

DOI: [10.55643/fcftp.2.43.2022.3700](https://doi.org/10.55643/fcftp.2.43.2022.3700)

**Kostyrko L.**

Doctor of Economics, Professor,  
Head of the Department of Finance  
and Banking Volodymyr Dahl East  
Ukrainian National University,  
Severodonetsk, Ukraine;  
ORCID: [0000-0002-3447-2343](https://orcid.org/0000-0002-3447-2343)

**Sieriebriak K.**

Doctor of Economics, Professor,  
Volodymyr Dahl East Ukrainian  
National University, Severodonetsk,  
Ukraine;  
ORCID: [0000-0002-7025-2399](https://orcid.org/0000-0002-7025-2399)

**Sereda O.**

Ph. D. In Economics, Associate  
Professor of the Department of Finance  
and Banking, Volodymyr Dahl East  
Ukrainian National University,  
Severodonetsk, Ukraine;  
e-mail: [sered1010@gmail.com](mailto:sered1010@gmail.com);  
ORCID: [0000-0003-0547-2077](https://orcid.org/0000-0003-0547-2077)  
(Corresponding author)

**Zaitseva L.**

Ph. D. In Economics, Associate  
Professor of the Department of  
Finance, Accounting and Banking,  
Taras Shevchenko Lugansk National  
University, Starobilsk, Ukraine  
ORCIDID: [0000-0002-9388-5500](https://orcid.org/0000-0002-9388-5500)

Received: 28/01/2022

Accepted: 06/04/2022

Published: 29/04/2022

© Copyright  
2022 by the author(s)



This is an Open Access article  
distributed under the terms of the  
[Creative Commons CC-BY 4.0](https://creativecommons.org/licenses/by/4.0/)

# INVESTMENT ATTRACTIVENESS OF UKRAINE AS A DOMINANT ATTRACTION OF FOREIGN DIRECT INVESTMENT FROM THE EUROPEAN SPACE: ANALYSIS, EVALUATION

## ABSTRACT

The purpose of the study is to determine the investment attractiveness of the country and regions as factors that are critical to attracting foreign direct investment from the EU.

Foreign direct investments serve as a source of capital growth, providing the most effective integration of the national economy into European and contributing to the attraction of advanced technologies and modern methods of business management as well. Foreign direct investments are a source of capital growth that ensures the most effective integration of the national economy into the European one and promotes the attraction of advanced technologies and modern methods of doing business.

Over the past ten years, there has been an unstable dynamics of foreign direct investment receipt to the economy of Ukraine. FDI in Ukraine from the EU countries is conventionally divided into three stages: 2010-2013 - a relatively stable level, 2014-2016 - a rapid fall, 2017-2020 - moderate growth.

Based on the results of international ratings, the need to determine the investment attractiveness of Ukraine in the conditions of the ecological and economic imperative is proved. Particular attention is granted to identify Ukraine's position by the Environmental Performance Index compared to countries of the world and Europe.

The methodology for determining the investment attractiveness of the country is proposed, which provides for the formation of a General Index of investment attractiveness of the country based on Ease of Doing Business Index, The Global Competitiveness Index, EBA Investment Attractiveness Index, Environment Performance Index. A significant differentiation of FDI funds in the regions of Ukraine is explained by their economic development, the largest volume enters industrially developed regions. A significant correlation between FDI in Ukrainian regions and the volume of products in the regions was revealed.

The determinants of the attractiveness of the regions that influence the decisions of investors to invest are identified. The methodical approach to assessing the investment attractiveness of the regions of Ukraine, which is based on generalized indicators of financial- economic and ecologically oriented direction, is proposed. The assessment was carried, out and dynamic analysis of the investment attractiveness of regions according to the proposed methodology was made, which allowed determining their rating of investment attractiveness.

**Keywords:** investment attractiveness, environmentally oriented activities, sustainable development, foreign direct investment, environmental and economic imperatives

**JEL Classification:** C13, F21, F36, G38, R11

## INTRODUCTION

In the current conditions of globalization and internationalization of countries, regions, and economic systems, international investment cooperation is especially important,

which allows businesses to attract new production and management technologies, produce innovative competitive products, and expand export opportunities for national goods and services. In today's world, the European Union (EU) is positioned as one of the most developed regional integration blocs, which has a global impact on other countries and sets the vectors of global trends. The experience of developed countries shows that active participation in the international movement of capital strengthens the economic stability of recipient countries, and promotes higher rates of development. In this regard, in the global aspect of the investment process, the greatest interest is the movement of direct investment. Ukraine's strategic partner and the largest foreign investor is the European Union (EU). In discussions about the priority of Ukraine's European choice, its movement towards European integration, and accession to the EU, the main argument is the growth of investment [1]. Investment and economic cooperation are important both for the border regions of Ukraine bordering the countries of the European Union and for other regions that have the potential for growth. Foreign companies have significant financial resources to invest in attractive investment projects. In addition, EU countries have extensive experience in ensuring sustainable development. A preliminary analysis of foreign direct investment in Ukraine shows their unevenness. Like other countries, such as Poland and China, regional differences depend on the availability of resources, industrial development, and agglomerations of large cities, economic prospects for potential cooperation with other countries. The main barriers to attracting foreign investment to the regions of Ukraine are political and economic instability in the country, lack of quality investment proposals from local governments and business structures, and insufficient information on investment attractiveness at the regional level. Research of the investment environment can be carried out at the macro and micro levels. At the same time, the macroeconomic environment is formed by variable factors that stimulate or constrain investment in the national economy. Such factors include: economic, political, environmental, and socio-cultural. Macro- and micro-level factors also significantly affect the investment behavior of investors. Therefore, the development of a theoretical and methodological basis aimed at assessing investment attractiveness at the level of the country and the region to ensure sustainable development is relevant.

## LITERATURE REVIEW

A significant inflow of FDI in the country contributes to economic growth and modernization [2]. Foreign direct investment provides benefits, including the inflow of additional capital into the country, the development of industry and agriculture, and contributes to environmental and social improvement, new technologies, and innovations [2], [3]. Therefore, FDI is the focus of many researchers in developed countries, developing countries, and countries with economies in transition. In the existing literature, among the main theories of foreign direct investment concerning the relationship of FDI with economic development, there are three approaches: neoclassical, institutional, and econometric. The basic in explaining the conditions and features of FDI is the eclectic paradigm J. Dunning [4], [5], [6], who argues that the strategic advantages of ownership, location, and internalization will vary depending on the specifics of each enterprise and the economic, political, social characteristics of the countries involved in FDI.

