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Sectoral Scenarios of the Causal Model of Foreign Investors' Behaviour in the Context of the Russian-Ukrainian War

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ABSTRACT. The article examines the transformation of the sectoral structure of foreign direct investment in Ukraine under the influence of full-scale war. The growing risks to physical assets, supply chain disruptions, territorial vulnerability and structural imbalances caused by hostilities have radically changed the behaviour of foreign investors. In this context, the study focuses on identifying the factors that determine not only the overall decline in FDI volumes, but also their sectoral redistribution, linked to the ability of certain sectors to adapt to the war environment better than others. The study is based on a combination of quantitative analysis of statistical data for 2021–2025 and formalised analysis of investment behaviour. The dynamics of FDI stocks are analysed in relation to the typology of investment flow components—new capital contributions, reinvestment of profits and debt operations—in order to separate the real actions of investors from nominal changes caused by market revaluations or exchange rate fluctuations. Particular attention is paid to the differentiation of industries by their sensitivity to the effects of war: territorial factors, infrastructure links, dependence on domestic or external demand, and the intensity of physical asset use are taken into account. As a result, a typology of sectors is proposed based on the type of foreign investor policy—active, cautious, and passive—which, in turn, made it possible to formulate a causal model of foreign investor behaviour in conditions of military risk. The scientific novelty lies in the fact that, unlike most previous studies, which focused mainly on the volume of FDI or its overall structure, this work attempts to explain the transformations through a system of factors that have not been comprehensively studied in the context of the Ukrainian economy during a period of full-scale war. The proposed analytical approaches can be used both for further interdisciplinary research and in the process of developing state policy to stimulate foreign investment in conditions of high uncertainty.
KEYWORDS: foreign investment, sectoral dynamics of FDI, consequences of war, investment behaviour, causal model.

Introduction

The issue of attracting and utilising foreign direct investment (FDI) in Ukraine's economy has traditionally attracted close attention from the

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scientific community. This is because, long before the start of the full-scale war, the key challenges for the country were to accelerate economic growth, modernise its structure and reduce its dependence on raw materials. In a situation where the national economy was dominated by energy-intensive and resource-oriented industries, and developed European countries focused on the dynamic development of information, telecommunications and high-tech sectors, Ukraine faced a strategic question: could the inflow of foreign capital become a catalyst for structural renewal and convergence with the modern model of the knowledge economy?

Even before the war began, scientific discourse actively raised the issue of the mismatch between the structure of foreign capital inflows and the strategic needs of the national economy. In particular, criticism was levelled at the fact that a significant share of FDI was not directed towards sectors capable of ensuring long-term growth, innovative breakthroughs and structural modernisation of the country, but rather towards industries with high capital turnover and a short investment horizon — primarily trade, real estate and financial services. In this context, it was noted that government policy failed to provide effective incentives for investors to reorient themselves towards sectors that are key to national socio-economic development priorities.

In particular, aspects of the sectoral distribution of foreign capital are considered in a study by O. M. Sokolovska, who analysed the dynamics of FDI inflows and focused on their concentration in less technology-intensive and knowledge-intensive sectors of the economy[2]. The author outlined the general structural characteristics of the investment flow, in particular its predominant focus on trade, real estate transactions and the financial sector. At the same time, the main focus is on stating these imbalances, while the motivational factors that influenced investors' choice of these areas remain outside the scope of in-depth analysis. A valuable contribution to the study of sectoral changes in the structure of FDI was made by Gerashchenko S. O. and Kolotylo M. B., who examined the dynamics of foreign investment in Ukraine in the context of European integration processes[3]. The study notes a sharp decline in FDI inflows after 2014 and analyses the sectoral distribution of capital, with an emphasis on the predominance of financial activities, manufacturing, trade and real estate transactions. Importantly, the study does not limit itself to describing these trends, but offers explanations for the impact of certain negative factors —

[2] Sokolovska O. M. (2021) Foreign direct investment in the Ukrainian economy: status and problems of attraction. Bulletin of Economic Science of Ukraine. No. 2 (41). Pp. 92-99.
DOI: https://doi.org/10.37405/1729-7206.2021.2(41).92-99

[3] Geraschenko, S. O., Kolotylo, M. B. (2018). Foreign direct investment in Ukraine in the context of integration into the global economy. Economic Bulletin of the National Mining University, (1), 60-68. https://ev.nmu.org.ua/docs/2018/1/EV20181_060-068.pdf

in particular, armed conflict and macroeconomic instability — on the overall investment climate. At the same time, investors' motivations for choosing certain sectors during this period remain outside the scope of the analysis. An attempt to interpret sectoral changes in the structure of FDI in the context of external influences was made by Kasych A. O. and Anurova-Prykhodko I. O., who examined the dynamics of foreign direct investment in Ukraine through the prism of global economic trends[4]. The article compares global trends with the situation in Ukraine during the 2010s and notes that investment priorities remain in industry, the financial sector and trade. The study is distinguished by its broad comparative approach and emphasis on external economic influences. At the same time, internal factors that could have caused sectoral shifts within the national economy remain less explored.

One of the most thorough attempts at a comprehensive analysis of investment trends in Ukraine is the study by Huk O. V., Mokhonko G. A. and Shenderivska L., which examines FDI inflows in 2016–2020, highlighting sectoral characteristics[5]. The authors analysed changes in the sectoral structure of foreign capital, identified key investors in 2020 and determined the most attractive areas for them — primarily manufacturing, financial activities and trade. The paper focuses on external events that have influenced investment dynamics, in particular the impact of the COVID-19 pandemic on the engineering industry. At the same time, despite the comprehensiveness of the presentation, the paper leaves open certain aspects related to the internal logic of investment behaviour — in particular, why these industries remain attractive for investment despite the risks of crisis. Significant attention to the structural analysis of FDI at the national and regional levels was paid by I. O. Khomenko, L. M. Volynets, and A. O. Shamkalo, who in their work outlined not only a list of leading industries that are recipients of foreign capital, but also offered explanations for their investment attractiveness[6]. The authors attempted to identify the factors — such as market capacity, stability of profitability, or implementation of reforms — that contribute to the concentration of FDI in industry, agriculture, and trade. This combination of quantitative and explanatory approaches makes the publication a significant contribution to the development of the subject. At the same time, given the focus on "leading sectors," sectors that continue to be marginalised in terms of

