International Entrepreneurship Review

2023, Vol. 9, No. 2

10.15678/IER.2023.0902.02

The shift of the foreign direct investments paradigm impacted by the Fourth Industrial Revolution

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ABSTRACT

Objective: The purpose of the article is to examine the impact of ground-breaking inventions collectively called the Fourth Industrial Revolution (4IR) or Industry 4.0 on foreign direct investments (FDIs). In particular, the impact of the inventions on offshoring and reshoring (backshoring, nearshoring, insourcing) was analysed in the context of other factors and their potential future course.

Research Design & Methods: The article is theoretical and empirical in nature and based on theoretical literature on the subject, secondary sources containing the results of empirical research, and desk research. Predictive analysis and logical reasoning methods played therefore a very important role, since the studied phenomena are in the process of evolution. The structure of the article consists of findings on the origins and the definitions of offshoring and reshoring and their theoretical foundations, an analysis of the motives, barriers and course of these processes follows, and the presentation of the research results and the final conclusions.

Findings: The implementation of 4IR inventions has the potential to fundamentally change the geography of FDIs and their importance in the world. It is likely to decrease the significance of labour costs as a factor of production location while increasing the role of human capital and technology. As a result, reshoring phenomena will intensify, and many global value chains will be liquidated or shortened. The ambivalent impact of 4IR on the geography of production will be probable, while the trend towards reshoring and spatial dispersion of the production of complete products in the long term may appear to be stronger.

Implications & Recommendations: To a significant degree, Industry 4.0 will probably change the criteria for the implementation of FDIs, their size, and the directions of capital flows. The consequences of this will vary depending on the type of industry and the production carried out within. In particular, the effects will differ when divided between highly developed and developing countries. If the former benefit from the change in business models and strengthen their competitive advantages, the latter may suffer significant losses related to the increase of unemployment and the collapse of their industrialization strategy based on the inflow of FDIs. Therefore, actions by governments and international organizations are necessary to prevent this 'dark' scenario from becoming a reality.

Contribution & Value Added: The article presents the theoretical foundations of offshoring and reshoring as well as the analysis and synthesis of their motives and barriers. Their course and recent determinants were characterized. The assessment of the impact of 4IR inventions on offshoring and reshoring and the identification of factors that will affect these two aspects of FDIs positively and negatively in the short, medium, and long term in the future have the greatest importance for the value of the study. Moreover, the study found that the reverse flow of FDIs implies the need to formulate their new paradigm. The former paradigm characterised them in a limited way as a unilateral flow of capital from the country of origin to the host country. The one proposed in the article takes into account also the return movement of capital as an immanent element of FDIs of increasing importance.

Article type: conceptual article

Keywords: Industrial Revolution 4.0; offshoring; reshoring; foreign direct investment

JEL codes: L2

Received: 1 February 2023 Revised: 19 February 2023 Accepted: 21 March 2023

Suggested citation:

Rymarczyk, J. (2023). The shift of the foreign direct investments paradigm impacted by the Fourth Industrial Revolution. *International Entrepreneurship Review,* 9(2), 19-34. https://doi.org/10.15678/IER.2023.0902.02

INTRODUCTION

The basic forms of international business include international trade and foreign direct investments (FDIs). Historically, the former preceded the latter, considered its higher, developed form. The dynamic development of FDIs is related to the stimulating influence of political, economic, socio-psychological and, last but not least, technical and technological factors. Those mentioned as the last are even considered the most important, because they preceded and determined the others. Breakthrough changes in the sphere of general technique and technology of production have been included in four intervals referred to as industrial revolutions. The fourth one is a process that is currently taking place and ultimately its effects may differ from those expected. Nevertheless, based on the current progress in the implementation of its basic inventions and their effects, it is expected that it will radically change the nature of production processes with far-reaching consequences in all spheres of the functioning of societies. Despite its application also in service activity, the complex of those manufacturing processes is also called Industry 4.0. (Rymarczyk, 2020; 2021). This may be influenced by the disappearance of differences between a product and a service as a result of widespread digitization. Although the Fourth Industrial Revolution constitutes a consequence and continuation of previous scientific, research and technical achievements, its turning point has been conventionally accepted to have taken place in 2010.