The search for mechanisms to attract FDI is relevant at any time, and therefore there is a large amount of research on the analysis of factors that increase the inflow of FDI in different countries.

Hayakawa, K, and co-authors [7] investigate the impact on FDI of various components of political and financial risks and their changes over time. The main conclusion is that political risk is negatively related to FDI inflows, reducing the level of political risk increases the inflow of foreign investment. Scientists Asongu, S., Akpan, US, and Isihak, SR [8] used panel analysis to study the factors that determine the direction of foreign direct investment in BRICS and MINT countries. They found that in addition to offering large markets and strategic geographical location, these countries must guarantee legal protection to investors, create a level playing field for competition in the domestic market, and ensure political stability that reduces investment risk. Shao, Y [9] clarified the relationship between FDI and carbon intensity based on a dynamic panel data model. The results of her study showed that FDI has a significant negative impact on the carbon intensity of high-income and middle- and low-income countries. The review of FDI attraction factors allows to connect them with investment attractiveness, which can be defined as a set of objective and subjective factors that contribute to or hinder the process of investing in the national economy at the macro, meso, and micro levels [10].

In the context of European integration, it is inefficient to assess the country's investment attractiveness on the basis of internal indicators, it is advisable to assess in comparison with other countries in order to identify weaknesses. In some studies, the indicators of determining the investment attractiveness of the country use the Global Competitiveness Index [11], the Ease of Doing Business Index, and the Index of Economic Freedom. In our opinion, it is advisable to use these indicators as baseline indicators for a generalized assessment of the country's investment attractiveness and to expand the Environmental Performance Index.

The level of development of regions in the country determines the attractiveness of enterprises and industries that are in their territory [11]. The investment attractiveness of regions is characterized by financial and economic development, investment prospects, and a number of other factors that influence the attraction of FDI.

In the research of scientists from different countries, most of the components of investment attractiveness or competitiveness of regions are traditional (economic, socio-cultural, political, technological, innovative, natural, and image), and are used in different configurations. Determining a universal list of indicators of regional attractiveness is a difficult task. This becomes even more difficult due to the fact that for different investors the same factors may be more or less important in terms of a particular economic activity [12]. In the study Kostyrko, L. and co-authors [13] determinants of investment attractiveness of regions identified financial and economic factors that most influence investment decisions.

The link between economic growth and the environment is a major challenge to achieving the goals of sustainable development, as intensive economic activity causes environmental problems that negatively affect sustainable development [14]. Therefore, environmental factors and the results of environmentally oriented activities of enterprises in the regions should be the determinants for determining the investment attractiveness of regions.

The professional literature emphasizes the contradiction between the goals of the enterprise, which arises as a result of the implementation of the basic principles of the concept of corporate social responsibility and profit maximization [15]. Businesses focus on obtaining financial effects, thus neglecting other aspects related to their activities, in particular, the principles of environmental management.

Some works are devoted to the study of environmental and economic consequences of management of enterprises that are harmful to the environment [16], [17]. Włodarczyk A, Mesjasz-Lech A. [18]. focuses on the social aspect of changes in public health associated with emissions of pollutants. They propose a new approach based on a set of three multi-criteria synthetic indicators for assessing the environmental, economic, and social performance of enterprises in individual Polish voivodships during 2005–2019.

Taking into account previous research, we propose to assess the attractiveness of the regions by calculating the integrated index of investment attractiveness of the region in selected areas, taking into account the generalized indicators of financial, economic, and environmental orientation.

The purpose of the study is to determine the investment attractiveness of Ukraine and the regions in terms of environmental and economic imperatives, aimed at improving cooperation with the EU.

## METHODOLOGY

The research methodology is based on the analysis of statistical data over the last ten years to assess the investment attractiveness at the level of the country and the region in terms of environmental and economic imperatives.

Data from international ratings are used to determine trends in Ukraine's investment attractiveness. In the context of European integration, it is advisable to assess the attractiveness of the country compared to others. The generalized indicator of investment attractiveness of Ukraine is defined as the average value of indices Index of Ease of Doing Business, Index of Global Competitiveness, EBA Index of Investment Attractiveness compared to their maximum values. To assess the investment attractiveness of the regions, an integrated model was used, which combines indicators of financial, economic, and environmental orientation. This makes it possible to identify the most attractive regions for attracting FDI.

## RESULTS

Economic growth is extremely important for Ukraine and its regions. It is the essence and rate of economic growth that determine the dynamics of economic development of each country, ensuring the progressive development of society. But the need to green the development of Ukraine and reduce the burden on natural systems is no less important. For the simultaneous implementation of both directions of development, it is necessary that economic growth takes place exclusively by environmentally friendly methods. Trends in the global economic process indicate the high efficiency of investment in greening technology, production of high-quality environmental equipment, and environmentally friendly products. Such a development strategy is an attractive and promising area for investment.

To assess the investment attractiveness of Ukraine it is proposed in the author method to use the Ease of Doing Business Index, the Global Competitiveness Index, the EBA Investment Attractiveness Index, and the Environmental Performance Index (*Table 1*).

**Table 1.** Investment attractiveness of Ukraine in international assessments

| Indicator                           | Organization                  | Maximum value        | Years |      |      |      |
|-------------------------------------|-------------------------------|----------------------|-------|------|------|------|
|                                     |                               |                      | 2017  | 2018 | 2019 | 2020 |
| Ease of Doing Business Index        | The World Bank                | 190<br>(rating)      | 80    | 76   | 71   | 64   |
| The Global Competitiveness Index    | World Economic Forum          | rating               | 85    | 81   | 85   | -*   |
|                                     |                               | maximum rating value | 138   | 137  | 141  | -*   |
| EBA Investment Attractiveness Index | European Business Association | 5                    | 3,15  | 3,07 | 2,95 | 2,4  |

Source: based on the [19], [20], [21]

The Ease of Doing Business Index assesses the conditions for doing business on 10 indicators, the rating consists of 190 countries. The components of the index assess the regulations governing the activities of small and medium-sized business and their use in practice. The rating assessment in 2020 includes: "creation of enterprises", "obtaining building permits", "connection to the electricity supply system", "property registration", "obtaining loans", "protection of minority investors", "taxation", "international trade", "Ensuring the fulfillment of contracts", "resolving the issue of insolvency" (World Bank, 2020). These indicators can be used to analyze the regulatory conditions for investment activities of economic entities. These indicators can be used to analyze the regulatory conditions for investment activities of economic entities.

