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INFLUENCE OF FDI ON STRUCTURAL CHANGES IN THE ECONOMY IN THE CONTEXT OF PROSPECTS FOR POST-WAR RECOVERY OF UKRAINE

The recovery of the national economy, which is undergoing great destruction as a result of full-scale Russian aggression in Ukraine, will require attracting not only domestic but also foreign investments. The post-war experience of various countries shows that the inflow of foreign capital contributed to meeting the needs for investment resources for the reconstruction of the economy and its structural modernization. The recent history of the rapid rise of newly industrialized countries also demonstrates that foreign investments enable the transformation of the structure of the recipient economy, and its progress towards higher levels of industrial development.

The purpose of this study is to conduct an analysis of the accumulation and sectoral distribution of FDI in the Ukrainian economy, to assess the effects of FDI to change the structure and dynamics of economic growth, and to identify approaches to attracting foreign investment in the context of prospects for post-war recovery and economic restructuring.

The article examines the accumulation of FDI in the Ukrainian economy in historical retrospect, analyzes the distribution of their reserves among the sectors and subsectors, as well as their geographical origin. The author assesses the depth of penetration of the FDI into the economy in general and into the technological sectors within the processing industry, in particular, and reveals various contradictory effects created by foreign investments for the development of the national economy, technological progress, and economic security.

Using regression modeling, the article investigates the FDI as a factor capable of contributing to the transformation of Ukraine's economy, and changing the structural distribution of added value and employment between sectors. The simulation results confirm that the

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accumulation of FDI really affects the dynamics of GVA production and employment in economic sectors, that is, it causes structural shifts in the economy. At the same time, sectoral assessments reveal the mixed effectiveness of this factor in terms of the strength and direction of changes in the structure of the economy.

Keywords: *foreign direct investments, structural changes in the economy, employment structure, industrial sector of the economy, manufacturing, technological structure of industry, post-war recovery of the economy*

Structural progress, accompanied by productivity gains, is essential for economic growth. The main drivers of structural progress are recognized as innovation, capital investment and, more recently, foreign direct investment (FDI). The latter will play an active, and possibly leading, role in the post-war reconstruction and structural modernization of Ukraine's economy, as discussed by the government and academic circles [1-3]. The scale of the destruction suffered by the Ukrainian economy as a result of Russian aggression is so great that public resources will not be sufficient for full recovery, nor will be sufficient the expected Western financial assistance [4]. That is why Ukraine will definitely need private domestic and foreign investment.

It should be borne in mind that there is an objective need to attract foreign capital for the expected recovery of Ukraine's economy. Indeed, the war depletes the resources of a country at war and thus complicates the accumulation of domestic investment potential. The low level of Ukraine's national savings led to a low rate of capital accumulation even in relatively peaceful times. Thus, in 2021, savings amounted to 12.5% of GDP [5], and gross fixed capital formation was 12.4% of GDP [6], which is several times lower than the global average and insufficient to invest in even the simple reproduction of the war-torn economy, much less its modernization. The NBU's tight monetary policy makes it impossible to attract bank loans for business investment needs (after the key policy rate was raised to 25% in June 2022, commercial bank lending rates start at 20% per annum [7]). The depletion of the banking system due to the immobilization of the vast majority of banks' assets to finance public debt creates a shortage of liquidity in the market, worsening the conditions for raising capital by businesses [8]. The abnormally high yields on government bonds encourage Ukrainian banks to focus on servicing public debt and increasing their portfolio of investments in domestic government bonds rather than performing the classic functions of financial intermediation [9]. This suppresses market mechanisms for transforming savings into investments and depletes financial resources for business lending. The growth in overdue loans (whose share in the banks' loan portfolio can reach 60% [10]), driven by the deterioration in the ability of companies and individuals to service their debts (since 24 February 2022, hundreds of companies have lost their facilities and millions of Ukrainians have lost their earnings), is increasingly limiting the ability of Ukrainian banks to lend to the future national economic recovery and raising the cost of loans. The large budget deficit, which amounted to

19% of GDP in 2022 [11], is now weakening the government's investment capacity. Large-scale capital outflows from the private sector in 2022 due to extreme military risks, as well as the actual underdevelopment of the national stock market, make it difficult to mobilize domestic investment resources. Therefore, foreign capital participation is essential. Moreover, historical experience convincingly proves the importance of foreign investment for post-war recovery and socio-economic progress in countries around the world.

The war in Ukraine is still ongoing and is worsening the condition of this country's economy, but despite this, plans are already being prepared for its future recovery, and sources of funds are being sought to rebuild its potential and modernize its structure. It will certainly not be possible to implement such plans without large-scale foreign investment. Thus, the topic of this study is relevant and topical.

The role of FDI in post-war economic recovery and restructuring: a literature review

Ukraine had no experience of attracting foreign investment to recover its economy after the Second World War, as the Soviet political system of the time did not allow that. Instead, Western European countries and Japan rebuilt their economies with the help of foreign capital, which made it possible to bridge the gap between low savings (in the context of impoverished population, income poverty and unemployment) and significant investment needs. The initial prerequisites for capital inflows were the guarantees of protection of private sector investments (including compensation for the loss of investments in case of their expropriation) and the convertibility of investors' profits provided by the US government [12, 13]. In general, this stimulated the mobilization of large amounts of resources for the restoration of war-damaged infrastructure, housing and industries.

In addition, foreign investment contributed to the structural modernization of the economies of these countries, and laid the foundation for their technological leap to higher levels of industrial development [13-15]. In particular, American investment support under the Marshall Plan in 1948-1951 made it possible for Western European countries to increase industrial output by 55% and significantly exceed pre-war levels [13]. Moreover, the resumed growth was sustainable and long-lasting - over the next few decades, Europe experienced a "golden period" of economic recovery.

Even the relatively small amount of foreign investment in Japan's post-war economy enriched this country's production process with new technologies, knowledge and skills, which contributed to the development of highly productive production and employment, and launched a long period of rapid growth (at a rate of over 8% annually in 1953-1973) [16]. There was a radical restructuring of the economy on a technologically intensive basis, transformation of the dominant manufacturing sector from food and light industry to the production of electrical equipment, electronics, and automobiles, with a corresponding increase in the share

of exports of these products. All this strengthened the competitiveness of Japanese goods in global markets.

A significant amount of literature on structural changes associated with increased productivity in individual industries and overall economic growth in one way or another raises the issue of foreign investment [17, 18]. When it comes to developing countries that have demonstrated dynamic growth in recent decades, and newly industrialized countries, an important role of incoming FDI flows in shaping the economic landscape of these countries is particularly noted by authors [19, 20]. The main channels of influence of foreign investment on economic structure include the uneven accumulation of capital in individual industries and sectors, and the introduction of new production technologies, business organization and management, which, according to Schumpeter, triggers the processes of "creative destruction" [21], displacement of old technologies and production structures due to competitive pressure on local companies, increased requirements for human capital development, quality of labor force, as well as changes in business culture, displacement of employment, and the expansion of ties between the local economy and the rest of the world.

