in Ukraine in 2014. After 2015, the volume of commodities trade turnover has been growing again, proving the objective nature of the Ukrainian-Chinese economic cooperation (fig 1) [6].

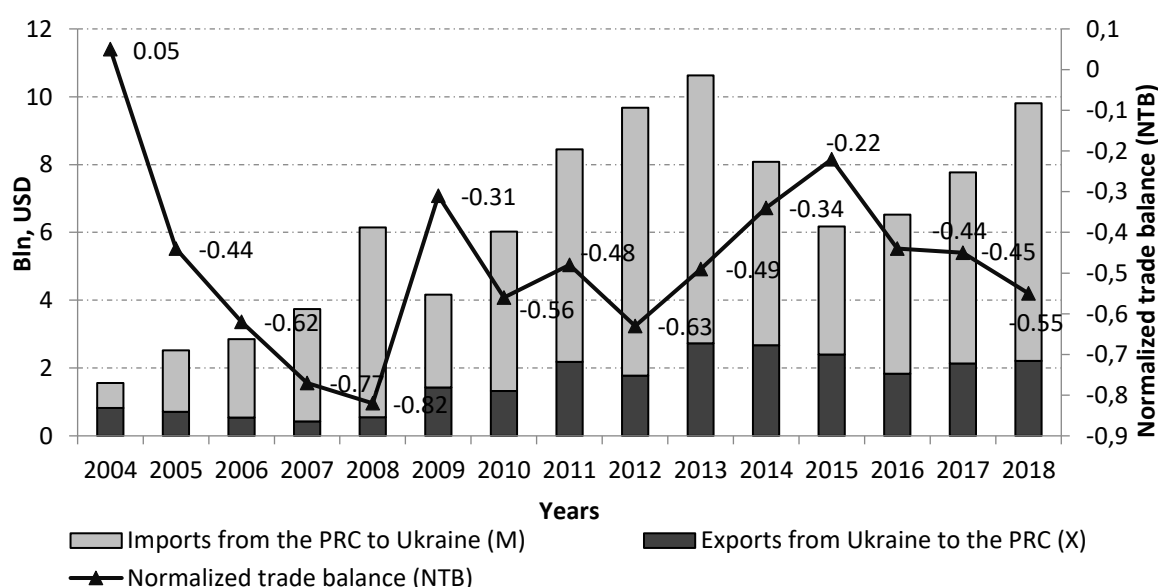


Figure 1 – Dynamics of the main parameters of bilateral trade in commodities between Ukraine and the PRC, 2004-2018

Source: submitted by the authors basing on sources [6; 8]

For the purpose of comparative analysis of the similarity of external trade activity of Ukraine and the PRC, the trade complementarity index (formula 1) was utilized by addressing the export and import product specifications and patterns of both analyzed countries.

The trade complementarity index (TCI) is an indicator that allows determining whether the commodities exported by one country are in demand by its trading partners. The index is calculated by comparing the export and import structure of the partner countries and measures the degree to which the export pattern of one country matches the import pattern of its potential trade partners [2, p. 80-81].

Trade complementarity index can be calculated by using the following formula:

$$TCI_{js} = \left[1 - \left(\sum \left| \frac{m_{ij}}{M_j} - \frac{x_{is}}{X_s} \right| \div 2 \right) \right] \times 100, \quad (1)$$

- where
- j – is the exporting country of interest;
 - s – is the importing country of interest;
 - i – is the name of commodity, service or industry;
 - x_i – is the export flow of i-commodity, service or industry;
 - m_i – is the import flow of i-commodity or industry;
 - X – is the total export flow;
 - M – is the total import flow.

The TCI takes a value from 0 to 100 depending on the degree of complementarity of the import profile of the country of interest with the respecting export profile of the potential trade partner. When TCI equals 100, the exports and imports of the two partner countries are fully

matched (a favorable prospect for a profitable arrangement), with the TCI being equal to 0, it is assumed that the countries do not have conditions to conduct profitable bilateral trade of any kind.