The Global Competitiveness Index is published by the World Economic Forum and until 2017-2018 consisted of three main groups of sub-indices: "Basic Requirements", "Productivity Boosters" and "Innovation and Improvement Factors" (World Economic Forum, 2020). On October 16, 2018, the World Economic Forum released the Global Competitiveness Index 4.0 in 2018, calculated according to a new methodology, following which the Global Competitiveness Index measures the readiness of countries for the fourth industrial revolution, covering 140 countries, competitiveness is assessed by 98 indicators, grouped by 12 components. It includes four sub-indices: "Creating favorable conditions", "Human capital", "Markets", and "Innovation ecosystem" (World Economic Forum, 2020). According to the Global Competitiveness Index 4.0, Ukraine ranked 85th in 2019 - deteriorating macroeconomic indicators (down 2 positions), unstable financial system (down from 117th to 136th), health care - moving from 94th to 101st place. The growth of ratings took place in the dynamics of business (by 1 position), in the labor market (from 66 to 59th place), and in the commodity market - by 16 positions (World Economic Forum, 2020).

In 2020, the WEF rolled up the rankings in the global competitiveness index, replacing the annual edition with a special one: How the countries are ascending on their "road to recovery". The Global Competitiveness Report, Special Edition 2020: How Countries are Performing on the Road to Recovery revitalization of competitiveness, as well as a look at the transition to new economic systems, as a way to increase "productivity", "specialty", as well as the goals of the "planet". After analyzing the remaining available statistical data for 37 countries of the world and evaluating only the priorities of their economic transformations, the priorities of economic transformation for the renewal of the economy were determined. The recommendations are grouped according to several broad guidelines for were developed: 1) rebirth and transformation of a friendly environment; 2) renewal and transformation of human capital; 3) regeneration and transformation of rinks; 4) regeneration and transformation of the innovative ecosystem. In 2021, the WEF plans to turn around to a peer-to-peer analysis of the global competitiveness of the country [22].

The most relevant method for assessing the investment attractiveness of the country is the method of the European Business Association (EBA) (European Business Association, 2020). The main advantage is greater realism and expert assessment of the state of the economy by companies operating in the domestic market. The index is determined on the basis of the results of a survey of business leaders working in Ukraine (residents and non-residents). In 2020, the Investment Index of the EBA decreased to 2.4, which is the lowest value since 2013. The main unsolved problems are an unfriendly investment climate, an epidemic of coronavirus and the resulting quarantine, lack of access to the ship system, workforce, political and economic turbulence, high level of corruption, shadow economy.

The successes and shortcomings of countries in the environmental field are evaluated on the basis of the Environmental Performance Index (EPI) [23], developed by the Center for Environmental Policy and Law at Yale University in collaboration with Columbia University and the World Economic Forum. The methodology of calculation and practical use of the Environmental Performance Index allows to compare the achievements of countries in the field of environmental health and ecosystem viability, it is calculated every two years. The EPI in 2020 is based on 32 indicators, taking into account these indicators, 11 categories were formed that reflects the state of the environment and viability: air quality, sanitation and water, heavy metal pollution, waste generation and disposal, biodiversity and habitat, ecosystem services, fisheries, climate

change, air pollution, agriculture, water resources. The Environmental Performance Index includes a ranking of countries for assessing the impact of the environment on human health and natural resource management (Table 2).

**Table 2.** Positions of Ukraine and some countries of the world according to the Environmental Performance Index for 2014-2020

| Year                        | 2014                        |                  | 2016                        |                  | 2018                         |                  | 2020                         |                  |
|-----------------------------|-----------------------------|------------------|-----------------------------|------------------|------------------------------|------------------|------------------------------|------------------|
| Index components            | 20 indicators, 9 categories |                  | 20 indicators, 9 categories |                  | 24 indicators, 10 categories |                  | 32 indicators, 11 categories |                  |
| Country                     | place                       | Rating indicator | place                       | Rating indicator | place                        | Rating indicator | place                        | Rating indicator |
| <b>Countries-leaders</b>    |                             |                  |                             |                  |                              |                  |                              |                  |
| Denmark                     | 13                          | 76.92            | 4                           | 89.21            | 3                            | 81.6             | 1                            | 82.5             |
| Luxembourg                  | 2                           | 83.29            | 20                          | 86.58            | 7                            | 79.12            | 2                            | 82.3             |
| Switzerland                 | 1                           | 87.67            | 16                          | 86.93            | 1                            | 87.42            | 3                            | 81.5             |
| Great Britain               | 12                          | 77.35            | 12                          | 87.38            | 6                            | 79.89            | 4                            | 81.3             |
| France                      | 27                          | 71.05            | 10                          | 88.2             | 2                            | 83.95            | 5                            | 80.0             |
| Finland                     | 18                          | 75.32            | 1                           | 90.68            | 10                           | 78.64            | 7                            | 78.9             |
| Sweden                      | 9                           | 78.09            | 3                           | 90.43            | 5                            | 80.51            | 8                            | 78.7             |
| Iceland                     | 14                          | 76.5             | 2                           | 90.51            | 11                           | 78.57            | 17                           | 72.3             |
| Slovenia                    | 15                          | 76.43            | 5                           | 88.98            | 34                           | 67.57            | 18                           | 72               |
| Australia                   | 3                           | 82.4             | 13                          | 87.22            | 21                           | 74.12            | 13                           | 74.9             |
| Singapore                   | 4                           | 81.78            | 14                          | 87.04            | 49                           | 64.23            | 39                           | 58.1             |
| Czech Republic              | 5                           | 81.47            | 27                          | 84.67            | 33                           | 67.68            | 20                           | 71               |
| <b>Positions of Ukraine</b> |                             |                  |                             |                  |                              |                  |                              |                  |
| Zimbabwe                    | 94                          | 49.5             | 129                         | 59.25            | 149                          | 43.41            | 123                          | 37               |
| Venezuela                   | 57                          | 57.8             | 56                          | 76.23            | 51                           | 63.89            | 59                           | 50.3             |
| Argentina                   | 93                          | 49.55            | 43                          | 79.84            | 74                           | 59.3             | 54                           | 52.2             |
| Ukraine                     | 95                          | 49.01            | 44                          | 79.69            | 109                          | 52.87            | 60                           | 49.5             |
| Uruguay                     | 70                          | 53.61            | 65                          | 73.98            | 47                           | 64.65            | 61                           | 49.1             |
| Antigua and Barbuda         | 96                          | 48.89            | 122                         | 62.55            | 76                           | 59.18            |                              | 48.5             |
| Cuba                        | 64                          | 55.07            | 45                          | 79.04            | 55                           | 63.42            | 64                           | 48.4             |
| Turkey                      | 66                          | 54.91            | 99                          | 67.68            | 108                          | 52.96            | 99                           | 42.6             |
| Guatemala                   | 98                          | 48.06            | 89                          | 69.64            | 110                          | 52.33            | 149                          | 31.8             |