Indeed, the factor of foreign investment, primarily in the manufacturing industry, is instrumental in increasing the added value of this sector, redistributing employment in its favor, increasing labor efficiency, and thus changing the structure and growth rates of the whole economy [22, 16]. Studies reveal a wide range of possible direct and indirect effects of FDI on the host country's economy, while they primarily recognize the importance of investment quality rather than investment volume, especially its ability to promote scientific and technological transfer and the ability of local companies to absorb it [23, 24].

The intensive industrialization of developing countries gave rise to unprecedented growth in their economies and was largely driven by foreign investment and the technologies it brought [25-28]. Asian countries (South Korea, Taiwan, China, India, Vietnam, etc.) provide convincing examples of how FDI attraction under conditions of economic openness (liberalization of investment rules, and creation of special economic zones in the host country) contributed to the emergence of a modern industrial sector, absorption of excess labor from agriculture, more productive employment in industry, poverty alleviation, and economic growth [29]. In particular, structural changes and increased efficiency of the Vietnamese economy occurred after the liberalization of trade and investment policy. The large inflow of foreign capital and technologies in the 1990s and 2000s paved the way for the development of modern and traditional industries in this country [30]. FDI inflows, which were concentrated mainly in manufacturing and other industries with high employment potential, were accompanied by a significant redistribution of production and exports in favor of companies with foreign capital. The transfer of labor from the state-owned to private companies, including those with foreign capital, contributed to increased productivity in basic sectors (industry, construction, trade, and hotel and restaurant services) and to overall productivity.

The mechanisms of FDI are triggered by transnational companies (TNCs) that export capital from their country and place it abroad, open subsidiaries with production facilities there, thus causing global structural shifts [22]. Analysis of microdata of Japanese TNCs that invested in setting up subsidiaries in China in the 2000s reveals various peculiarities of the division of labor functions and employment between parent and subsidiary companies. The outline of this division included a reduction in the number of employees in the production units of parent companies, while the number of employees in the units providing services in the field of international business relations and R&D increased. On the other hand, the number of industrial workers increased in the Chinese subsidiaries, where production units were relocated. Obviously, the flow of FDI from the donor country to the host country triggers waves of structural transformations, first between parent and subsidiary companies (due to the distribution of technological functions between them, relocation of production process links and corporate division of labor), which then spread across both economies and change the relationship between their structural components.

The main features of changes in the configuration of a developing economy caused by capital inflows from a developed country are studied on the example of US investments in Mexico's industrial sector [31]. In particular, the subsidiaries of American companies take over the production of intermediate products and assembly operations, and massively employ low- and medium-skilled workers, while complex works requiring highly skilled workers remain with the parent companies. Consequently, changes in the employment structure of the recipient country of foreign investment mainly affect the low- and medium-skilled workforce. In contrast, in the investor country, there is structural unemployment among workers in these qualification groups, but there is an increased demand for highly skilled workers. The distribution of functions between parent and subsidiary companies shows that it is the subsidiaries that are entrusted with the production of lower value-added products, while the activities with higher value-added (production of technologically complex products, and performance of intellectually intensive services) are retained by the former. Such a division of functions (by technological complexity, skill level, etc.) scales from individual companies to the level of entire economy, and shapes the structure of the global economy [32].

The ability to adopt technologies created in developed countries was once an important achievement of developing countries, providing many formerly low-skilled agricultural workers with new and more productive jobs [33]. However, modern technologies make ever higher demands on workers' skills, while automation and other forms of innovation are replacing low-skilled labor and reducing the share of wages in value added. Thus, the comparative advantage of low-cost labor will continue to lose importance, while the importance of technology-intensive industries will increase and the geography of their location will change. With the advancement of technologies that release labor from labor-intensive industries, there will be more and more prerequisites for the reverse movement - reshoring of industrial capital and relocation of production to

industrialized countries and the deployment of new labor-saving (robotic) industries [34, 35]. The beneficiaries of these new trends are well-educated and highly skilled workers in developed countries.

The current destabilization of the world order as a result of Russian aggression in Ukraine adds to the arguments in favor of reshoring and relocation, while the disruption of global supply chains due to the pandemic, US-China rivalry, the specific geopolitical positioning of developing countries, and their domestic political issues signal the investors of the risks of asset expropriation [36]. As the world is increasingly divided into blocs and international economic integration is transforming into "fragmented globalization", companies are diversifying their supply chains and moving away from China (as a global factory), changing their trade and investment models [37]. The circumstances force Western investors to review their strategies in these countries, take into account geopolitical risks, and consider decisions to withdraw capital from them [38].

Leading countries are returning to industrial policy, stimulating investment in key sectors in order to improve the structure of their economies and strengthen their competitiveness [39, 32]. In particular, the United States, with the government's support, is attracting investments from Taiwan to restore its semiconductor industry, and is also concerned about the comparative advantages for localized microelectronics production, and therefore funds the development of revolutionary technologies through the Defense Advanced Research Projects Agency, and the National Science Foundation, prepares a network of innovation centers within research universities, companies, etc. [40, 41]. Thus, the role of FDI as a driver of local and global economic restructuring is far from being exhausted; on the contrary, it is being strengthened via the measures within national industrial policy.

At the same time, within the framework of industrial policy, countries are determined to protect economic security, including by introducing protective restrictions on foreign ownership and on investments by their national businesses in knowledge-intensive industries of certain foreign countries. In particular, the United States, in the interests of national food security, seeks to impose a general ban on the lease/possession of agricultural land by any entity from countries designated as "foreign adversaries" [42]. A number of less developed countries realized the need for protective industrial policies only when they were unable to resist predatory forms of foreign investment lending, which trapped them into external debt dependence and undermined their sovereignty [43, 44].

The strategic advantage of the Central and Eastern European countries as recipients of foreign investment that joined the EU in 2004-2013 was the powerful modernization effect of FDI inflows into their economies [45]. Having attracted mostly high-quality investments in terms of their sources of origin, sectoral specialization, and technological characteristics, these countries received highly productive assets and upgraded their production potential to Western standards. In particular, the lion's share of FDI accumulated by Poland and Hungary (over 85%) originated in the EU-15 rather than offshore jurisdictions. The share of such

sources of investment in the Romanian economy is 80%, and in Slovakia - 70% (another 16% comes from the Czech Republic and Korea). Foreign investment in these countries is largely concentrated in the real sector (technologically advanced manufacturing industries), as well as in business services (IT, software development) and logistics. This sectoral allocation of investment contributes to the structural progress of these economies. High-quality FDI helped to create highly productive and export-oriented industries and ensured integration into international production cooperation chains (a good example is the functioning of cross-border automotive production chains that connect several countries - Germany, the Czech Republic, Slovakia [46] and the Ukrainian border regions with the EU). The inflow of FDI into the processing industry of the region's countries improved the composition of their export basket, increased the technological level of goods in it, and increased revenues from foreign trade [47]. Foreign investment is recognized as part of the necessary elements that ensure high productivity of the EU macro-regions' economies in accordance with the strategy of "smart specialization" and will contribute to their restructuring on an innovative basis [48].