[4] Kasych, A. O., Anurova-Prykhodko, I. O. The flow of foreign direct investment into Ukraine through the prism of global trends. Investments: practice and experience. 2018. No. 2. Pp. 5–9. http://www.investplan.com.ua/pdf/2_2018/3.pdf

[5] Guk, O., Mokhonko, H., Shenderivska, L. (2021). Investment trends in Ukraine. Economy and Society, (29). https://doi.org/10.32782/2524-0072/2021-29-35

[6] Khomenko, I. O., Volynets, L. M., & Shamkalo, A. O. (2021). Features of foreign direct investment inflows and their impact on the Ukrainian economy. *Problems and Prospects of Economics and Management,* 1(25), 15–26. https://doi.org/10.25140/2411-5215-2021-1(25)-15-26

investment, as well as the mechanisms that determine the hierarchy of sectors from the perspective of long-term investors, have been somewhat overlooked.

With the outbreak of full-scale war, the topic of attracting FDI has gained new relevance within the broader discussion on the architecture of Ukraine's post-conflict economic recovery. A consensus is gradually forming among experts on the key role of foreign private capital as one of the drivers of reconstruction. In particular, V. Heyets emphasises that in the post-war period, private investment by foreign businesses should become an important component of the financial support for economic revival on a commercial basis[7]. At the same time, he stresses the need to create a national model for attracting FDI based on systematic legal support, transparency, institutional memory of previous mistakes, and rejection of ineffective approaches of the past, such as "investment marketing" or "windows of opportunity" without substantive content. While agreeing with the fundamental importance of FDI in post-crisis and post-disaster recovery, A. Sundakov warns that large-scale private investment is only possible after basic institutional stability has been achieved[8]. In his opinion, foreign investors usually join reconstruction projects not immediately after the end of the war, but with a time lag of five to ten years, when security is guaranteed, predictable tariff regulation is ensured, corruption is overcome, and a reliable legal environment is created. He emphasises that the primary prerequisites are political stability, the rule of law and an effective judicial system, as well as transparency in the mechanisms for using international aid.

Along with conceptual studies on the general role of foreign capital in post-war reconstruction, more specialised empirical studies are gradually emerging that focus on the sectoral and regional dimensions of foreign capital attraction in wartime. In particular, N. O. Yevtushenko analysed the state of FDI in Ukraine during martial law, noting that the investment focus remained on industry and trade[9]. The author not only records sectoral changes, but also identifies key constraints — primarily security risks — and formulates recommendations for revitalising FDI in the post-war period. At the same time, it should be noted that the study was conducted in the first year of the war, when structural trends had not yet stabilised and were not clearly defined. This limits the analytical coverage: a number of effects that only became apparent in subsequent years were not taken into account. Of

[7] Heyets, V. (2024). Priorities in the programme for the post-war revival of Ukraine's economy. *International Economic Policy,* No. 2(41), pp. 8–20. DOI: https://www.doi.org/10.33111/iep.2024.41.01

[8] Sundakov, A. (2024). Post-war reconstruction and disaster recovery: lessons for Ukraine. *International Economic Policy,* No. 2(41), pp. 67–81. DOI: https://www.doi.org/10.33111/iep.2024.41.05

[9] Yevtushenko, N. O. (2022). Foreign direct investment in Ukraine during martial law: current status and prospects for attraction. *Financial and Credit Activities: Problems of Theory and Practice,* 4(45), 185–194. https://doi.org/10.55643/fcaptp.4.45.2022.3881

considerable interest is the publication by Kovalchuk N. O. on the dynamics of FDI in Ukraine in 2002–2022 in the context of European integration processes[10]. The author consistently tracks changes in FDI volumes under the influence of domestic political crises, the pandemic and full-scale war, highlighting a sharp decline in investment in 2022. The paper also characterises the sectoral structure of capital, noting in particular that the bulk of FDI is concentrated in the most developed sectors. At the same time, the motivational mechanisms behind this concentration are only partially revealed, without an in-depth explanation of investors' choice of particular areas. In another relevant study published in 2024, Atamas O. P. examines the current state of FDI in Ukraine in the context of war and provides a short-term forecast of its dynamics[11]. The author analyses the structure of capital inflows from EU countries in 2019–2023 and identifies the sectors of the national economy that are of greatest interest to potential investors in the current conditions. The paper also provides an analysis of Ukraine's investment attractiveness index for 2008–2023, emphasising the need for comprehensive reforms as a condition for restoring the confidence of foreign capital. The study has a broad factual basis, supported by statistics and short-term forecasts, and offers an overview of sectoral priorities for the future. At the same time, despite the substance and relevance of the approach, insufficient attention is paid to the specific motivational factors that determine investors' choice of certain industries in crisis conditions. It is this analytical gap that highlights the need for further research into the logic of foreign investors' behaviour in wartime.

In view of the above, the aim of this study was to construct a causal model of the investment behaviour of foreign direct investors in the context of full-scale war in Ukraine, with an emphasis on the factors of sectoral choice and the peculiarities of the transformation of the FDI structure. Within the framework of this study, a causal model is interpreted as a conceptual construct that explains the investment decisions of foreign companies through the interconnection between the level of sensitivity of the economic sector to the consequences of war and the chosen investor behaviour strategy.

To achieve this goal, a number of interrelated tasks were formulated. First, it was planned to analyse key trends in changes in the sectoral structure of FDI stocks in 2021–2025, highlighting industries with both the most significant decline and growth in the share of investment, as well as identifying sectors with relatively stable dynamics. A separate task was to

[10] Kovalchuk, N. O. (2023). Foreign direct investment in Ukraine in the context of integration into the European Union. *Business Inform,* (3), 38–42. https://doi.org/10.32983/2222-4459-2023-3-38-42

[11] Atamas, O. (2024). Investing in a war economy: analysis of the current situation and short-term forecast. *Economy and Society,* (59). https://doi.org/10.32782/2524-0072/2024-59-161

break down changes in FDI stocks by source, which included assessing the role of exchange rate effects, market revaluations, reinvestment of income and new capital inflows. Next, it was necessary to classify sectors of the economy according to the nature of changes in FDI dynamics, establishing a link between their degree of vulnerability to the effects of war and the specifics of investment behaviour. At the final stage, it was planned to formulate an explanatory model that reveals the logic of investor actions in wartime, taking into account sectoral characteristics, institutional risks and adaptive capabilities.