Source: based on the [24]

The index is evaluated on a scale of 0-100 points, the higher the value of which is the best. According to research by Yale and Columbia Universities, the first place in the 2020 Environmental Performance Index was taken by Denmark, which has held a stable position among leaders since 2016. Luxembourg took second place, and Switzerland dropped to third, despite leading positions in 2014 and 2018. European countries continue to dominate the top ten among the most successful countries in terms of environmental efficiency, the UK and France are in the top five. Compared to 2018, Ukraine rose by 49 steps and took 60th place, despite changes in the methodology of calculating EPI and adding indicators. Neighbors are Venezuela and Uruguay (in 2014 – Zimbabwe and Antigua and Barbuda, in 2016 – Argentina and Cuba, in 2018 – Turkey and Guatemala). Ukraine loses to the average assessments of developed EU countries in most components of the Environmental Performance Index. This year, the EPI of Ukraine amounted to 49.5 points. Moreover, the lowest values were given to the indicators assessing Fisheries (12.4), Water Resources (14.1), and the best value (88.4) was assigned to Ukraine on the indicator Agriculture. Ukraine has recently progressed on most EPI indicators.

To obtain a generalized indicator of investment attractiveness of Ukraine on the basis of the considered international indices it is proposed to determine the General index of investment attractiveness of countries as the average value of indices (Ease of Doing Business Index, The Global Competitiveness Index, EBA Investment Attractiveness Index, Environmental Performance Index).

According to the proposed method, the aggregate indicator of the state of the business environment of the country (1) is calculated by the formula:

$$I_{iac} = \frac{1}{n} \sum_{i=1}^n \frac{I_n}{I_{nmax}} \quad (1)$$

$I_{iac}$  - General index of investment attractiveness of the country;  $n$  - the number of components used to assess,  $In$  - rating number by index;  $In_{max}$  - the maximum value of the index by rating number.

The results of the assessment of the investment attractiveness of Ukraine are given in *Table 3*.

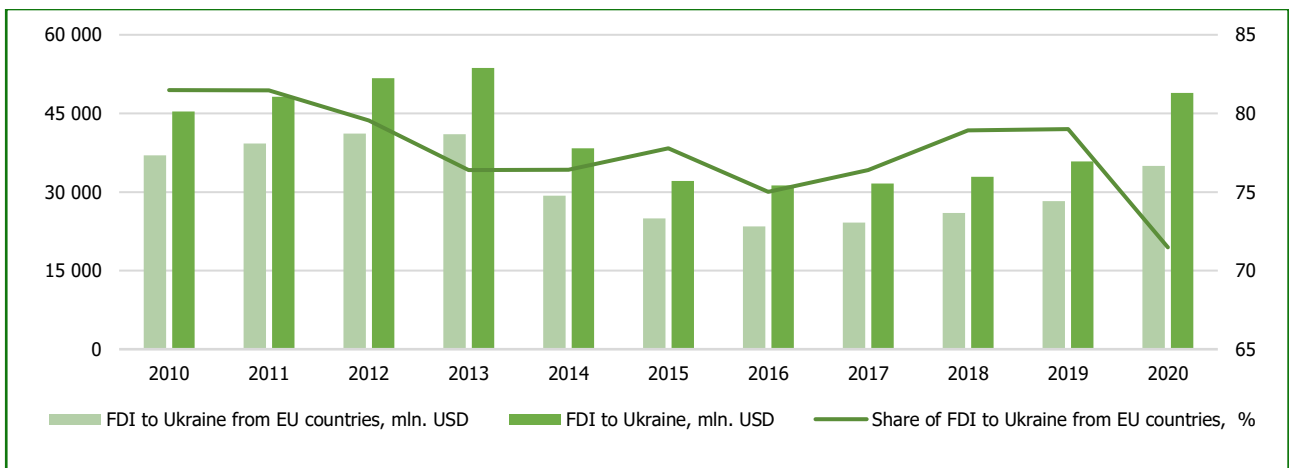
**Table 3.** The results of the assessment of investment attractiveness of Ukraine

| Indicator   | Value |      |      |      |      |      |      |
|---|-------|------|------|------|------|------|------|
|   | 2014  | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| General index of investment attractiveness of the country | 0.51  | 0.55 | 0.63 | 0.65 | 0.61 | 0.59 | 0.41 |

The general index of investment attractiveness of Ukraine shows the improvement of the investment climate in 2016-2017 and its deterioration in 2018-2020, as a result of which Ukraine remains in the zone of risky investment.

Economic growth is extremely important for Ukraine and its regions. Given the limited domestic sources of funding is of particular importance to attract foreign investment, which contribute to the accelerated development of Ukraine's economy. However, rapid economic development leads to increased resource use and environmental impact. From this point of view, FDI, as the most important driving force of economic development, can also influence environmentally oriented activities in certain regions.