Foreign investment inflows are also recognized as a favorable factor for restructuring the economies of host regions [49, 19]. The radicalism of structural changes depends on the industry in which these investments are concentrated and how different they are from the portfolio of local regional activities. A study of dozens of regions in Hungary has found that foreign-invested firms are key agents of structural change, as they cause shifts that are stronger than those produced by national firms [49]. The degree of diversification impact of multinational firms on the local economy differs depending on region type, whether it is an urbanized metropolitan region, a region with a long industrial tradition, or a relatively underdeveloped peripheral region. In particular, the structural impact of FDI is stronger in the regions of the first and third types than in those of the second type. However, the most significant diversification of local activities occurs when a foreign investor builds an entirely new enterprise with a profile unique to the structural landscape of the region's economy. The ability of foreign-invested firms to diversify their portfolio of local activities with new ones is supported by their integration into global value chains and their reliance on the parent companies' own R&D base [31].

The **purpose** of this study is to analyze the processes of FDI accumulation and sectoral distribution in the Ukrainian economy, to assess the effects of FDI on changing the structure and dynamics of economic growth, and to identify approaches to attracting foreign investment in the context of the prospects for post-war economic recovery and restructuring.

FDI in Ukraine's economy: accumulation dynamics and sectoral distribution

The presence of foreign capital in the Ukrainian economy was increasing since the 1990s, which was the period of this country's independence and the beginning of market oriented social and economic reforms. Foreign investors took

an active part in the privatization of public assets and the subsequent redistribution of property.

The dynamics of FDI accumulation was uneven in different periods and depended on the course of reforms, the acceptability of investment climate, etc. Analysis of the data on FDI accumulation in the Ukrainian economy (Figure 1) allows us to distinguish several periods that differ in terms of the dynamics of investment inflows, their capacity and direction. During the first period, which lasted from the early 1990s until 2004, a rapid accumulation of foreign investment took place. The average annual growth rate of FDI stocks was 134% in 1994-2003, and their average increase reached USD 0.7 billion per year. During the subsequent period (2004-2013), FDI accumulation progressed, its average rate seemed to slow down to 122%, but the annual growth of stocks increased to USD 4.8 billion, or 7 times the previous year.

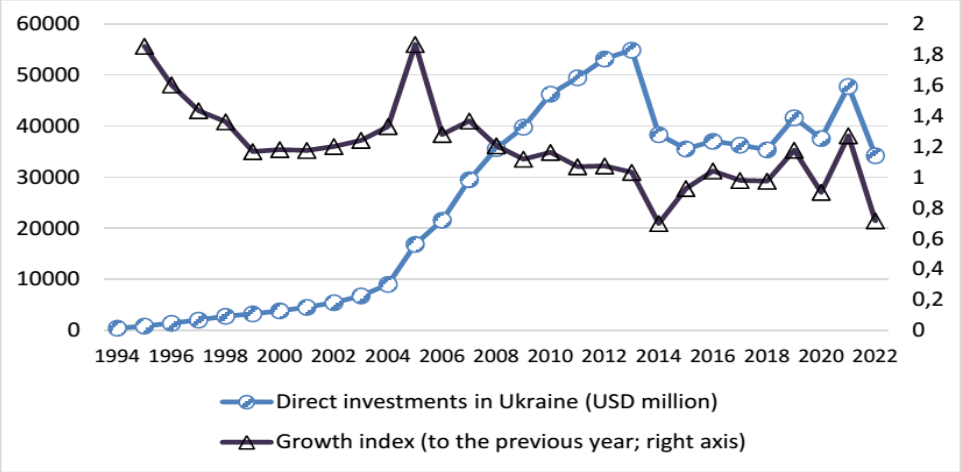

Figure 1. Direct investment (equity capital) in the Ukrainian economy and its growth index in 1994-2022

Source: calculated by the author according to the State Statistics Service of Ukraine (http://www.ukrstat.gov.ua.); NBU https://bank.gov.ua/).

Subsequently, the shocks of the first phase of Russian aggression in Ukraine in 2014 caused long-term political and economic risks for foreign investors, and reduced the country's investment attractiveness, leading to a significant outflow of FDI. After that, the average annual rate of investment accumulation dropped to 98% (2014-2021), meaning that investment stocks dwindled by an average of USD 0.8 billion per year. After the start of the large-scale war - in 2022 - FDI decreased by almost USD 14 billion, or 28% (Figure 1), while GDP dropped by 29%.

The degree of foreign capital involvement in Ukraine's economy remained relatively low. Experts assess the FDI inflows at that period as small and insufficient to meet the needs of economic development and modernization, and the performance in this area is assessed as a failure [50]. The volume of accumulated FDI in Ukraine remained within USD 2 thousand per capita (2021), while in the Czech Republic it was USD 21 thousand, and in Hungary - USD 14

thousand [51]. The penetration rate of foreign investment (accumulated FDI stocks as a GDP percentage) in Ukraine's economy was estimated at 23% of GDP in 2021, while in the global economy it was 49% (2020), in developed countries - 58%, in developing countries - 35%, in EU countries - 63% (2021), including in the Czech Republic - 71%, Estonia - 91%, and Poland - 40% [52, 53].

The inter-sectoral distribution of FDI accumulated in Ukraine's economy demonstrates the investors' selective and variable attitude of different economic activities (Figure 2). The services sector remains dominant in terms of FDI stocks, with its share in the aggregate volume ranging from 53-63-45% in 2009, 2013, and 2021. Investors' main resources are concentrated in financial and insurance activities (11% in 2021); wholesale and retail trade (14%); real estate transactions (10%); professional, scientific, and technical activities (7%, respectively); information and telecommunications (about 6%); and transport, warehousing, postal and courier activities (about 4%).

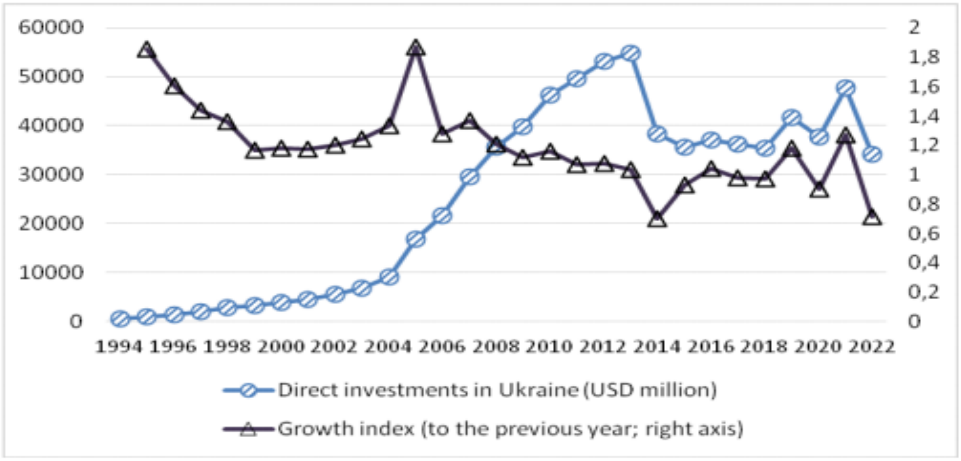

Figure 2. Direct investment (equity capital) in the sectors of Ukraine's economy in 2009-2021, *%*

Source: calculated by the author based on NBU data (https://bank.gov.ua/).