A combination of general scientific and specialised methods was used to achieve the set objectives. The comparative analysis method was used to identify structural changes, the dynamic approach was used to track the evolution of FDI shares in different sectors, and factor analysis was used to decompose the sources of changes in capital stocks. The typology method ensured a reasonable grouping of sectors according to behavioural characteristics, and elements of causal modelling made it possible to identify the key determinants of an investor's choice of a particular industry in conditions of high uncertainty and military risk.

Sectoral transformation of the FDI structure in Ukraine in conditions of war and its key determinants

Official statistics released at the end of the first quarter of 2025 show noticeable transformations in the structure of the sectoral distribution of FDI stocks in Ukraine. The changes identified are systemic in nature and are the result of both large-scale structural shifts in the economy due to full-scale war and a reorientation of investment priorities driven by new security, logistics, demand and public policy conditions. Against the backdrop of an overall decline in foreign capital in the early years of the war, there was not only a reduction in stocks in certain sectors, but also a redistribution of investments between individual industries, indicating the adaptive response of foreign investors to the changing economic environment (Fig. 1).

To analyse sectoral changes in the structure of FDI stocks, official statistical data grouped according to the current Classification of Economic Activities (CEA) was used. The names of individual sectors in the table have been abbreviated solely for the convenience of presenting the information in a visual format. It should also be noted that the comparison includes only those industries and sub-industries whose share in total FDI stocks exceeded 3 per cent at the end of the first quarter of 2025. This threshold is due to the specific nature of the research task of this article, which focuses on the transformation of the sectoral structure of FDI during

the war years. No significant changes were recorded in sectors with a share of less than 3 per cent, which explains their exclusion from further consideration.

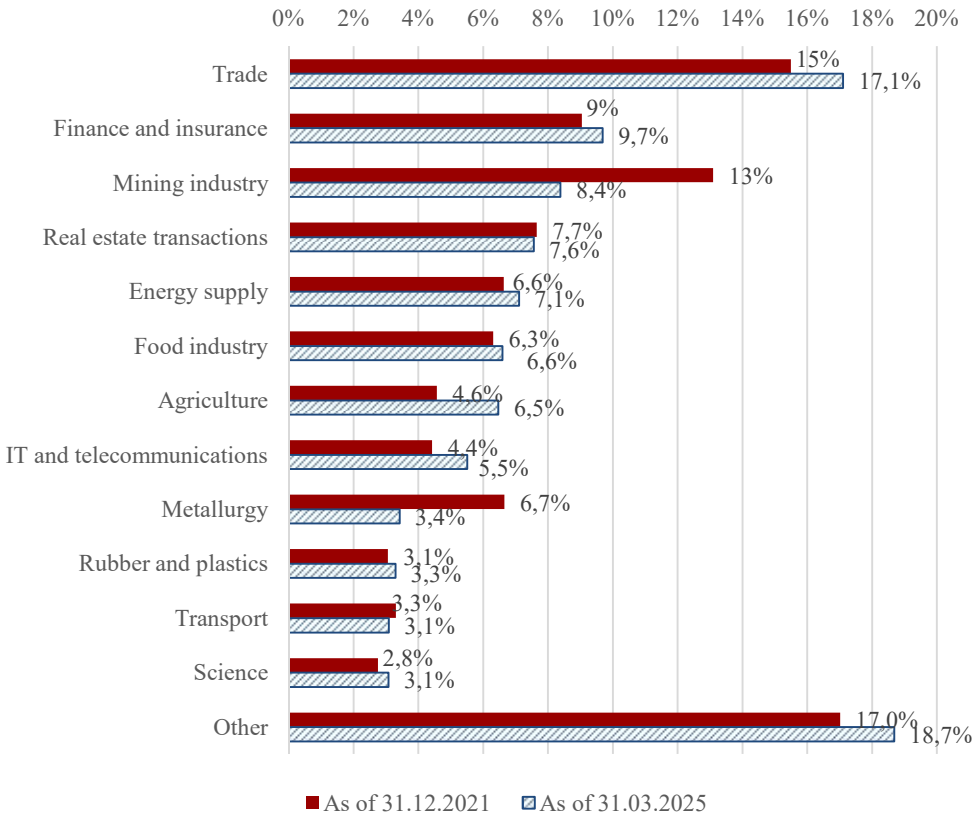

Fig. 1 — Dynamics of the sectoral structure of FDI stocks in Ukraine in 2021–2025, as a percentage of total FDI stocks

Source: compiled by the author based on[12]

Taking into account the above analytical limitations regarding sector coverage, several key observations can be made regarding the transformation of the sectoral structure of FDI stocks in Ukraine in 2021–2025. The most significant losses in structural weight were in two capital-intensive sectors: mining and metallurgy. The share of FDI in the extractive sector decreased by 4.7 percentage points, and in metallurgy —

[12] National Bank of Ukraine. (2025). External sector statistics: Website. https://bank.gov.ua/ua/statistic/sector-external

by 3.3 percentage points, which together accounts for an 8.0 percentage point reduction in the overall structure. In absolute terms, the volume of FDI stocks in the extractive industry decreased by USD3,791 million, and in metallurgy — by USD2,408 million. The combined losses of these two sectors amounted to USD6,199 million, or almost 75 per cent of the total decline in FDI in the Ukrainian economy during this period (USD8,275 million). This indicates that these two sectors bore the brunt of the structural contraction, and it was their partial contraction in the structure that provided the conditional space for the growth of other sectors.

Thus, the recorded growth in the share of FDI—particularly in trade, the financial sector, energy supply, transport and scientific activity—should not be interpreted as the result of a large-scale increase in new investments. In the vast majority of cases, this is a secondary effect of redistribution within the existing investment base, caused by the structural decline of industrial sectors. The only exceptions to this pattern were agriculture and the information and communication technology sector, which saw not only an increase in their share but also a real increase in FDI stocks—by 24 per cent (USD716 million) and 9 per cent (USD255 million) respectively compared to the end of 2021.