To determine the general trends, consider the total FDI to Ukraine and FDI to Ukraine from EU countries for 2010-2020 (*Figure 1*).



**Figure 1.** Dynamics of FDI inflows to Ukraine for 2010-2020

Source: the authors calculated based on the [25]

Over the past ten years, there has been an unstable dynamic of foreign direct investment in the country's economy.

Total FDI in Ukraine tended to increase during 2010-2014, decrease in 2015, and increase during 2016-2020. FDI to Ukraine from the EU countries has similar trends, which can be divided into three stages: Phase I - 2010-2013 - relatively stable level, Phase II - 2014-2015 - rapid decline, Phase III - 2017-2020 - moderate growth.

A significant differentiation of FDI inflows to the regions of Ukraine is explained by their economic development, the largest volume comes to industrialized regions (Kyiv, Dnipro, Donetsk, Odesa, Poltava), which receive 75% of all foreign investment. This is confirmed by the presence of a strong correlation between FDI in the regions of Ukraine and the volume of production in the regions (*Table 4*).

When studying the investment attractiveness of the regions we must take into account their features, so we offer a classification of regions by volume of production. In this paper, a connection within a group of algorithms using a quadratic Euclidean distance is used. The results of the analysis obtained can be explained as follows: there are two regions in which the volume of production is 51%: Kyiv, and Dnipro. These regions are industrialized and their level can be classified as very high level. The high level of industrial development includes Donetsk, Kyiv, Lviv, Odesa, Kharkiv, and the average level - Zaporizhzhya and Poltava. The rest of the regions can be attributed to the low level, which includes regions whose

priority branch of production is agriculture: Vinnytsia, Volyn, Zhytomyr, Zakarpattia, Ivano-Frankivsk, Kropyvnytskyi, Luhansk, Mykolaiv, Rivne, Sumy, Ternopil, Kherson, Khmelnytskyi, Cherkasy, Chernivtsi, Chernihiv.

**Table 4.** Results of correlation analysis of FDI in the regions of Ukraine and the volume of production in the regions

| Indicator         | Year |      |      |      |      |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|------|------|------|------|------|
|                   | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Production volume | 0.96 | 0.94 | 0.94 | 0.96 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |

As Ukrainian regions are highly diversified in terms of their economic structure, and concentrations of enterprises that are particularly harmful to the environment, further research concerns groups of enterprises operating in individual regions.

An important condition for achieving the goals of sustainable development of countries, regions, and economic entities is the coordination of tasks of financial, economic, and environmentally oriented activities, which is in line with the provisions of EU investment policy.

The activity of industrial enterprises in the regions is connected with the release of pollutants into the air, waste generation. The most important goal of environmentally oriented activities in the field of environmental protection is to reduce emissions of pollutants into the atmosphere, reduce waste and increase the substances to be disposed of. For this reason, changes in the level of emissions of pollutants, carbon dioxide, waste generation, and waste disposal in some regions of Ukraine were studied.

The analysis of the descriptive statistics presented in *Table 5* shows that the upper limit of the typical range of variability (Lmax) of air pollutant emissions decreased in 2015 compared to 2010, and decreased in 2020 compared to 2015. The change was noticeable in the case of carbon dioxide emissions, as the upper emission threshold in 2020 decreased compared to 2015 and 2010. Waste generation in 2020 in the regions was lower than the upper limit of the typical range of variability since 2010, the level was exceeded only in two regions. Waste disposal by region decreased in 2015 compared to 2010 by more than 50% and exceeded the upper limit of standard values in 6 regions. This is a negative trend. In 2020, these indicators improved slightly, but indicate the need to continue modernization for waste disposal.

**Table 5.** Descriptive statistics for the Air Emission total, Carbon dioxide emissions, Waste generation, Utilization of wastes by regions

| Variable                      | Mean    | Median | Q1     | Q3     | Lmin    | Lmax    | K |
|-------------------------------|---------|--------|--------|--------|---------|---------|---|
| Air emissions total 2010      | 163.8   | 31.7   | 18.4   | 113.2  | -123.8  | 255.4   | 3 |
| Air emissions total 2010      | 114.3   | 26.7   | 10.2   | 102.4  | -128.1  | 240.7   | 2 |
| Air emissions total 2020      | 89.5    | 25.5   | 11.2   | 76.0   | -86.0   | 173.2   | 2 |
| Carbon dioxide emissions 2010 | 6532.6  | 2205.4 | 840.5  | 7162.9 | -8643.1 | 16646.5 | 2 |
| Carbon dioxide emissions 2015 | 5557.3  | 2662.2 | 1012.1 | 5365.8 | -5518.5 | 11896.4 | 3 |
| Carbon dioxide emissions 2020 | 4363.2  | 2071.7 | 848.8  | 4249.5 | -4252.3 | 9350.6  | 4 |
| Waste generation 2010         | 16902.0 | 1568.9 | 748.8  | 3529.0 | -3421.5 | 7699.3  | 1 |
| Waste generation 2015         | 12490.7 | 1610.3 | 808.9  | 2548.4 | -1800.4 | 5157.7  | 1 |
| Waste generation 2020         | 18494.9 | 886.2  | 456.2  | 2502.1 | -2612.7 | 5571.0  | 2 |
| Utilization of wastes 2010    | 5819.2  | 338.8  | 83.2   | 1296.9 | -1737.4 | 3117.5  | 4 |
| Utilization of wastes 2015    | 3698.5  | 187.9  | 79.6   | 575.4  | -664.1  | 1319.1  | 6 |
| Utilization of wastes 2020    | 4021.0  | 88.3   | 35.1   | 409.1  | -525.9  | 970.1   | 4 |

Note: Lmin and Lmax - the lower and upper limits of the typical range of the variation; K - the number of regions exceeding the Lmax level.  
Source: the authors calculated based on the [26]

Achieving the goal of sustainable development of economic entities, and maintaining favorable trends to improve the environmental situation in the regions indicate the need to increase investment attractiveness.

When assessing the investment attractiveness of the region, the difference between the investment attractiveness of the national economy and individual regions is taken into account; the specifics of investment attractiveness of industries in the region, which is determined by the potential opportunities and risks of investors, investment activity of enterprises.