The industrial sector is the next largest in terms of FDI inflows. Its share in the portfolio of external investors was close to 45% in 2009-2021. FDI stocks are distributed across industries, with manufacturing accounting for 23% (2021), mining for 15%, energy for 6%, and construction for 1%. FDI in manufacturing is concentrated mainly in metallurgy (from 19% in 2009 to 8% in 2021) and food production (4 and 7% respectively), in other words, in the traditional medium and low technology industries. More technologically sophisticated manufacturing industries lack foreign investment, thus machine building accounted for only 2-3% of total, as did rubber and plastic products and other non-metallic mineral products; chemicals and chemical products - 1-2%; and wood products, paper and printing - also 1-2%. In total, FDI stocks in manufacturing industries that use high- and medium-level technologies accounted for about 14% in 2021 (2.4 and 11.4%, respectively) of total FDI stocks in the manufacturing (Figure 3). The rest (more than 85%) are investments accumulated in the lower technology sectors.

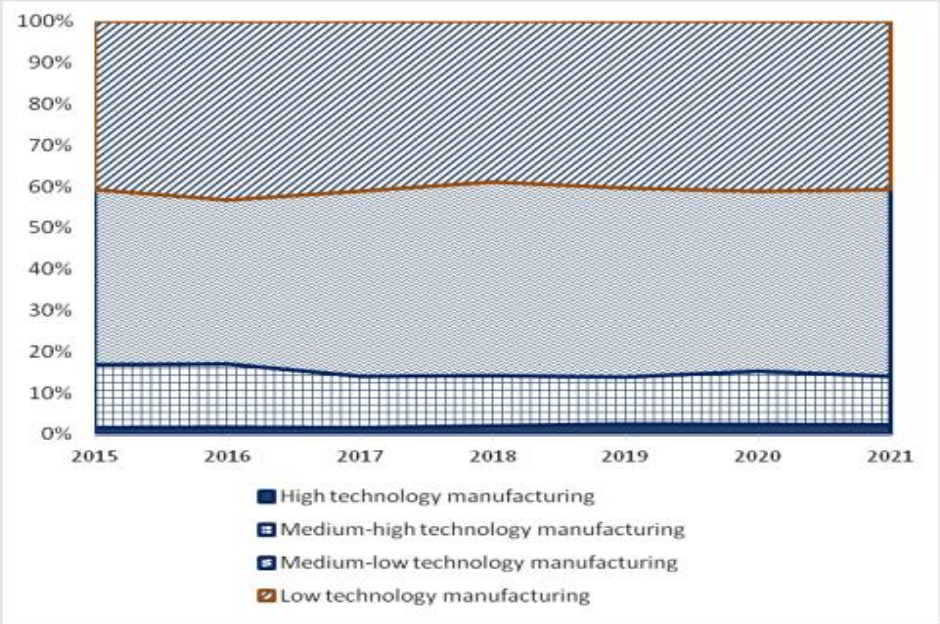

Figure 3. Direct investments in Ukraine' manufacturing (equity instruments) in 2015-2021: balances by groups of economic activities, aggregated by the level of technology used, *%*

Notes: HTM - high technology manufacturing; MHTM – medium-high technology manufacturing; MLTM – medium-low technology manufacturing; and LTM - low technology manufacturing.

Source: author's calculations based on NBU data (https://bank.gov.ua/).

FDI in the energy sector has been intense in recent years, with the sector's share of the FDI portfolio exceeding 5% in 2021. Investors were attracted by the mechanism of energy buybacks at high feed-in tariffs, due to which the volume of investments tripled in 2014-2015 and continued to grow.

The weight of the agricultural sector in the foreign investment portfolio remained relatively small for a long time (1-2%), but increased to 4% in 2021 after the adoption of the law on the launch of agricultural land turnover.

The sectoral distribution of FDI stocks in the countries with modernized industry is different from that in Ukraine. For example, in the Czech Republic, 27% of the FDI portfolio is accounted for by the manufacturing and 65% by the services sector (2020) [54]; Slovakia - 33 and 59% respectively; Poland - 33 and 58%; Turkey - 34 and 58%; Korea - 37 and 62%; Japan - 37 and 55%; and US - 40 and 54%. It is also noteworthy that foreign investment in manufacturing in these countries is concentrated primarily in machine building, chemical and pharmaceutical production, and other high-tech industries. Foreign businesses in the host country's services sector largely perform financial, insurance, and trade support, and maintenance services for industrial investments from the countries of their origin. Such a sectoral configuration of foreign investment stocks strengthens

the host economy's links with global value chains, enhances the modernization impact on it, and increases multiplier effects in its growth.

Estimates of the geographical structure of FDI sources in the Ukrainian economy show contradictory trends. On the one hand, the conclusion of the EU-Ukraine Association Agreement and the approximation of norms and standards Ukraine's regulatory environment to those familiar to European investors promotes the dominance of investments from EU countries in this country (Table 1). On the other hand, almost half of their total volume comes from offshore harbors (Cyprus, the Netherlands, Luxembourg, and the British Virgin Islands). The trend towards the expansion of offshore investment flows became noticeably more pronounced after 2007. The significant presence of offshore capital in Ukraine's economy indicates an unsatisfactory investment climate, which is a consequence of delays in structural reforms (business openly raises questions about the quality of the judicial system, corruption, and gaps in the energy sector [55]).

Table 1

Direct investment (equity instruments) in Ukraine: balances by country in 1996-2021, *%*

Indicator / Country	**1996**	**2000**	**2005**	**2010**	**2015**	**2020**	**2021**
Direct investment	100	100	100	100	100	100	100
EU countries	38.8	38.7	63.2	56.4	74.4	69.3	70.0
Cyprus	6.0	9.7	9.7	21.2	29.8	26.0	26.6
Netherlands	8.3	9.3	5.4	25.1	21.8	23.6	23.0
Switzerland	3.5	4.2	2.7	1.9	2.3	7.6	8.7
Germany	11.6	6.2	32.6	11.0	3.9	4.5	4.5
United Kingdom	7.0	8.1	7.0	4.9	4.3	4.5	4.1
Austria	1.5	3.2	8.5	4.0	2.7	3.0	2.9
Luxembourg	0.1	0.3	0.5	1.0	0.9	2.1	2.7
USA	18.3	16.5	8.2	2.4	2.3	2.1	2.5
France	0.9	1.0	0.5	4.6	3.7	2.2	2.2
Russia	7.4	7.4	4.9	5.9	3.2	1.7	1.8

Source: calculated by the author according to the State Statistics Service of Ukraine (http://www.ukrstat.gov.ua); NBU (https://bank.gov.ua/).