Thus, having identified the group of sectors with the largest decline in their share in the structure of FDI stocks, as well as highlighting the areas where both relative and absolute growth in investment is recorded, we can also identify a third—intermediate—group. This group includes sectors whose share in the overall FDI structure remained relatively stable during the period under review. Most of them saw a decline in FDI stocks in absolute terms, but this was proportional to the overall decline in foreign capital in the economy, as a result of which their relative weight in the structure of remained almost unchanged. This group includes, in particular, such sectors as real estate transactions (-0.1 p.p.), transport (-0.2 p.p.), food industry (+0.3 p.p.), manufacture of rubber and plastic products (+0.2 p.p.) and others.

Assuming that the key factor in the changes in the structure and total volume of FDI stocks during 2021–2025 was the combination of primary and secondary effects of the full-scale war, the observed differentiation of sectors by direction and intensity of dynamics allows us to draw a number of conclusions. The sectors in the first group, which experienced the greatest structural decline, proved to be the most vulnerable to the aforementioned consequences. Already in the first year of the war, a significant part of the industrial capacity of both the metallurgical and mining sectors found itself in the occupied territories, in particular in the Donetsk and Luhansk regions. In this logic, the loss of control over key metallurgical enterprises in Mariupol, as well as over mining and extraction enterprises in Kryvyi Rih and Donbas, is indicative. In addition,

both of these sectors have a high territorial concentration of production facilities, which made them priority targets for enemy strikes. Their vulnerability is further exacerbated by their high energy consumption, while since the beginning of the war, enemy attacks have been systematically directed at critical energy infrastructure facilities. As a result, it is the industrial sectors that have found themselves in the most vulnerable position.

In contrast, sectors that have seen not only relative but also absolute growth in FDI volumes show a qualitatively different profile. In particular, the information and communication technology sector is characterised by decentralised infrastructure, the absence of large and vulnerable production sites, lower dependence on centralised energy supplies, and the ability to adapt quickly in conditions of military uncertainty. Similar factors played a role in the case of agriculture. Its production structure is not only less geographically concentrated, but also largely remained outside the zone of direct armed influence. According to official data, as of 2020, more than 70 per cent of Ukraine's total cultivated area was located in regions[13] where there was no active combat in 2022–2023, i.e. outside the Donetsk, Luhansk, Zaporizhzhia, Kherson, Mykolaiv and Kharkiv regions. This means that the main factors of production in the agricultural sector remained functionally accessible even during the most intense period of hostilities, which preserved the objective prerequisites for maintaining investment activity.

As a result, crop production and primary processing (cereals, oilseeds, legumes, oils, flour) remained one of the few traditional areas of Ukrainian exports that retained their competitiveness on the international market, despite the general economic turbulence caused by the war. An additional incentive to maintain investment in agriculture was a targeted government policy that viewed the agricultural sector as one of the key sources of foreign exchange earnings and fiscal stability.

Against this backdrop, the vulnerability of industrial sectors is even more evident. This is due not only to the high territorial concentration of metallurgical and extractive production facilities, but also to the fact that historically, the largest production sites in these sectors were concentrated in regions that became frontline or partially occupied with the outbreak of full-scale war. Thus, the sensitivity of different sectors to the effects of the war was determined not only by technical or infrastructural characteristics, but also by spatial coincidence with the trajectory of hostilities, which further exacerbated the structural vulnerability of heavy industry and, conversely, determined the resilience of the agricultural sector.

[13] State Statistics Service of Ukraine. *Sown areas of agricultural crops by type in 2020.* 2020. https://www.ukrstat.gov.ua/operativ/operativ2020/sg/ppsgk/ppsgk2020.xlsx

Characteristics of foreign investor behaviour during the war through the prism of sectoral FDI stock decomposition

However, a scientific analysis of the dynamics of the sectoral distribution of FDI would be incomplete without considering the structural composition of the annual change in their stocks. The NBU methodology allows us to identify four main components of this indicator: equity instruments, reinvested earnings, debt instruments, and exchange rate differences and asset revaluation. The first element involves the acquisition by a direct investor (DI) of a share in the share capital of a direct investment enterprise (DIE) [14]. Debt instruments include loans, in particular trade loans, as well as loans between enterprises linked by direct investment relationships. A change in the volume of this component can be interpreted as the provision of new loans by the DI to the DII or the repayment of the latter's debt. An important aspect here is the consideration of commodity credits: a positive value of this element in this case reflects the accounts payable of Ukrainian DIIs to foreign DIIs for imports without payment or for prepaid but not completed exports, while a negative value indicates the opposite transaction. The category of reinvested income deserves special attention. According to the official definition, it is "income to be received/paid, consisting of profits from investments in shares (stocks, shares) and income from debt instruments," and is calculated "on the basis of net income from the operating activities of banks and enterprises with direct investments in accordance with the share of the direct foreign investor in their capital, net of taxes and dividends."

According to the author, the available official statistics provide a basis for a differentiated analysis of the dynamics of FDI stock changes, allowing not only to distinguish between its components, but also to assess the nature of changes in investor behaviour. In particular, the distinction between individual components makes it possible to determine which part of the annual dynamics of FDI is determined by the decisions of the investors themselves, and which part is formed by external, non-behavioural factors. In view of this:

- equity instruments reflect the investor's immediate strategic intentions: the acquisition or sale of a stake in a company is a direct indication of changes in its assessment of risks, prospects and the attractiveness of the Ukrainian environment;
- Reinvested income records undistributed profits retained for further development of the FDI and usually signals the investor's willingness to

[14] National Bank of Ukraine. (2023). *Foreign investment in Ukraine: where to find data, how to read the balance of payments, what the latest figures say.* URL: https://expla.bank.gov.ua/expla/src/files/Publication126.pdf

maintain an active presence in the market. At the same time, during the war, especially before 2024, this indicator also partly reflected the inability to repatriate income due to a regulatory ban on its withdrawal, which remained in place until the National Bank introduced easing measures in the currency regime. In this context, it should be noted that the negative value of reinvested income primarily indicates the unprofitability of enterprises and the unfavourable financial situation in the industry, rather than the passivity of the investor as such. On the other hand, the positive value of this indicator, despite the existing restrictions on profit withdrawal, can still be seen as a sign of an active behavioural strategy, since the investor had the opportunity, without reinvesting the income, to withdraw it from circulation or leave it in the form of cash assets not involved in current economic activity. Thus, it is precisely the significant positive values in this category that can be considered an indicator of the investor's conscious long-term orientation towards supporting the company's activities in Ukraine;

- debt instruments demonstrate a change in the volume of financing from foreign investors or, conversely, the repayment of loans, which is also the result of specific actions aimed at changing the structure of intra-corporate debt;

- exchange rate differences and asset revaluation, unlike the three previous elements, are the result of macro-financial fluctuations — in particular, exchange rates and market valuations — and therefore cannot be considered behavioural decisions of the investor.