Changes in TCI over time may help to determine whether the trade profiles are becoming more or less compatible. However, the TCI has the following limitations: the distance between countries is not measured, the difference in sizes of economies is not taken into consideration, and the index does not consider the quality, types, and share of high-tech commodities. Therefore this index is not recommended as an absolutely reliable indicator of compulsory demand for domestic products by partner countries.

The index can be calculated by using the same formula in two different ways: by comparing Ukraine's export pattern with the import patterns of potential trade partners (TCIX, where Ukraine is the exporter) or by comparing the import pattern of Ukraine with exports patterns of potential trade partners (TCIM where Ukraine is the importer). By measuring the gap between TCIX and TCIM it is possible to determine whether the trade with each partner is a benefit or a threat to the external security of Ukraine.

The calculations were made by addressing the statistics of the International Trade Center for the interval of 2001-2019 (99 commodity positions of Harmonized System) [7]. The changes of the direct (TCIX) and the reverse (TCIM) indexes of trade complementarity between Ukraine and the PRC in 2009-2018 are presented in figure 2.

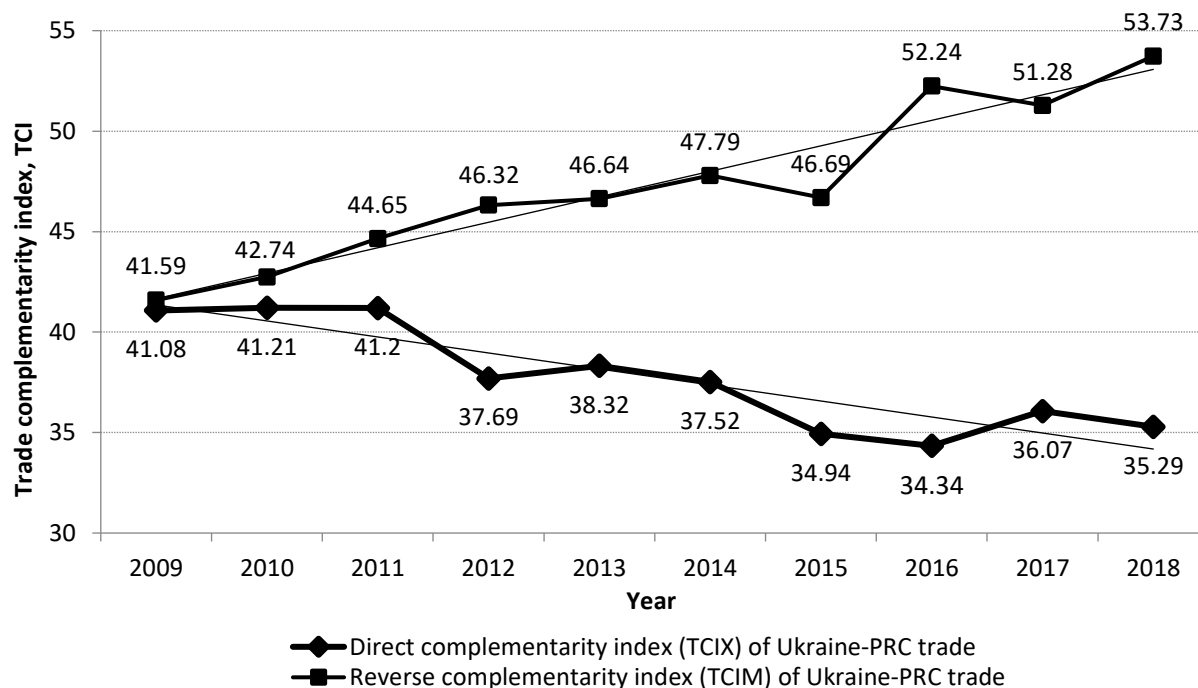


Figure 2 – The dynamics of the trade complementarity indexes between Ukraine and the PRC, 2009-2018

Source: submitted by the authors basing on sources [8]