Most of the foreign investment attracted to the economy is of Ukrainian origin. In particular, according to NBU estimates, the amount of funds of domestic origin that came to Ukraine as foreign direct investment under the "round tripping" scheme (when residents withdraw funds abroad and then return them to the country in the status of foreign investment) [56] averaged 26% of total FDI inflow to Ukraine in 2010-2021. The share of net inflows from "round tripping" transactions reached 69% in 2021. There are other estimates that complement the picture of the scale of reinvestment of domestic capital. For example, according to the Institute for Economics and Forecasting of the National Academy of Sciences of Ukraine, almost 40% of large and medium-sized businesses in Ukraine are controlled by and attract capital from offshore [57]. According to the Centre for Economic Strategy,

Ukrainian oligarchic business owns 60% of its assets through other countries on average [58]. The trend towards offshoring the finances of large Ukrainian businesses is progressing [59], while globally, on the contrary, there has been a decline in the share of offshore centers in FDI since 2018 [60]. It is acknowledged that the reason for businesses to use such capital transactions may not be so much a desire to optimize the tax burden as high risks and insecurity of investments, and investors' distrust of the weak national institutional and financial system [59]. Whatever the case, real foreign investment in Ukraine's economy is clearly lacking.

The vast majority (89%) of "round tripping" investments is directed to real sector companies. However, the ability of such investments to contribute to the modernization of enterprises or create other positive effects for the economy is questionable [61]. Often, it was the failure of the allegedly foreign investor to fulfil his investment obligations committed during privatization to carry out technological upgrades that led to high-profile lawsuits and the return of enterprises to state ownership. One of the most recent examples is the court decision to return to the state the Zaporizhzhia Titanium and Magnesium Plant, which was once privatized by a Cypriot company from Firtash's group [62].

Indeed, the significance of FDI for the development of the Ukrainian economy proves to be controversial. Practice shows that real modernization effects are created by investments in the development of new modern enterprises with close export ties for the sale of manufactured products. To a certain extent, this can apply, for example, to Ukrainian subsidiaries of Fujikura Automotive Ukraine Lviv LLC of the Japanese company Fujikura Ltd. and plants of LEONI Wareng Systems UA GmbH, which belong to the German concern LEONI AG, and some others. However, another category of foreign investors, mostly from among those who became owners during the privatization of state-owned enterprises, prefer to exploit the acquired assets until they are completely exhausted, without spending money on technological upgrades of production facilities [61].

At the same time, there are categories of foreign investors whose actions represent an outright threat to the host country's economy. In particular, takeovers of foreign companies are often used by investors from developing countries (especially from China) to gain access to innovative technologies owned by the target in order to reduce their gap with the leading competitor [24, 63]. For example, the story of a Chinese investor acquiring a controlling stake in Motor Sich, a Ukrainian manufacturer of aircraft engines for aircraft and helicopters, became widely publicized [64]. The Chinese investor planned to take over the technology and move production facilities to a newly established plant in Chongqing [65].

The host country's economy is also threatened by the actions of a foreign investor who aims to commit a hostile takeover of a local competitor, weaken it or even drive it out of the global market in favor of itself. This type of takeover was partly the case during the privatization of state property in Ukraine. At that time, a so-called "strategic investor" often became the new owner of a state-owned enterprise, which was in fact an intra-industry competitor on the global market. The consequences of such privatization for the future of the Ukrainian enterprise were

predictable. For example, the production of primary aluminum at Zaporizhzhya Aluminum Smelter was destroyed (the basic technological equipment was cut out and sold) by its Russian owner, Rusal, which is positioned as one of the world's primary aluminum producers [66]. Since then, ZALK has not produced anything at all - neither aluminum, nor alumina, nor silicon - and its main source of income is the lease-out of the company's property [67]. In a similar context, we can recall the fate of the once successful Cheksil company [68] and a number of others.

This bitter experience reveals the extraordinary risks to national security that lie behind the presence in the recipient country's economy of investors from the hostile camp (either directly or veiled under offshore cover) who are trying to own strategic assets. The damage deliberately inflicted by such investors on the recipient country is an instrument of aggression in the economic field, and a tool for its economic subjugation and deprivation of sovereignty.

Thus, the experience of FDI accumulation in Ukraine is controversial and ambiguous in terms of economic development. Such accumulation of investment stocks is characterized by instability, relatively small scale, selective sectoral distribution, and low technological quality. Under such conditions, foreign investment is likely to be limited in its ability to create positive effects of productivity and economic growth, and its impact as a carrier of structural modernization is limited too. In order to test these assumptions, a special study has been conducted, which will be discussed below.

Research methods

Usually, structural changes in the economy are measured using the structural change indexes (SCI) [69]. The latter is equal to half of the absolute amount of growth in the specific shares of *value added (or employment*) in all sectors (types of economic activity) of the economy over a certain period of time.

$$ISC = {}^{1}/_{2} \sum_{i=1}^{n} |d_{it} - d_{i(t-1)}| \quad (1)$$

where ***ISC*** – structural change coefficient;

n – the number of economic sectors (economic activities);

$\mathbf{d}_{it}$ and $\mathbf{d}_{i(t-1)}$ – share of value added (or employment) of a sector (economic activity) ***i*** in the current period ***t*** and previous periods ***(t-1)***, respectively.

In turn, the relative share of a particular sector (economic activity) *i* in total *value added* ***VA*** of the economy is expressed in fractions of a unit:

$$d_i = {}^{VAi}/_{VA} \quad (2)$$

Similarly, the share of sector ***i*** in total number of people *employed* L in the economy is expressed as:

$$d_i = {}^{Li}/_{L} \quad (3)$$

This generalized indicator gives an idea of the intensity of changes in the proportions between components (value added or employment) in the overall composition of sectors (activities) in the economy. Small values of the index of changes in the proportion of different parts of the whole indicate relative stability of the system, while large values indicate its mobility. Changes in the sectoral

structure of value added production or the number of employed people are affected by various factors (e.g., increased demand for some goods and decreased demand for others, labor force displacement from production due to the introduction of labor-saving technologies, etc.). Among other things, FDI is recognized as an effective factor, which is confirmed by the results of relevant studies [16, 22].