An analysis of statistical data on changes in foreign direct investment stocks for the period from 2022 to the first quarter of 2025, taking into account four key sources of change (equity transactions, reinvested income, debt instruments and exchange rate/other revaluations) allows us to formulate a number of conclusions from the perspective of behavioural interpretation — that is, through the prism of the extent to which the recorded changes are the result of conscious investor decisions and the extent to which they are the result of external objective factors beyond the investor's control. To implement this approach, we will use factor analysis, which allows us to quantitatively assess the contribution of each component to the overall change in FDI stocks (Table 2). This does not refer to the share in the total volume of investments, but rather to the degree of influence of the relevant factors on the final result, i.e. on the aggregate expansion or contraction of accumulated FDI during the period under review.

Firstly, structural and objective factors related to exchange rate differences, capital revaluation and other non-operational changes played a key role in reducing FDI stocks across all sectors of the economy during the period under review.

Table 2

DECOMPOSITION OF CHANGES IN FOREIGN DIRECT INVESTMENT STOCKS IN 2022–2025 BY ECONOMIC SECTOR AND SOURCE OF FORMATION, IN MILLION US DOLLARS

	As of December 31, 2021	Changes due to transactions with:			Exchange rate differences, capital revaluation and other changes	Total change (2+3+4 +5)	As of March 31, 2025
		equity instruments, except for reinvestment of income	reinvestment of income	debt instruments			
	1	2	3	4	5	6	7
FDI stocks, including in:	65747	2008	6601	627	−17511	−8275	57472
Agricultural production	3004	4	664	213	−165	716	3720
IT and telecoms	2910	87	1558	−65	−1325	255	3165
Science	1811	1	353	−26	−368	−40	1771
Rubber and plastics	2012	97	311	114	−641	−119	1893
Energy supply	4359	219	−276	37	−256	−275	4084
Trade	10188	641	2730	−23	−3705	−356	9832
Food industry	4148	172	920	−51	−1400	−359	3788
Finance and insurance	5945	303	2631	−87	−3225	−379	5567
Transportation	2172	59	461	−65	−853	−397	1775
Real estate transactions	5031	231	−454	310	−772	−686	4345
Metallurgy	4375	−10	−937	97	−1557	−2408	1967
Production	8608	3	−20	−572	−3202	−3791	4817
Other	11184	210	−1333	743	−34	−421	10740

Source: compiled by the author based on[15].

It was this component that ensured a reduction in the total volume of FDI by more than USD17.5 billion, while the total positive contribution of investor activity in the form of transactions with equity instruments,

[15] National Bank of Ukraine. *External sector statistics: Website.* 2025. https://bank.gov.ua/ua/statistic/sector-external

reinvestment of income and debt instruments amounted to USD9.2 billion. In terms of impact, this means that more than 65 per cent of the total change is attributable to factors caused by external circumstances — primarily currency dynamics and market adjustments — while only 35 per cent of the change is the result of residents' investment behaviour. As a result, positive investment activity was unable to fully offset the large-scale depreciation of assets: the total reduction in FDI stocks for 2022–2025 amounted to USD8.3 billion.

Secondly, within the 35 per cent of the total increase that was directly attributable to investor actions, the leading share — about 25 per cent of the total change in FDI stocks — was provided by reinvestment of income (USD 6.6 billion). This structure indicates that, in the context of a full-scale war, it was precisely the retention and reinvestment of profits already earned in Ukraine that became the main form of support for the presence of foreign capital. In most cases, investors were forced to reinvest a significant portion of their income because they were unable to transfer dividends owed to direct investors abroad. This is explained by the action of NBU Resolution No. 18 of 24 February 2022 "On the operation of the banking system during the period of martial law"[16], which completely banned currency transfers from Ukraine, including the repatriation of income received from FDI. Unlike foreign owners of government bonds, who received partial relief as early as 2023[17], owners of corporate FDI were deprived of the opportunity to transfer profits abroad until May 2024. As a result, reinvestment became not only a conscious economic decision, but also a forced response to currency restrictions.

The second largest position, at over USD2 billion, or 7.6 per cent of the total increase, was accounted for by transactions with equity instruments, excluding reinvested income. This indicates limited but positive interest in recapitalising existing enterprises or participating in new projects, despite the threat of escalating military risks. In a number of cases, it was probably not so much a desire to expand the business as a forced support for existing assets, the loss of which could have been even greater in the event of inaction. In addition, such activity could have been concentrated in relatively stable sectors — primarily agriculture and IT — which remained attractive to a limited circle of investors even in wartime.

The smallest contribution — about USD0.6 billion, or 2.4 per cent of the total increase — came from changes in debt instruments. This volume of change may indicate both moderate activity in the area of financial support and a general desire to maintain a balance in mutual settlements, which

[16] National Bank of Ukraine. *On the operation of the banking system during the period of martial law: Resolution No. 18 of 24 February 2022.* 2022. https://zakon.rada.gov.ua/laws/show/v0018500-22#Text

[17] National Bank of Ukraine. *The National Bank has eased and clarified a number of currency restrictions.* 2022. https://bank.gov.ua/ua/news/all/natsionalniy-bank-poslabiv-ta-utochniv-nizku-valyutnih-obmejen

does not lead to a significant increase or decrease in debt. Therefore, the interpretation of this component remains limited, and its impact on the overall dynamics of FDI stocks is minimal compared to other channels.

Thirdly, based on a similar factor approach, an in-depth analysis of the dynamics of FDI stocks in individual sectors was carried out, which revealed significant differences in investor behaviour patterns depending on the specifics of each sector.