The results of the calculation indicate that in 2018 Ukraine's exports complementarity with the PRC was relatively low (TCIX = 35.29). At the same time, during the analyzed interval there was a declining trend in the dynamics of changes in the index. The reverse complementarity (TCIM) which indicates the matching of imports portfolio of Ukraine and the exports portfolio of the PRC in 2018 was 53.73. During the 2009-2018, this indicator increased significantly (from 41.59 to 53.73). The average value of import complementarity (TCIM) during this period is 47.37, which is 9.6 points higher than the average complementarity of exports (TCIX = 37.76). The gap between TCIX and TCIM is constantly growing and amounted to 18.44 in 2018. This deviation confirms that the imports portfolio is more relevant than exports, which

is indirectly confirmed by the growth of the volume of Chinese imports to Ukraine.

To determine the position and role of the PRC in the global Ukrainian trade, the calculation of the trade complementarity with the major trade partners of Ukraine in the Asia-Pacific region in the same time interval was conducted.

In 2009-2018, both the TCIX and TCIM indexes of complementarities of foreign trade with the PRC are lower than the average of these indicators for the major partner countries in the Asia-Pacific region. Thus, in trade with the Russian Federation, the complementarity of exports during the investigated period reached 40.33, the value of the reverse index was 50.41; with Japan, respectively 43.65 and 46.53; with the Republic of Korea 44.76 and 52.03 (fig. 3).

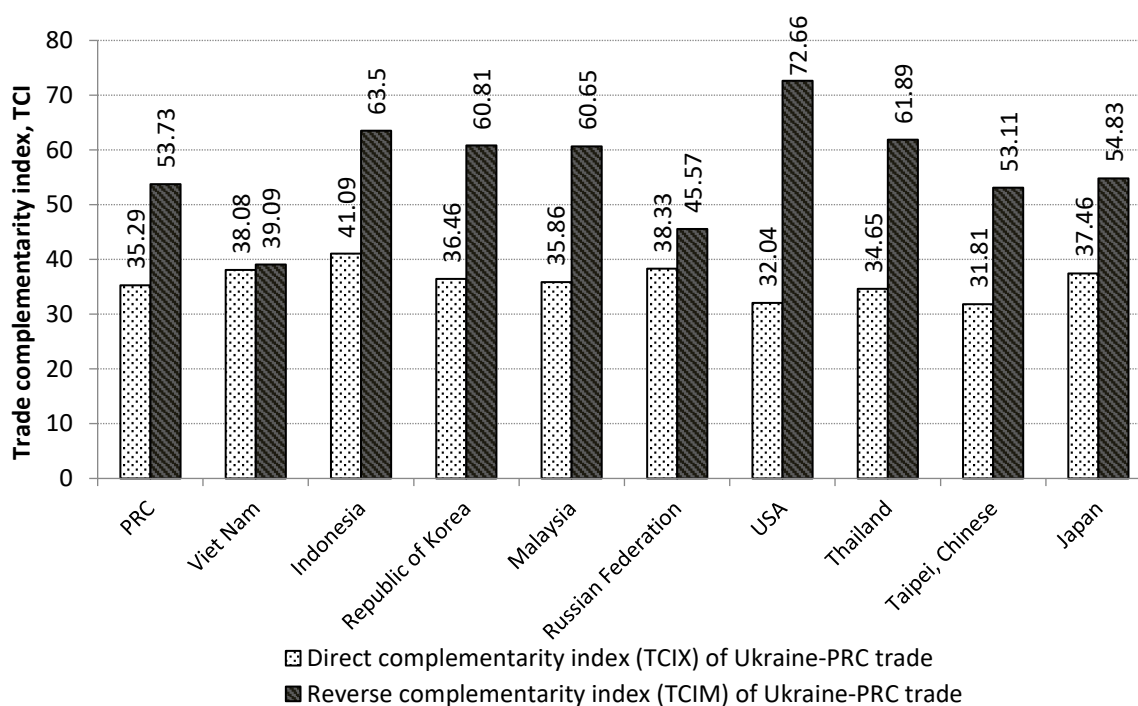


Figure 3 – The of complementarity of Ukraine's trade with the largest partners in the Asia-Pacific region, 2018