In this paper, the influence of the FDI factor in the processes of structural changes in the economy is investigated by means of linear regression models using EViews software. The models reveal two categories of dependence, namely, 1) the dependence of GDP dynamics and value added of individual sectors of the economy on the intensity of FDI accumulation in the economy and its sectors, and 2) the dynamics of employment in sectors on the same regressor. The working versions of the equations in the models of both categories are as follows:

$$IVA_i = \beta_0 + \beta_1 * IFDI_i + \cdots + \beta_n * IFDI_n + \varepsilon_i \quad \textbf{(4)}$$

$$IL_i = \beta_0 + \beta_1 * IFDI_i + \cdots + \beta_n * IFDI_n + \varepsilon_i, \quad \textbf{(5)}$$

where

$\mathbf{IVA_i}$ –value added index of sector $\boldsymbol{i}$ ($\boldsymbol{i}$ = 1; …; n.);

$\mathbf{IFDI_i}$ – FDI index of sector $\boldsymbol{i}$;

$\mathbf{IL_i}$ –the index of the number of employees in sector $\boldsymbol{i}$;

$\boldsymbol{\beta_0, \ldots, \beta_n}$ – the unknown regression coefficients to be estimated;

$\boldsymbol{\varepsilon_i}$ – unobservable error.

We start from the fact that the statistical index reflects the intensity of change of a statistical parameter (VA_i, L_i, or FDI_i) in the current period compared to previous one, and takes into account that the coefficients of structural changes are calculated based on the change in the parameters $\boldsymbol{VA_i}$ or $\boldsymbol{L_i}$ over time. Accordingly, if the model calculations show the existence of a dependence of the resultant indicator on the regressor, this will prove the influence of the FDI factor on the dynamics of value added or employment in sectors, and thus on changes in the sectoral structure of the economy. Otherwise, in the absence of such a dependence, the factor has no impact on structural changes.

Testing the impact of FDI as a factor of economic restructuring

Given the characteristics of the state of FDI accumulation in Ukraine, identified on the basis of statistical analysis, questions arise about the ability of foreign investment to create positive growth effects in economic sectors, and about their capacity as carriers of structural change. These questions are important, given the general imperfection of the structure of Ukraine's economy and the range of the export basket [70-72]. To find answers to them, an empirical study has been conducted using econometric modelling tools.

The information base for the empirical study is based on annual observations of the State Statistics Service and the NBU. General statistical information on FDI in Ukraine's economy has been available since 1994. However, comparable observations on FDI accumulation by economic activity has been available since 2009. The limited period of observations led to the choice of a specific research

method. In particular, the analysis of the effectiveness of the foreign investment factor in transforming the structure of Ukraine's economy and its growth was carried out using regression modelling. The goal was to test the hypothesis that FDI accumulated in the economic sectors affects, first, their dynamics of value added; and second, the change in the number of people employed in the sectors; and to assess the significance of this factor in general.

Therefore, we first estimate the impact of FDI accumulation on GDP growth. The obtained modelling results (Table 2) are reliable, all regression coefficients are statistically significant; random deviations of the models (residuals) are free from autocorrelation and heteroscedasticity. Thus, the models are true (statistically significant), and the regression equations are reliable and adequate.

The results of the modelling (Table 2) confirm the hypothesis that the FDI factor is influential for GDP growth in general and GVA of economic sectors in particular. The coefficients of determination of the models indicate a significant (models 1, 2) and high (models 3, 4) density of the relationship between the dependent variables and regressors. The factor of direct investment accumulation really affects the growth dynamics of the economy and its sectors, as it explains the bulk (64-88%) of the variability of the performance indicator in each case.

Table 2

The results of estimation of linear regression models on the impact of the FDI accumulation factor on the dynamics of GDP in Ukraine's economy and its sectors

Variable, indicator	Model 1	Model 2	Model 3	Model 4
Dependent variable				
GDP physical volume index (in prices of previous year, to previous year)	GDPGR	GDPGR		
Index of physical volume of gross value added of secondary sector (CEA C÷F) (in prices of previous year, before previous year)			SECGDPGR	
Index of physical volume of gross value added of tertiary sector (services, CEA G÷T) (in prices of previous year, to previous year)				THERGDPGR
Factorial variable				
Index of direct investments (equity instruments - stocks) in agricultural sector (CEA A) (to previous year)	IAGRFDI		IAGRFDI	
	-0.042 (0,024)		- 0.057 (0.030)	
Index of direct investments (equity instruments - stocks) in industrial sector (CEA B÷F) (to previous year)	IINDFDI			
	0.179 (0,026)			
Index of direct investment (equity instruments - stocks) in secondary sector (CEA C÷F) (to previous year)			ISECFDI	ISECFDI
			0.320 (0.024)	0.171 (0.034)

Table 2 (continued)

Index of direct investment (equity instruments - stocks) in tertiary sector (services, CEA G÷T) (to previous year)		ITHERFDI		ITHERFDI
		0.238 (0.006)		0.124 (0.049)
Constant (C)	0.869 (0,000)	0.762 (0.000)	0.732 (0.002)	0.715 (0.000)
Evaluation period, *years*	2010 - 2020	2011 – 2020	2014 – 2020	2011 – 2020
The number of observations	11	10	7	10
R-squared	**0,675**	**0.636**	**0.876**	**0.820**
Durbin-Watson stat	1,769	1.389	2.132	1.962
F-statistic	8,308	13.952	14.161	15.894
Prob(F-statistic)	0,011	0.006	0.015	0.002
Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	0.079 (0,925)	2.117 (0.202)	0.151 (0.869)	1.543 (0.301)
Obs*R-squared (Prob. Chi-Square)	0.282 (0,868)	4.137 (0.126)	0.917 (0.632)	3.816 (0.148)
Heteroskedasticity Test: White				
F-statistic	0.259 (0,918)	2.402 (0.161)	1.265 (0.585)	1.486 (0.361)
Obs*R-squared (Prob. Chi-Square)	2.261 (0,812)	4.070 (0.131)	6.045 (0.302)	6.501 (0.261)
Heteroskedasticity Test: Glejser				
F-statistic (1)	0.188 (0,675)	0.786 (0.401)	0.935 (0.378)	0.056 (0.819)
Obs*R-squared (Prob. Chi-Square) (1)	0.225 (0,635)	0.895 (0.344)	1.103 (0.294)	0.069 (0.793)
F-statistic (2)	0.008 (0,932)		1.704 (0.249)	1.281 (0.291)
Obs*R-squared (Prob. Chi-Square) (2)	0.009 (0,923)		1.779 (0.182)	1.380 (0.240)
Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	0.097 (0,908)	1.461 (0.261)	1.252 (0.378)	0.656 (0.548)
Obs*R-squared (Prob. Chi-Square)	0.262 (0,877)	1.544 (0.214)	2.695 (0.260)	1.579 (0.454)

* The values in brackets are Prob.

Source: calculated by the author according to the State Statistics Service of Ukraine (http://www.ukrstat.gov.ua); NBU (https://bank.gov.ua/).

It is noteworthy that the increase in FDI stocks in the economic sectors has a predominantly positive effect on the growth rate of their gross value added. Thus, an increase in the stock of direct investment in both the secondary and tertiary sectors accelerates the growth of gross value added in the services sector (Model 4).