The differences in investor behaviour patterns in sectors such as mining, trade, and financial and insurance activities are indicative. On the one hand, these sectors suffered the largest and relatively similar losses in FDI stocks caused by structural factors — exchange rate differences, capital revaluation and other changes, which amounted to USD 3.2–3.7 billion, respectively. On the other hand, the overall result of changes in FDI stocks in each sector differed significantly, reflecting different investor tactics in wartime conditions. In the extractive industry, generally pessimistic investment sentiment has been observed. In particular, foreign investors made virtually no new investments (only USD3 million) amid the overall unprofitability of companies in the sector, as evidenced by the negative value of reinvested earnings (USD-20 million). In addition, there was a negative balance of debt instruments (–USD572 million), which may indicate the accumulation of accounts payable by foreign investors to Ukrainian enterprises with foreign participation. As a result, this sector saw the largest absolute decline in FDI stocks — almost UD$3.8 billion, which accounts for more than 45 per cent of the total decline in FDI in the economy as a whole (almost USD8.3 billion). On the other hand, investors in trade and financial services, whose enterprises remained profitable even during the war, demonstrated a much more active position. In both cases, there were significant amounts of reinvestment of income (over USD2.6 billion), as well as notable new capital investments — USD641 million in trade and USD303 million in the financial sector. These actions significantly mitigated losses: the cumulative decline in FDI stocks was only USD356 million in trade and USD379 million in finance, which together accounts for less than 9 per cent of the total decline in FDI in the economy.

The relatively high activity of foreign investors during the war period is a common feature of the agriculture and transport sectors. In both cases, significant amounts of reinvested earnings were recorded — USD664 million in the agricultural sector and USD461 million in transport — as well as additional investments in capital and debt instruments. In the transport sector, this investment behaviour made it possible to partially offset losses from capital revaluation and exchange rate fluctuations, limiting the overall decline in FDI stocks to $397 million. At the same time, in agriculture, the combination of large-scale reinvestment with the smallest

losses from currency fluctuations and capital revaluation (USD165 million) among all sectors resulted in an increase in FDI of USD716 million. This trend demonstrates not only the relative stability of the industry, but also the strategic vision of investors who have chosen to maintain and expand their presence in this area even in the context of war.

The energy supply and real estate sectors show similar patterns: both maintained positive dynamics of new capital investments (USD 219 million and USD 231 million, respectively), but had significant negative reinvested earnings (USD −276 million and USD −454 million), indicating the unprofitability of enterprises in wartime conditions. Moderate borrowing (USD 37 million and USD 310 million) only partially offset the losses. The overall reduction in FDI stocks in these sectors remained relatively moderate (−275 and −686 million), allowing them to be considered as industries with neutral investment behaviour, where external factors played a key role.

The rubber and plastics science and manufacturing sectors demonstrate a different type of investment behaviour, which can be described as cautiously active, but insufficient to fully neutralise external losses. Both industries recorded noticeable positive operational changes: in science, primarily due to a significant volume of domestic lending (USD353 million), and in rubber and plastics manufacturing — thanks to a combination of new capital investments (USD 97 million), reinvestment of income (USD 311 million) and a positive debt balance (USD 114 million). At the same time, external factors, primarily exchange rate fluctuations and capital revaluation, led to significant losses (USD −368 million and −641 million, respectively), which substantially offset the results of investment activity. As a result, although changes in FDI stocks were negative (−40 and −119 million US dollars), their moderate scale indicates both a certain stability of investment presence and the limitations faced by passive or semi-active strategies in conditions of military turbulence.

Typology of sectoral investment behaviour of foreign investors in the context of full-scale war in Ukraine

Based on the above analysis of changes in FDI stocks by sector, which revealed significant differences in the investment behaviour of foreign investors, the sectors of the Ukrainian economy were grouped according to common characteristics. These are, first, the degree of vulnerability of the industry to the consequences of the war, caused by both direct physical impact and logistical, regulatory or structural constraints; second, the level of profitability of enterprises within the sector, which determines the presence or absence of reinvested income and its sign. The combined effect

of these two factors forms the basic prerequisites for choosing the type of investment policy that foreign investors adhere to in each of the sectors (Table 3).

Table 3

GROUPING OF SECTORS OF THE UKRAINIAN ECONOMY BY DEGREE OF VULNERABILITY TO THE CONSEQUENCES OF THE WAR AND TYPE OF INVESTMENT BEHAVIOUR OF FOREIGN DIRECT INVESTORS

Group of sectors	Degree of vulnerability to the consequences of war		Type of behaviour of foreign direct investors during wartime		Share in the overall decline in FDI stocks
	Category	Share in reinvested income	Type	Share in total new investments	
Agriculture, IT and telecoms, trade, food industry, finance and insurance	Stable	88%	Active	66%	12%
Real estate, energy supply, transport, rubber and plastic products manufacturing, science	Moderate	12%	Cautious	33%	16%
Metallurgy, mining industry	Critical	-	Passive	0,1%	67%

Source: compiled by the author.

The first group includes economic sectors whose enterprises maintained sufficient profitability during the full-scale war, which allowed for large-scale reinvestment of FDI income. The share of reinvested income in the sectors of this group amounted to more than 88 per cent of the total volume of such income in the economy. In addition, these industries accumulated more than 66 per cent of new contributions to the authorised capital. This dynamic allows us to characterise these sectors as relatively resistant to the effects of war, and the policy of foreign investors within this group as active. The aggregate result of investment activity indicates the presence of a significant reserve of stability: in these sectors, either there was an increase in FDI stocks, or losses were minimal compared to other industries.

The second group of sectors covers industries with a moderate level of resilience to the effects of the war. During the period under review, the profitability of companies in this group suffered significantly, but remained sufficient to generate 12 per cent of total reinvested income. This made it possible to maintain partial investment activity, albeit against the backdrop of a restrained strategy. Foreign investors within this group accounted for 33 per cent of all new investments, indicating interest but no readiness for

full-scale expansion. Thus, the policy of investors in these sectors can be characterised as cautious. The FDI stock reduction rate was 16 per cent — slightly higher than in stable sectors, but significantly lower than in critically vulnerable ones. The aggregate parameters of this group indicate a partial ability to adapt and retain foreign capital in conditions of high military uncertainty.