There are grounds to believe that overcoming technical and economic barriers related to the industrial implementation of its inventions will affect the size of the structure and the geography of FDIs. The previous FDI paradigm defined it as the complete or partial takeover of the ownership of an entity abroad or the establishment of a new one to conduct business activity (Rymarczyk, 2017). It, therefore, limited FDIs to one option, namely the flow of capital from its country of origin to the host country. However, under the influence of geopolitical, economic, and technical and technological changes that are taking place in the global economy, it should include reshoring in addition to the offshoring option. The proposed new paradigm of FDI could be as follows: 'FDI is the movement of capital consisting of taking over the ownership of an entity or establishing a new one abroad to conduct business activity, as well as its relocation to the country of origin of the investment, a neighbouring or a third country.'

RESEARCH METHODOLOGY

The current article is based on available literature and online sources. This is a theory development article, which relies on literature review and desk research (Rymarczyk, 2020; 2021).

This conceptual article derives research propositions from literature review and desk research of current business press papers, professional reports, company web pages, and blogs because this subject is relatively new in the theory of economics and international business. This article should be considered as a conceptual paper, in which literature review and desk research lead to the development of theoretical propositions. As for the scientific approach, this article uses a qualitative design of research, the method of indirect observation, cause-effect analysis, and predictive synthesis, modelling, induction, and description.

LITERATURE REVIEW AND THEORY DEVELOPMENT

The Origin and the Notions of Offshoring and Reshoring

Political, economic, socio-psychological and, above all, technical and technological changes occurring in the world economy, gradually intensified from the mid-1960s, and resulted in an extraordinary increase, albeit to a varying degree, in the internationalization of national economies. The main authors of these processes – which we call globalization – have been business entities commencing their activities in various countries of the world. For a long time, their deepening internationalization was treated as a linear process, following a sequential or stepwise manner. The intensification of establishing business activity abroad, *i.e.* offshoring, became one of the most widespread strategies used by companies to increase their competitive advantage since the early 1990s (Di Mauro *et al*., 2018). The basic form

of offshoring involved foreign direct investments, consisting in the creation (greenfield) or acquisition (brownfield) of existing enterprises in various foreign locations. The outsourcing of individual production phases to specialized, local and independent companies abroad was of lesser significance. In this way, global supply and value chains of transnational corporations (TCNs) were created. The literature dealing with these phenomena abounds. It would be impossible to cite even the most representative examples of the literature, here. Therefore, only items containing literature reviews on FDIs, mainly from the last few years, have been listed (Le, 2021; Letsou & Pantelidis, 2020; Otieno & Aduda, 2022; Paul & Feliciano-Castero, 2021; Riker & Wickramarachi, 2020; Trąpczyński, 2013; Wan, 2010; World Bank, 2020). However, with increasing frequency since the beginning of the twenty-first century, the phenomenon opposite to offshoring has been observed, involving the transfer of production either back to the country hosting the corporation's headquarters, referred to as 'reshoring,' 'backshoring' or 'insourcing,' or its neighbouring country, *i.e*. 'nearshoring.' In the literature on the subject, various forms of reshoring are distinguished, namely (Gray *et al*., 2013; Tate & Bals, 2018):

- in-house reshoring, meaning the transfer of activities carried out by the corporation's own foreign branch to its own branch in the country of its registered office;
- reshoring for outsourcing, meaning the transfer of activities performed by the corporation's own foreign branch to other companies in the country of the corporation's registered office;
- reshoring for insourcing, meaning the transfer of activities performed by foreign suppliers to the corporation's own branch in the country of its registered office;
- outsourced reshoring, meaning the transfer of activities performed by the corporation's foreign suppliers to suppliers in the country of its registered office.

It should be noted that the optimal combination of offshoring and reshoring from the point of view of efficiency is referred to as rightshoring.