Together, these regressors account for 82% of the variation in the respective regressor. The marginal effects of each of the model's regressors (0.171 for ISECFDI and 0.124 for ITHERFDI) provide an indication of the magnitude of change in the tertiary sector gross value added index when one of the regressors increases by one unit while the other remains unchanged. They also show the importance of FDI accumulation in both sectors, especially in the secondary sector, for the growth of gross value added in the tertiary sector. Obviously, as FDI stocks in the secondary sector increase, the demand of foreign businesses for various types of services increases, which contributes to the growth of the services sector as a whole (note that this conclusion is consistent with the results of our previous studies [70]). Undoubtedly, the joint action of these two regressors amplifies the effect and strengthens the potential for growth in the sector's gross value added (GVA).

The combination of an increase in the stock of direct investment in such two adjacent sectors as the agriculture and the secondary sector, has opposite effects on the development of the latter (model 3). On the one hand, an increase in the stock of direct investment in the secondary sector adds to the GVA dynamics of this sector, while it detracts from it in the agricultural sector. This effect is worrisome, especially since the degree of dependence is high (R-squared = 0.88). The reasons for the negative impact of the accumulation of FDI stocks in the agricultural sector on the secondary sector's GVA are seen in the insufficient interaction between these sectors and the lack of value chains within the national economy [71]. Our previous studies have shown that the Ukrainian economy has a paradoxical situation where the growth of the agricultural sector is poorly correlated with the dynamics of processing industries. The reason is that the business model of agricultural enterprises is focused on raw material exports (supply of unprocessed products to the world market) and a low degree of integration with local industry. In addition, the agricultural sector's needs for inputs (machinery, fuel, fertilizers, etc.) are almost entirely met by imports [72].

This effect indicates that as the stock of FDI in the agricultural sector increases, the business model mentioned above becomes more radical, in other words, even less agricultural products are processed while more are exported. The shallow interdependence between the agricultural and industrial sectors creates constraints on productivity growth in different parts of the cross-sectoral value chains in Ukraine’s economy, suppresses the potential for output growth in related industries, and has various deindustrialization effects.

The model calculations show that the dependencies taking place at the sectoral level are reproduced in the economy as a whole, albeit with a lower intensity. For example, the accumulation of FDI in the services sector (model 2) also has a significant positive impact on GDP dynamics (R-squared = 0.64). The similarity of the effects of joint action of the two regressors (FDI accumulation in the agricultural and industrial sectors) on GDP dynamics (model 1) is noteworthy. This model again shows a negative effect of FDI stock accumulation in the agricultural sector on economic growth (GDP index) and a positive effect in the

industrial sector. The relationship between the regressors and the outcome variable is quite significant (R-squared = 0.68). Thus, the accumulation of FDI in the secondary and tertiary sectors benefits economic growth, while in the agricultural sector it becomes an obstacle.

Thus, the modelling results confirm the assumption that FDI accumulation does indeed have a significant or even strong impact on the dynamics of GVA growth in key sectors and the economy as a whole. This proves the existence of a causal link between the accumulation of FDI in economic sectors and changes in the structure of the national economy.

The next step in the study was to test the impact of FDI accumulation on changes in the employment structure. The results of the test (Table 3) are reliable, since the models are found to be statistically significant and adequate, and their residuals are free from autocorrelation and heteroscedasticity.

Table 3

The results of estimation of linear regression models on the impact of FDI accumulation factor on dynamics of employment in the economy and its sectors

Dependent variable, factor, indicator	**Model 6**	**Model 7**	**Model 8**	**Model 9**
Dependent variable				
Index of total number of employees (to previous year)			UEEMP	UEEMP
Index of number of employees in secondary sector (CEA C÷F) (to previous year)	ISECEMP			
Index of the number of employed workers in tertiary sector (services, CEA G÷T) (to previous year)		ITHEREMP		
Factorial variable				
Index of direct investments (equity) in agricultural sector (CEA A) (to previous year)				IAGRFDI
				-0.025 (0.039)
Index of direct investments (equity instruments - stocks) in industrial sector (CEA B÷F) (to previous year)				IINDFDI
				0.239 (0.005)
Index of direct investments (equity instruments - stocks) in secondary sector (CEA C÷F) (to previous year)	ISECFDI	ISECFDI	ISECFDI	
	0.297 (0.005)	0,339 (0,035)	0.295 (0.015)	
Constant	0.669 (0.000)	0,670 (0,002)	0.700 (0.000)	0.779 (0.000)
Evaluation period	2011–2019	2013–2019	2013–2020	2013–2021
Number of observations	9	7	8	9
R-squared	**0.697**	**0,621**	**0.658**	**0.768**
Durbin-Watson stat	2.381	2,232	2.176	2.361
F-statistic	16.136	8,202	11.544	9.947
Prob(F-statistic)	0.005	0,035	0.015	0.012

Table 3 (continued)

Breusch-Godfrey Serial Correlation LM Test:				
F-statistic	1.278 (0.356)	0,040 (0,961)	2.006 (0.249)	0.903 (0.475)
Obs*R-squared (Prob. Chi-Square)	3.045 (0.218)	0,183 (0,913)	4.006 (0.135)	2.801 (0.247)
Heteroscedasticity Test: White				
F-statistic	0.149 (0.865)	0,381 (0,705)	0.497 (0.636)	0.169 (0.958)
Obs*R-squared (Prob. Chi-Square)	0.426 (0.808)	1,121 (0,571)	1.326 (0.515)	1.978 (0.852)
Heteroscedasticity Test: Glejser				
F-statistic (1)	0.023 (0.884)	0,250 (0,638)	0.186 (0.682)	1.933 (0.207)
Obs*R-squared (Prob. Chi-Square) (1)	0.029 (0.864)	0,333 (0,564)	0.240 (0.624)	1.947 (0.163)
F-statistic (2)				1.317 (0.289)
Obs*R-squared (Prob. Chi-Square) (2)				1.425 (0.233)
Heteroscedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	0.032 (0.863)	0,081 (0,788)	0.018 (0.899)	0.355 (0.715)
Obs*R-squared (Prob. Chi-Square)	0.041 (0.839)	0,111 (0,739)	0.024 (0.878)	0.953 (0.621)

Source: calculated by the author according to the State Statistics Service of Ukraine (http://www.ukrstat.gov.ua); NBU (https://bank.gov.ua/).

The coefficients of determination indicate a significant (models 6, 7, 8) and strong (model 9) correlation between each individual outcome variable and the respective regressors. For example, the factor of FDI accumulation in the secondary sector is a significant and positive factor for changes in employment not only in this sector (model 6), but also in the services sector (model 7) and in the economy as a whole (model 8). This factor explains a significant part of the regressor's variation in each of these models (62-70%). The estimation of the regression coefficient of the models shows that as FDI stocks increase, the employment index increases in the secondary sector, the tertiary sector, and the economy as a whole by 0.3 percentage points (assuming other factors remain unchanged).

The accumulation of FDI in the productive sectors serves an important precondition for changes in aggregate employment in the economy (Model 9), with the difference that the growth of FDI stocks in the agricultural sector causes a reduction in employment, while in the industrial sector it causes an expansion. The effect of redistribution of employment between sectors is evident, in other words, the regressor causes shifts in the sectoral structure of employment.