The method of assessing the investment attractiveness of the regions involves the implementation of the following stages:

1. Formation of a set of indicators that characterize the investment attractiveness of the regions, taking into account the financial, economic and environmental components. Potential opportunities for investment activities in the region should be assessed on the basis of generalized indicators of industrial production, capital investment, rates of accumulation of industrial enterprises, and profitability of operating activities. Investment activity of the territory is characterized by the growth rate of foreign direct investment, innovation activity of economic entities, growth rate of innovation costs of industrial enterprises, capital investment index for environmental protection, waste disposal rate, index of Air Emissions total. The risks of investing in the region are characterized by the share of profitable industrial enterprises.
2. Selection of parameters of standardization (rationing) of initial indicators. The recommended (reference) values were used for rationing, which allows determining the extent to which the region has approached the achievement of the desired indicators in terms of ensuring investment attractiveness. The priority of choosing the recommended values is the average industry values, except when such a value is significantly underestimated due to the crisis in the economy. In this case, the industry values in the last pre-crisis years are chosen. The system of indicators for assessing the investment attractiveness of the industry in the regions of Ukraine and the choice of reference values for rationing are given in *Table 6*.

**Table 6.** System of indicators for assessing the investment attractiveness of the industry in the regions of Ukraine

| Indicator  | Industry average value |       |        |       | Recommended value |
|--|------------------------|-------|--------|-------|-------------------|
|  | 2017                   | 2018  | 2019   | 2020  |                   |
| Industrial production index, %                                   | 101.1                  | 103.0 | 99.5   | 104.5 | 103               |
| Share of profitable industrial enterprises, %                    | 72.4                   | 73.9  | 73.6   | 64.5  | 75                |
| Index of capital investment of industry, %                       | 121.8                  | 139.1 | 127.2  | 56.4  | 139.1             |
| Accumulation rate of industrial enterprises, %                   | 6.7                    | 8.0   | 10.2   | 11.6  | 10.2              |
| The growth rate of foreign direct investment, %                  | 101.2                  | 104.1 | 108.8  | 136.7 | 108.8             |
| Profitability of operating activities, %                         | 6.8                    | 6.3   | 5.5    | 3.9   | 6.8               |
| Growth rate of innovatively active industrial enterprises, %     | 105.0                  | 102.4 | 100.6  | 106.3 | 105.0             |
| The growth rate of innovation costs of industrial enterprises, % | 133.6                  | 133.6 | 116.76 | 101.3 | 133.6             |
| Index of capital investments in environmental protection, %      | 82.3                   | 91.4  | 161.4  | 81.4  | 161.4             |
| Waste disposal rate  | 0.50                   | 0.44  | 0.46   | 0.54  | 0.50              |
| Index of air emissions total                                     | 83.98                  | 97.04 | 98.05  | 89.5  | 83.98             |

Source: based on the [25]

Compiled and calculated on the basis.

Normalization of indicators for assessing the investment attractiveness of regions is carried out according to the formula: for stimulants (2)

$$q_j = \frac{x_j}{x_{rec}} \quad (2)$$

for destimulants (3)

$$q_j = \frac{x_{jrec}}{x_j} \quad (3)$$

Where  $q_j$  – a normalized value of the indicator,  $x_j$  – the actual value of the indicator,  $x_{rec}$  – recommended (reference) value of the indicator.

3. The calculation of the integrated indicator of investment attractiveness of the regions is carried out at the arithmetic mean. The results of calculations and the rating of the regions of Ukraine in terms of investment attractiveness are given in *Table 7*.

**Table 7.** Assessment of investment attractiveness of the regions of Ukraine

| Region              | Investment attractiveness |      |      |      | Group rating |
|---------------------|---------------------------|------|------|------|--------------|
|                     | Integrated assessment     |      |      |      |              |
|                     | 2017                      | 2018 | 2019 | 2020 |              |
| The very high level |                           |      |      |      |              |
| City of Kyiv        | 1.00                      | 1.15 | 1.17 | 1.03 | 2            |
| Dnipro              | 1.07                      | 0.92 | 1.04 | 1.09 | 1            |
| The high level      |                           |      |      |      |              |
| Donetsk             | 0.82                      | 0.94 | 0.91 | 0.97 | 5            |
| Kyiv                | 0.98                      | 1.21 | 1.04 | 1.03 | 2            |
| Lviv                | 0.87                      | 0.77 | 0.72 | 1.07 | 1            |
| Odesa               | 1.07                      | 0.75 | 0.76 | 1.03 | 3            |
| Kharkiv             | 1.02                      | 0.78 | 0.68 | 1.03 | 4            |
| The average level   |                           |      |      |      |              |
| Zaporizhzhia        | 0.98                      | 0.99 | 0.75 | 1.07 | 1            |
| Poltava             | 0.90                      | 0.86 | 1.29 | 1.05 | 2            |
| The low level       |                           |      |      |      |              |
| Vinnitsia           | 0.80                      | 1.14 | 0.84 | 1.13 | 4            |
| Volyn               | 0.88                      | 0.80 | 0.97 | 1.07 | 8            |
| Zhytomyr            | 1.00                      | 1.53 | 0.98 | 1.18 | 2            |
| Zakarpattia         | 0.86                      | 0.86 | 0.73 | 1.04 | 10           |
| Ivano-Frankivsk     | 1.01                      | 0.88 | 0.79 | 1.1  | 5            |
| Kropyvnytskyi       | 0.80                      | 0.81 | 0.83 | 1.16 | 3            |
| Luhansk             | 0.08                      | 0.72 | 1.15 | 1.01 | 13           |
| Mykolaiv            | 0.79                      | 0.75 | 1.13 | 0.98 | 12           |
| Rivne               | 0.68                      | 0.74 | 1.31 | 1.06 | 9            |
| Sumy                | 0.86                      | 0.78 | 0.90 | 0.98 | 14           |
| Ternopil            | 0.97                      | 1.01 | 0.97 | 0.94 | 15           |
| Kherson             | 0.99                      | 1.09 | 1.11 | 1.08 | 7            |
| Khmelnyskyi         | 0.73                      | 0.86 | 1.01 | 1.09 | 6            |
| Cherkasy            | 0.88                      | 1.15 | 0.79 | 1.01 | 11           |
| Chernivtsi          | 0.69                      | 0.71 | 0.60 | 1.01 | 12           |
| Chernihiv           | 0.91                      | 0.94 | 0.67 | 1.78 | 1            |

In 2020, the most attractive for investors were Chernihiv, Zaporizhia, Lviv and Dnipro regions, and Kyiv.