Theoretical Foundations of Offshoring and Reshoring

The offshoring and reshoring phenomena can be treated as elements of a company's internationalization process influenced by the dynamics of competition on a global scale, the environment of the country of investment origin, its location, and the specificity of the company itself (Arik, 2013). From the theoretical point of view, they can be explained primarily by the theory of transaction costs and Dunning's OLI-eclectic paradigm. According to the first theory, lower transaction costs in a foreign location are a factor stimulating offshoring, and their over-proportional increase in relation to the benefits achieved affects reshoring decisions (Rao, 2003). Dunning's paradigm consists of three theories (Dunning & Lundan, 2008). The first is the theory of monopolistic advantage (ownership theory). It states that a company invests abroad, because it can benefit from the advantages over local companies related to technology, finance, marketing, production, etc. However, if these advantages can be used more effectively in the country of the company's origin or in the neighbouring country, as a result of a change in the situation on the foreign market and its surroundings or within the company, it will be inclined to change its location to the one closer to its head office.

The second theory, *i.e.* the internationalization theory, assumes that if a company has monopolistic advantages, it will use them internally, *i.e.* in the form of foreign direct investments (offshoring) in its subsidiaries in foreign countries, and not in the form of internationalization that would result in its acquisition by competitors, *e.g*. by selling licenses. In this case, reshoring may be justified by the greater security of maintaining these advantages and better management of those advantages in the country of origin of the company than in the host country. In developed countries, the quality of the law protecting intellectual property is usually higher than in developing countries. Moreover, production in this location gives the benefits of products made at home.

The third element of the paradigm is the location theory, pointing to the specific benefits of locating investments in a given country. First of all, these include lower costs of labour, as well as materials, raw materials, energy and environmental protection. The implementation of a number of modern technologies related to 4IR, discussed later in the article, significantly reduces the benefits of arbitration in this area. This results in the fact that the share of the listed elements that make up

the final product is significantly reduced in relation to the participation of the capital. Production in the highly developed, home country of the company becomes labour- and material-efficient, with the increase of labour productivity, quality and modernity of products; relations with consumers are closer and the negative impact of the production on the natural environment is reduced, which creates impulses to relocate the previously offshore production.

The stimulants to the interpretation of the phenomenon of reshoring can also be found in a number of other theories in the field of business and international enterprise management, such as the internationalization theory, resource-based theory, dynamic capabilities theory, contingency theory, factor market rivalry theory, Ahroni's behavioural theory and others. So far, however, there has not appeared a separate theory of reshoring (Di Stefano & Fratocchi, 2019; Ellram *et al*., 2013; Wiesmann *et al*., 2017).

Motives and Barriers of Offshoring

The comparison of the motives and barriers of offshoring and reshoring, as well as their development, carried out here with the application of the theoretical and empirical method, allows for the identification of factors determining the processes of globalization and de-globalization of enterprises and their course in the period of 4IR. In particular, it provides an answer to the question of whether the decision to invest abroad was already based on reasons for the need to make reshoring decisions in the future. Such a case may be, for example, when the decision on offshoring was erroneous, *i.e.* the company's management incorrectly assessed the proportions of potential profits and benefits to costs and risks. If this is not the case, an alternative cause of reshoring is likely to be an unforeseen change in conditions in the host country market, the domestic market, conditions within the company, and the global economy in general. It should be noted that reshoring does not necessarily mean de-internationalization of the company, because production can be moved not only to the country of the company's headquarters, but also to another country. If it is a neighbouring country, the already mentioned nearshoring is taking place. In addition, the development of production in the company's home country with the use of modern technology can lead to an increase in the international competitiveness of its products and an increase in exports, which is also treated as a form of its internationalization.

Generally, the motives for offshoring can be divided into (Ashby, 2016; Di Mauro *et al*., 2018; Rymarczyk, 2017):

- cost-related;
- market-related;
- supplies-related;
- political;
- strategic.