The third group covers industries with a critical level of vulnerability to the effects of war, as confirmed by both the absence of positive values in the structure of reinvested income and the minimal volume of new investments. This share accounts for only 0.1 per cent of the total volume, indicating an actual decline in investment activity in the relevant sectors. This allows us to define the policy of foreign investors in this group as passive. The cumulative effect of such investor behaviour against the backdrop of high losses and deep losses caused by the war was manifested in the fact that the sectors in this group accounted for 67 per cent of the total reduction in FDI stocks.

Causal model of foreign investor behaviour in wartime depending on sectoral vulnerability

Based on the relationship identified during the typology between the degree of vulnerability of economic sectors to the effects of war and the types of investment behaviour of foreign direct investors, there is a need to formulate a causal model that explains how these factors influence investor behaviour (Fig. 2).

Within the proposed model, the degree of vulnerability of a particular industry to the direct consequences of hostilities and related economic shocks is of decisive importance. In the case of critical vulnerability, as observed in the domestic metallurgical and mining industries, the balance of risks and potential benefits for investors shifts sharply to the negative side. This results in a passive investment position, manifested in the absence of new capital investments through equity instruments and significant negative volumes of reinvested income, which is explained by the deep unprofitability of enterprises in the relevant industries. In this context, the dynamics of FDI stocks are determined not so much by conscious investment decisions as by structural losses caused by the war. This is confirmed by the largest reductions in FDI volumes in those sectors that combine high territorial concentration of production, proximity to the combat zone, and high dependence on critical infrastructure that has been damaged.

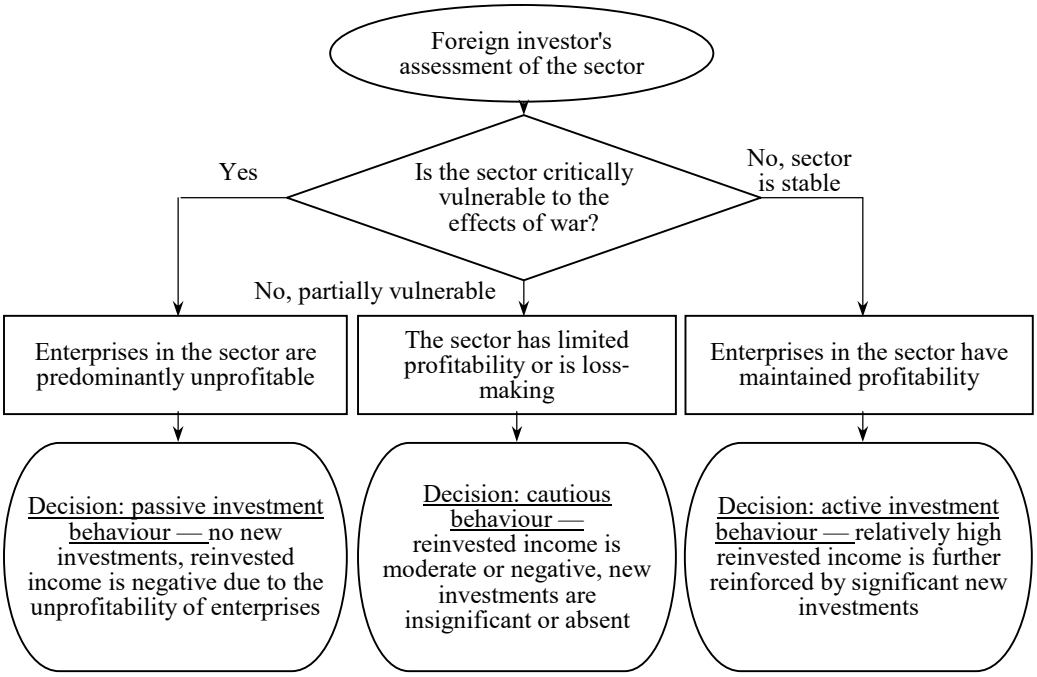

Fig. 2. Causal model of direct foreign investor behaviour in Ukraine depending on sectoral vulnerability to the effects of war

Source: compiled by the author independently

The same model explains the radically different behaviour of foreign investors in sectors whose enterprises have demonstrated the ability to withstand the effects of the war with minimal losses. The basis for this resilience can vary: decentralised production capacities and adaptive business organisation, as in the IT sector; low dependence on external factors, as in the financial sector; stable domestic demand, as in the food industry; or export orientation, as in the agricultural sector. In all these cases, the balance of risks and benefits for investors shifts to the positive side, creating the conditions for active investment behaviour. Foreign-owned companies in these sectors retain their ability to generate profits, a significant portion of which investors reinvest in further development. Moreover, there is a direct correlation between the level of profitability and the propensity to make new investments: the higher the income, the more funds are directed towards new investments. A striking example is the food industry, which has recorded the highest values in terms of both reinvested income and new capital investments. In such sectors, the dynamics of FDI stocks are largely determined by investor behaviour, and the overall decline is insignificant or even offset by growth.

In sectors that occupy an intermediate position between critically vulnerable and relatively protected from military risks, the investment behaviour of foreign investors is generally characterised as cautious. Given the uncertain nature of the balance of risks and benefits in these sectors, the volume of reinvested earnings varies depending on the profitability of enterprises: they either take on moderately positive values or are recorded as insignificant losses. The volume of new capital investments in such cases is also intermediate in nature — from minimal to moderate. Such investor behaviour indicates a lack of confidence in the long-term attractiveness of the industry, but does not signal a mass exit or curtailment of investment presence.

Conclusions

In the course of studying the sectoral structure of FDI stocks in Ukraine during 2021–2025, significant changes were identified that reflect the adaptive response of investors to the military transformation of the economic environment. The largest reduction in FDI volumes occurred in industrial sectors — metallurgy and mining — which are characterised by high territorial concentration, critical dependence on energy infrastructure, and spatial overlap with areas of active combat operations. In contrast, growth or stability in foreign capital was recorded in sectors that proved resilient to military risks — primarily IT, agribusiness, and finance. The decisive factors were infrastructure dispersion, export orientation, domestic demand, and lower dependence on physical assets.