Thus, the results of the regression modelling confirm that the factor of FDI accumulation affects the sectoral dynamics of GVA production and employment, and thus changes in the sectoral structure of the economy. At the same time, sectoral assessments show that the effectiveness of this factor is heterogeneous in terms of direction and strength of influence. The correlation between the regressor and the dependent variables is positive in all sectors except agriculture, and the degree of correlation varies from moderate to strong.

Conclusions and proposals

Recovering Ukraine's economy after the enormous destruction caused by Russia's full-scale aggression against Ukraine will require not only mobilizing state budget resources and external financial assistance, but also large-scale private investment from domestic and foreign investors. The objective need for foreign investment in the Ukrainian economy already exists.

The historical experience of various countries proves the importance of foreign investment for post-war recovery and transformation of the economic structure. Observations in recent decades, especially in the case of newly industrialized countries, show that FDI was an indispensable element of technological progress and development of a modern economic structure in these countries. It is precisely these positive properties of FDI that should be used to recover the Ukrainian economy after the war.

The analytical study has shown that the degree of saturation of Ukraine's economy with foreign investment was too low compared to the indicators of the group of comparable countries and the global economy as a whole even before the full-scale war, and it is even more so after it has begun. The level of FDI presence in the manufacturing, especially in its technologically intensive segments, was also insufficient. The domestic experience of companies with foreign capital combines both positive and extremely negative practices. The former are associated with the construction of new modern enterprises and their integration into global supply chains. The latter has various manifestations, including the foreign owner's failure to fulfil his investment obligations before to the enterprise he privatized, the foreign investor's attempt to take possession of unique technological developments and thus destroy the competitive potential of a strategic Ukrainian enterprise, the foreign owner's physical destruction of the production facilities of a large enterprise, etc.

The empirical analysis reveals certain contradictions, namely a significant presence of offshore capital despite the shallow involvement of foreign investment in this country's economy, and the lack of real foreign investment in the Ukrainian economy, despite the fact that its significant is of domestic origin and comes through the "round tripping" scheme. Such inconsistencies, which arise from an unsatisfactory investment climate and delays in structural reforms, limit the potential impact of FDI on the structural progress. Moreover, mistakes made in the policy of attracting investment have led to long-term threats to the security of Ukraine's national economy.

The results of the econometric modelling have shown an unconditional influence of the FDI accumulation factor on changes in the sectoral structure of GVA production and employment. However, the effectiveness of this factor was heterogeneous in terms of strength and direction of influence, depending on the parameters of FDI and its distribution among the sectors. The most noticeable structural effect is the accumulation of FDI stocks in the secondary sector, which has a positive impact on both the growth of GVA and the increase in the number of people employed in the economy as a whole, including in the secondary and tertiary sectors. The accumulation of FDI stocks in the agricultural sector has a supposedly labor-saving effect, but at the same time it has a hindering effect on economic growth and the development of related industries, which indicates insufficient economic links with the rest of economy. The accumulation of foreign capital in the services sector, which performs the tasks of services support of foreign business and various other functions, contributes both to general development of this very sector and, at the same time, the host economy.

In general, FDI acts as an additional catalyst for adjusting the structure of the national economy. Ukraine's European perspective and EU candidate status will facilitate investment to rebuild the economy after the war. However, in order to achieve a better effect (speed up the economic recovery, restructure the economy on the basis of technological modernization and increase productivity), it is advisable to focus on priorities for attracting investment. Based on the results of the study, the secondary sector (including manufacturing, energy, and construction) and the services sector should be recognized as priority areas for attracting FDI. Before accumulating FDI in the agricultural sector, it is advisable to introduce state regulation of business models for agricultural enterprises (including those managed by foreign capital). In particular, it is necessary to encourage the localization of processing of raw agricultural products and the establishment of long value chains between the agricultural, industrial and services sectors of Ukraine’s national economy. Implementation of such measures would contribute to the diversification of processing industries and the expansion of interconnections between the sectors of this country’s economy, which would have a powerful multiplier effect on economic growth.

In addition, in order to really saturate the economy with investment, it is necessary to take care of the investment climate and implement relevant reforms. Investment inflows will be closely linked to reforms. First and foremost, the country's institutional system needs to be improved in terms of aligning national legislation with European legislation, reforming the judiciary, preventing corruption in public administration, introducing a tough competition policy and limiting the power of oligarchs. Given the reality of threats to investors, it is important to create an effective system of insurance of military and political risks with the participation of Ukrainian and global financial market players. Finally, it is necessary to ensure that the policy of attracting investments be in line with the goals of economic growth and development; a proper expert control over the inflow of foreign investments should be established with due regard for national security and economic interests.

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ВПЛИВ ПІІ НА СТРУКТУРНІ ЗМІНИ ЕКОНОМІКИ У КОНТЕКСТІ ПЕРСПЕКТИВ ПОВОЄННОГО ВІДНОВЛЕННЯ УКРАЇНИ

Відновлення національної економіки, що зазнає великих руйнувань унаслідок повномасштабної російської агресії в Україні, потребуватиме залучення, крім внутрішніх, іще й зовнішніх інвестицій. Повоєнний досвід країн світу показав, що приплив іноземного капіталу сприяв задоволенню потреб в інвестиційних ресурсах на відбудову економіки, її структурну модернізацію. Нещодавня історія стрімкого піднесення нових індустріальних країн також демонструє, що іноземні інвестиції уможливлюють трансформацію структури приймаючої економіки, її перехід на вищі щаблі індустріального розвитку.

Метою цього дослідження було проведення аналізу нагромадження і секторального розподілу ПІІ в українській економіці, оцінювання ефектів від ПІІ для зміни структури та динаміки зростання економіки, визначення підходів щодо залучення зовнішніх інвестицій у контексті перспектив повоєнного відновлення та реструктуризації економіки.

У статті розглянуто акумуляцію ПІІ в українській економіці в історичній ретроспективі, проаналізовано розподіл їх запасів між секторами і галузями економіки, а також їх географічне походження. Оцінено глибину проникнення ПІІ в економіку загалом і технологічні сектори переробної промисловості зокрема. Розкрито суперечливість ефектів, створюваних зовнішніми інвестиціями, для розвитку національного господарства, технологічного поступу, підтримання економічної безпеки.

З використанням регресійного моделювання досліджено ПІІ як чинник, здатний сприяти трансформації української економіки, викликати зміни у структурному розподілі доданої вартості та зайнятості між секторами. Результати моделювання підтвердили те, що нагромадження ПІІ дійсно

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впливає на динаміку виробництва ВДВ та зайнятості у секторах економіки, тобто зумовлює структурні зрушення в економіці. Разом із тим секторальні оцінки виявили неоднорідну дієвість цього чинника за силою та напрямом викликаних ним змін у структурі економіки.

***Ключові слова**: прямі іноземні інвестиції, структурні зміни економіки, структура зайнятості, індустріальний сектор економіки, переробна промисловість, технологічна структура промисловості, повоєнне відновлення економіки*