Source: submitted by the authors basing on sources [8]

The obtained data confirm the negative tendency of a constant decline in the level of complementarity of Ukrainian exports to the countries of the Asia-Pacific region (from 44.14 in 2009 to 35.57 in 2018), while the level of complementarity of Ukraine imports to the exports portfolio of the countries of this region is steadily increasing (60.07 and 70.18, respectively). Such changes in the complementarity indexes and the volumes of trade corresponds to the general tendencies in Ukraine's trade with the countries of Asia, which complete the process of industrialization (Malaysia, Thailand). The export complementarity index is significantly reduced due to a decrease in demand in the countries of the Asia-Pacific region for products of ferrous metallurgy, which is first in Ukraine's exports portfolio. At the same time, there is an

increase in imports of consumer products to Ukraine from the newly industrialized countries of Eurasia, which confirms the growing dynamics of the reverse complementarity index (TCIM). The exception is the Russian Federation, the complementarity of trade with which declined in both indicators, due to a decrease in the overall level of cooperation since 2014.

Currently, the PRC actively exports to Ukraine the same types of commodities that it previously imported from Ukraine. In 2003, the main exports to the PRC from Ukraine were products of metallurgy, textiles, light industry, food and beverages, household electrical goods, computers, and office equipment. Currently, the majority of Ukrainian exports (up to 81%) to the PRC are mineral raw materials: iron, titanium, and zirconium ore [3]. If

such a trend continues there is that threat that Ukraine will become the raw material appendage of the PRC, and will become the consumer market for Chinese goods.

It is possible to assume that competition from Chinese metal manufacturers on markets that were considered traditional for Ukrainian producers will also increase. The PRC is currently interested in the Middle East region, to which Ukraine exports around 35% of its domestically produced steel. Since 2007, Chinese manufacturers are increasing their influence in this region. Taking into account the state of the global steel market, The Middle East and North Africa are becoming some of the most promising markets along with those of India, Vietnam, Thailand, and the Republic of Korea [9; 10].

Conclusion. Over the past decade, there has been a steady trend towards an increase in the turnover of trade between Ukraine and the PRC with a negative balance in trade in commodities for Ukraine not only in quantitative but also in qualitative terms. The volume of imports from the PRC exceeds domestic Ukrainian exports; the analysis of the domestic trade pattern proves its extensive nature, which manifests itself in the low diversification of commodity groups. The overall complementarity of Ukraine-PRC trade is steadily declining, indicating the completion of industrialization processes in the People's Republic of China and the further reduction of demand for the products of Ukrainian metallurgy and machinery.

This proves that the current status of economic cooperation with PRC is not constructive and requires diversification and expansion in the form and structure of trade, and orientation to other spheres of economic activity (agriculture, education, culture, tourism, etc.). According to the conducted research, to avoid possible

threats of growing competition with Chinese manufacturers and dependence on incoming Chinese imports, Ukraine needs to revise its trade policy and strategy of cooperation with PRC.

In order to improve Ukrainian-Chinese trade relations and achieve better matching of export-import patterns manifested in increasing the TCI and reducing the gap between TCIX and TCIM indices, it is advisable that Ukraine concentrate on the following measures:

- optimize industries where domestic producers retain a relative advantage and have the smallest similarity of the export portfolio with the PRC, including agricultural raw materials, food industry, vegetable oils, and high-tech commodities of mechanical engineering (space and military);

- search for strategic partners and real opportunities for increasing the export of Ukrainian commodities to PRC by informing the Chinese business community about the priority sectors of the Ukrainian economy and enhancing the competitiveness of Ukrainian commodities both in the Chinese and global markets;

- review and change the structure of exports, take government control measures to reduce the export of raw materials to China;

- enhance the work in the regions of China by organizing round tables, meetings with heads of small and medium-sized enterprises and local communities, participation in the organization of local events covered by the publications in the regional press.

- ensure that the Chinese business receives specific proposals and data on the investment in Ukraine by posting detailed information in various newsletters and on a special website on the Internet.

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