It should be noted that the integrated indicator of investment attractiveness of regions allows us to outline the positive and negative trends that affect the investment attractiveness of regions and businesses.

The proposed approach to assessing the investment attractiveness in the country and regions in terms of environmental and economic imperatives takes into account financial factors and factors of environmentally oriented activities at the country, region, allows to characterize investment attractiveness in dynamics, to reduce information asymmetry for investors, and to identify targets and opportunities for attracting FDI.

## CONCLUSIONS

Sustainable development, which takes into account a combination of economic, environmental, and innovation factors, is influenced by FDI. Over the last ten years, there has been an unstable trend in the inflow of foreign direct investment in general and from EU countries into Ukraine's economy. FDI to Ukraine from the EU is conditionally divided into three stages: 2010-2013 - a relatively stable level, 2014-2016 - a sharp decline, 2017-2020 - a moderate increase. To implement

Ukraine's international obligations in the field of environmental protection, enterprises need to bring their activities to high European standards, which requires significant costs. The successes and shortcomings of countries in the environmental sphere at the global level are assessed on the basis of the Environmental Efficiency Index, in 2020 Ukraine took 60th place (49.5 points). Ukraine loses to the average scores of developed EU countries in most components of the Environmental Efficiency Index, but Ukraine has recently progressed in most EPI indicators, the best value (88.4) in 2019 was assigned to Ukraine in terms of the "growth rate of nitrogen oxides". The authors proved the need for research and determination of the investment attractiveness of Ukraine in terms of environmental and economic imperatives, which requires inclusion in the assessment of the environmental component. To assess Ukraine's investment attractiveness, the author's methodology proposes to use the Ease of Doing Business Index, the Global Competitiveness Index, the EBA Investment Attractiveness Index, and the Environmental Performance Index.

Mobilization of investment resources from all possible sources, including foreign investment, will contribute to the sustainable development of the regions. For this reason, an integrated indicator that combines the results of financial, economic and environmentally oriented activities, and the attraction of FDI was adopted as a basis for grouping indicators of investment attractiveness of regions. The subject of the study was the regions in Ukraine - the main administrative unit of the country. Based on environmental indicators, it was possible to identify regions in which enterprises were able to reduce pollutants and waste in the period 2010-2020. The results of the assessment of the investment attractiveness of the regions allowed to determine their rating.

Taking into account the dynamically changing economic conditions, the basis for future research will be the social factors and consequences of the COVID-19 pandemic, which affect the investment attractiveness of the country and regions.

## REFERENCES / ЛІТЕРАТУРА

1. Prychepa, I., Smetaniuk, O. & Ratushnyak, O. (2020). Investytsiina polityka Yevropeiskoho Soiuzu v mezhakh zovnishnoekonomichnykh zv'iazkiv z Ukrainoiu [European union investment policy in the context of foreign economic relations with Ukraine]. *Efektivna ekonomika – Efektivna ekonomika*, 5. Retrieved from: <http://www.economy.nayka.com.ua/?op=1&z=7874> [in Ukrainian].
2. Kurtishi-Kastrati, S. (2013). The Effects of Foreign Direct Investments for Host Country's Economy. *European Journal of Interdisciplinary Studies*. 5.
3. Bayar, Y. & Gavriletea, M.D. (2018). Foreign Direct Investment Inflows and Financial Development in Central and Eastern European Union Countries: A Panel Cointegration and Causality. *International Journal of Financial Studies*. 6. 2:55. <https://doi.org/10.3390/ijfs6020055>
4. Dunning, J.H. (1988). *Explaining International Production*. Unwin Hyman, London.
5. Dunning, J.H. (1993). *Multinational Enterprises and the Global Economy*. Addison Wesley, New York.
6. Dunning, J.H. (2000). The eclectic paradigm as an envelope for economic and business theories of MNE activity. *International Business Review*. 9. 2. 163-190.
7. Hayakawa, K., Kimura, F., & Lee, H. H. (2013). How does country risk matter for foreign direct investment? *The Developing Economies*. 51(1). 60–78.
8. Asongu, S., Akpan, U. S. & Isihak, S. R. (2018). Determinants of foreign direct investment in fast-growing economies: Evidence from the BRICS and MINT countries. *Financial Innovation*. 4. 26. <https://doi.org/10.1186/s40854-018-0114-0>.
9. Shao, Y. (2018). Does FDI affect carbon intensity? New evidence from dynamic panel analysis. *International Journal of Climate Change Strategies and Management*. 10. 1. 27–42. <https://doi.org/10.1108/IJCCSM-03-2017-0062>
10. Malko, K.S. (2015). Investytsiinyi klimat ta investytsiina pryvablyvist Ukrainy: faktory yikh formuvannya v suchasnykh umovakh [Investment climate and investment attractiveness of Ukraine: factors of their formation in modern conditions]. *Actual problems of economy – Aktualni problemy ekonomiky*. 3. 100 – 105 [in Ukrainian].
11. Venhurenko, T. H. & Plahotniuk, V. V. (2020). Analiz investytsiinoi pryvablyvosti Ukrainy [Analyzing the Investment Attractiveness of Ukraine]. *Biznes Inform – Business Inform*. 4(507). 103-111. <https://doi.org/10.32983/2222-4459-2020-4-103-111> [in Ukrainian].
12. Raszkowski, A. (2013), "Selected aspects of investment attractiveness of regions". *Journal ACC*. 2. 116–126.
13. Kostyrko, L.A, Kostyrko, R.O., Madiyarova, E.S, & Sereda, O.O. (2018). *Kompleksnyi analiz*