An analysis of the sources of change in foreign direct investment stocks in 2021–2025 found that external factors accounted for the majority of the decline — exchange rate fluctuations, market revaluations and other non-operational changes, which together led to a decrease in FDI of more than USD17.5 billion. In contrast, actual investor actions — in the form of reinvestment of income, new capital investments and debt instruments — accounted for only USD9.2 billion, or 35 per cent of the total change. Reinvestment (USD 6.6 billion) played a decisive role among these actions, indicating the dominance of the strategy of maintaining existing presence over the strategy of expansion. A sectoral analysis allowed us to detail the differences in investor behaviour depending on the characteristics of the respective industries.

The study typologised economic sectors according to the nature of changes in FDI dynamics, which made it possible to identify the relationship between the vulnerability of industries to the effects of war and investment behaviour patterns. Three types were identified: sectors with stable profitability, where reinvestment prevailed and an active

strategy was maintained; sectors with moderate adaptability, characterised by cautious investor behaviour; and critically vulnerable industries, which were characterised by an almost complete lack of investment activity. The latter accounted for the bulk of the overall decline in FDI in 2022–2025.

Based on the identified relationship between the vulnerability of sectors to the consequences of full-scale war in Ukraine and the nature of foreign investors' investment behaviour, a causal model has been developed to explain the dominant approaches to decision-making. In conditions of critical vulnerability (particularly in metallurgy and mining), passive investment behaviour is formed, manifested in a reduction in investment, a lack of reinvestment and a loss of assets. In relatively stable sectors (IT, finance, food industry, agribusiness), an active policy is observed — maintaining profitability, reinvestment and new capital contributions. In sectors of intermediate vulnerability, cautious behaviour prevails, with limited investment and unstable profit dynamics. The proposed model reflects the specifics of the transformation of foreign investors' behaviour specifically in the context of the war in Ukraine.

The results obtained have made it possible to identify consistent patterns in the investment behaviour of foreign investors in the context of the war in Ukraine, in particular the ability to maintain activity in profitable sectors even in times of high uncertainty. This has important practical significance, as it shows that the formation of FDI incentive policies does not necessarily have to be tied exclusively to the post-war period — it can be effective now, targeting shock-resistant industries. At the same time, the study opens up new analytical horizons: in particular, further attempts to model the relationship between industry characteristics, structural risks and investor behaviour; expanding the analysis at the regional level; and studying the transformation of investor motivations in the dynamics of war are promising. Thus, the work lays the foundation for both applied government planning and further interdisciplinary research on investment decision-making mechanisms in conflict environments.

* This article was translated from its original in Ukrainian.

References

Atamas, O. Investing in a war economy: analysis of the current situation and short-term forecast. *Economy and Society*, No. 59. (2024). https://doi.org/10.32782/2524-0072/2024-59-161 [In Ukrainian].

Geraschenko S. O., Kolotylo M. B. "Foreign direct investment in Ukraine in the context of integration into the global economy." *Economic Bulletin of the National Mining University,* No. 1, pp. 60–68. (2018). https://ev.nmu.org.ua/docs/2018/1/EV20181_060-068.pdf [In Ukrainian].

Guk O., Mokhonko G., Shenderivska L. Investment trends in Ukraine. *Economy and Society*, No. 29. (2021). https://doi.org/10.32782/2524-0072/2021-29-35 [In Ukrainian].

Heyets V. "Priorities in the programme for the post-war revival of Ukraine's economy." *International Economic Policy*, No. 2(41), pp. 8–20. (2024). https://doi.org/10.33111/iep.2024.41.01 [In Ukrainian].

Kasich, A. O., Anurova-Prykhodko, I. O. "Foreign direct investment flows to Ukraine through the prism of global trends." *Investments: Practice and Experience*, No. 2, pp. 5–9. (2018). http://www.investplan.com.ua/pdf/2_2018/3.pdf [In Ukrainian].

Khomenko I. O., Volynets L. M., Shamkalo A. O. Features of foreign direct investment inflows and their impact on the Ukrainian economy. *Problems and Prospects of Economics and Management,* No. 1(25), pp. 15–26. (2021). https://doi.org/10.25140/2411-5215-2021-1(25)-15-26 [In Ukrainian].

Kovalchuk N. O. "Foreign direct investment in Ukraine in the context of integration into the European Union." *Business Inform*, No. 3, pp. 38–42. (2023). https://doi.org/10.32983/2222-4459-2023-3-38-42 [In Ukrainian].

National Bank of Ukraine. *External sector statistics: Website*. 2025. https://bank.gov.ua/ua/statistic/sector-external [In Ukrainian].

National Bank of Ukraine. *Foreign investment in Ukraine: where to find data, how to read the balance of payments, what the latest figures say*. 2023. https://expla.bank.gov.ua/expla/src/files/Publication126.pdf

National Bank of Ukraine. *On the operation of the banking system during the period of martial law: Resolution No. 18 of 24 February 2022* (2022). https://zakon.rada.gov.ua/laws/show/v0018500-22#Text [In Ukrainian].

National Bank of Ukraine. *The National Bank has eased and clarified a number of currency restrictions*. 2022. https://bank.gov.ua/ua/news/all/natsionalniy-bank-poslabiv-ta-utochniv-nizku-valyutnih-obmejen

Sokolovska O. M. Foreign direct investment in the Ukrainian economy: status and problems of attraction. *Bulletin of Economic Science of Ukraine,* No. 2(41), pp. 92–99. (2021). https://doi.org/10.37405/1729-7206.2021.2(41).92-99 [In Ukrainian].

State Statistics Service of Ukraine. *Sown areas of agricultural crops by type in 2020*. 2020. https://www.ukrstat.gov.ua/operativ/operativ2020/sg/ppsgk/ppsgk2020.xlsx [In Ukrainian].

Sundakov, A. "Post-war reconstruction and disaster recovery: lessons for Ukraine." *International Economic Policy*, No. 2(41), pp. 67–81. (2024). https://doi.org/10.33111/iep.2024.41.05. [In Ukrainian].

Yevtushenko N. O. "Foreign direct investment in Ukraine during martial law: current status and prospects for attraction." *Financial and credit activities: problems of theory and practice*, No. 4(45), pp. 185–194. (2022). https://doi.org/10.55643/fcaptp.4.45.2022.3881 [In Ukrainian].