- investytsiino pryvablyvykh pidpryiemstv u konteksti finansovoho zabezpechennia rozvytku pidpryiemstva. [Comprehensive analysis of the investment attractive enterprises in the context of financial provision of enterprise development]. Finansovo-kredytna diialnist: problemy teorii ta praktyky – Financial and credit activity: problems of theory and practice. 2. 198–207. <http://doi.org/10.18371/fcaptop.v2i25.136555> [in Ukrainian].
14. Simionescu, M., Păuna, C.B. & Niculescu, M-DV. (2021). The Relationship between Economic Growth and Pollution in Some New European Union Member States: A Dynamic Panel ARDL Approach. *Energies*. 14(9):2363. <http://doi.org/10.3390/en14092363>
  15. Herbst, K.C., Hannah, S.T. & Allan, D. (2013). Advertisement Disclaimer Speed and Corporate Social Responsibility: “Costs” to Consumer Comprehension and Effects on Brand Trust and Purchase Intention. *Journal of Business Ethics*. 117. 2. 297–311.
  16. Lundgren, T. & Zhou, W. (2017). Firm performance and the role of environmental management. *Journal Environmental Management*. 203. 330–341.
  17. Alipour, M., Ghanbari, M., Jamshidinavid, B. & Taherabadi, A. (2019). Does board independence moderate the relationship between environmental disclosure quality and performance? Evidence from static and dynamic panel data. *Corporate Governance International Journal of Business in Society*. 19. 580–610.
  18. Włodarczyk, A. & Mesjasz-Lech, A. (2021). Ecological and Economic Context of Managing Enterprises That Are Particularly Harmful to the Environment and the Well-Being of Society. *Energies*. 14(10):2884. <https://doi.org/10.3390/en14102884>
  19. World Bank (2020). Doing Business Data. Retrieved December 13, 2021, from <https://www.doingbusiness.org/en/data>
  20. World Economic Forum (2020). Report Global Competitiveness 2018. Retrieved December 21, 2021, from at: <http://www3.weforum.org/docs/GCR2018/05FullReport/TheGlobalCompetitivenessReport2018.pdf>
  21. European Business Association (2020), Official website the European Business Association. URL: <https://eba.com.ua>
  22. Department of Electronic Communications Development (2021). Competitiveness of Ukraine 2020-2021. Information review and situational analysis. Kyiv. [in Ukrainian].
  23. The EPI Team (2020). Environmental Performance Index. Retrieved December 21, 2021, from at: <https://epi.yale.edu/epi-results/2020/component/epi>
  24. Socioeconomic Data and Applications Center (2021). Environmental Performance Index, 2020. Retrieved December 21, 2021, from at: <https://sedac.ciesin.columbia.edu/data/collection/epi/sets/browse>
  25. Derzhavna sluzhba statystyky Ukrainy. Ofitsiinyi sait [Official site]. Retrieved December 22, 2021, from at: <http://www.ukrstat.gov.ua> [in Ukrainian].
  26. State Statistic Service of Ukraine (2021). Environment of Ukraine 2020. Statistical yearbook. Kyiv. URL: [http://www.ukrstat.gov.ua/druk/publicat/kat\\_u/2021/zb/11/Dovk\\_20.pdf](http://www.ukrstat.gov.ua/druk/publicat/kat_u/2021/zb/11/Dovk_20.pdf)

*Костирко Л. А., Серебряк К. І., Серета О. О., Зайцева Л. О.*

## **ІНВЕСТИЦІЙНА ПРИВАБЛИВІСТЬ УКРАЇНИ ЯК ДОМІНАНТА ЗАЛУЧЕННЯ ПРЯМИХ ІНОЗЕМНИХ ІНВЕСТИЦІЙ З ЄВРОПЕЙСЬКОГО ПРОСТОРУ: АНАЛІЗ, ОЦІНКА**

Метою цього дослідження є оцінка інвестиційної привабливості країни й регіонів як чинників, що мають вирішальне значення для залучення прямих іноземних інвестицій з європейського простору. Прямі іноземні інвестиції як джерело приросту капіталу забезпечують найбільш ефективну інтеграцію національної економіки в європейську та сприяють залученню передових технологій і впровадженню сучасних методів ведення бізнесу. Протягом останніх десяти років спостерігається нестабільна динаміка надходження прямих іноземних інвестицій узагалі та з країн ЄС в економіку країни. Прямі іноземні інвестиції в Україну з країн ЄС умовно розмежовано на три етапи: 2010-2013 роки – відносно стабільний рівень, 2014-2016 роки – стрімке падіння, 2017-2020 роки – помірне зростання. За результатами дослідження визначено передумови залучення прямих іноземних інвестицій в економіку з метою забезпечення сталого розвитку регіонів.

Спираючись на результати міжнародних рейтингових оцінок, доведено необхідність дослідження та визначення інвестиційної привабливості України в умовах еколого-економічних імперативів. Особливу увагу приділено визна-

ченню позиції України за Індексом екологічної ефективності (EPI) в порівнянні з країнами світу та Європи. Запропонована методологія визначення інвестиційної привабливості країни, що передбачає формування Загального індексу інвестиційної привабливості країни на основі міжнародних індексів легкості ведення бізнесу (Ease of Doing Business Index), глобальної конкурентоспроможності (The Global Competitiveness Index), інвестиційної привабливості ЄБА (EBA Investment Attractiveness Index), екологічної ефективності (Environmental Performance Index). Значна диференціація надходження ПІІ до регіонів України пояснюється їхнім економічним розвитком, найбільший обсяг надходить у промислово розвинуті регіони. Було виявлено значну кореляцію між ПІІ в українські регіони та обсягом продукції в регіонах.

Визначено детермінанти привабливості регіонів, які впливають на прийняття рішень інвесторів щодо вкладання інвестицій. Запропоновано методичний підхід до оцінки інвестиційної привабливості регіонів України на узагальнених показниках фінансово-економічного та еколого-орієнтованого спрямування. Проведена оцінка та здійснено динамічний аналіз інвестиційної привабливості регіонів за запропонованою методикою, що дозволило визначити їхній рейтинг за рівнем інвестиційної привабливості.

**Ключові слова:** інвестиційна привабливість, екологічно орієнтована діяльність, сталий розвиток, прямі іноземні інвестиції, екологічно-економічні імперативи

**JEL Класифікація:** C13, F21, F36, G38, R11