Cost-related motives and the expected benefits related to them are considered the most important ones. Not only labour costs – which are much lower in developing countries – but also lower costs of materials, energy, and environmental protection are put forward. Access to new, large, and absorptive markets with a low level of competition is mentioned in the second place. Supply-related motives concern access to raw materials, qualified workforce as well as know-how and modern technology, which can be ensured by investments in high-tech clusters, located mainly in highly developed countries. The political determinants of offshoring are related to the policy towards FDIs applied by the countries of origin and host countries, as well as the political risk in the latter ones. With many financial, fiscal, and other tools, both the countries of origin and the host countries support companies in their international operations. Factors encouraging investments in a given country, sometimes even *sine qua non*, include its political, economic, and social stability. The strategic motives include the maintenance or increase of the company's international competitiveness or the weakening of the competitive influence of other companies. This may take place through a takeover of some or all of the assets of other companies, creating new companies, entering into strategic alliances, or creating joint ventures. The strategic motive may also include dispersing the risk of the business activity throughout a number of countries.

Offshoring, however, results in the creation of some negative phenomena for the company. These include the geographical distance related to an increase in costs regarding trade, border procedures

and customs, and transport and cargo insurance, higher risk of the loss or damage to cargo, the likelihood of failing to meet delivery deadlines and production downtime taking place. The supply chain gets more complex and less transparent and controllable, and the costs of inventories and logistics increase. Communication barriers, cultural differences, lower qualifications of employees, lower standards of control and management, no tradition of well-organized large-scale production, lack of direct contact with the company's R&D centres, and lower quality of local materials and raw materials mean that intermediate and final products manufactured in foreign locations are of lower quality. Moving production abroad is associated with a decrease in employment in the company's home country and the country's budget revenues. There is also a political risk involved. Changes in governments and the transition from a policy favouring FDIs to a restrictive one can significantly hamper the activities of foreign companies, increase their costs and deprive them of planned profits. In an extreme case, foreign companies may be expropriated or forced to 'domestication,' *i.e.* the obligation to enter into a joint venture with a local partner. Dependence on production abroad can reduce a country's economic, social, and security-related stability. In the event of conflicts and emergencies, supply chains are likely to be disrupted. The Covid-19 epidemic has shown the excessive dependence of European countries on the production of medical equipment and pharmaceutical raw materials and microprocessors in China. Leading European politicians state that globalization has gone too far and call for bringing the production of certain sectors back to Europe, for greater diversification of supply chains and for replication of production. It is stated that excessive de-industrialisation, relocation of production, and lengthening of delivery chains to their extremes annihilate production capacities and know-how in highly developed countries and lead to the limitation of their sovereignty. The impulse to intensify reshoring may also result from the common policy of the European Union (*Koronawirus*, 2020).

Development of FDIs and Their Determinants

The development of globalization processes, including FDIs, has a sinusoidal character. After a period of strong growth, their progress weakens or even decreases, exemplified mainly by a decrease in the dynamics and volume of trade and international capital flows. The years 1980-2007 are referred to as the golden age of globalization or hyper globalization. It was interrupted by the outbreak of the global financial crisis of 2007-2009. After overcoming this crisis, there was a slight and short-term increase in the global inflow of FDIs, and then their stagnation until 2014 at the level of approximately USD 1500 billion, followed by a strong increase lasting two years. After reaching a value of about USD 2000 billion, they fell and accelerated intensively in 2020 due to the Covid-19 pandemic. At that time, the investments fell by 35% compared to the previous year – from USD 1500 billion to USD 1000 billion (Figure 1).

This was the largest decrease in FDIs since 2001 when the Internet bubble burst and it was 10 times greater than the decline in global GDP and five times greater than global trade (Kalotay & Sass, 2021). In the following year, *i.e*. 2021, there was a significant increase in FDIs, by as much as 64%, exceeding the level of the first full year of the Covid-19 pandemic, and they amounted to USD 1582 billion. This was influenced by the dynamically developing market of mergers and acquisitions and the rapid increase in the implementation of project finance as a result of liberal financing conditions, significant state financial aid packages stimulating the development of infrastructure sectors and the reduction of the impact of the 'pandemic shock' (UNCTAD, 2022). In 2022, however, as indicated by the data from the first quarter of this year, a significant weakening of the FDIs inflow was expected.

While the world continued to feel the effects of Covid-19, a new threat emerged in the form of war in Ukraine, with its effects going far beyond its borders. The immediate effects include a dramatic decrease in FDIs inflows to Russia following the imposition of sanctions by many countries, and also a decrease in FDIs inflows to Ukraine due to high political risk. However, the indirect effects on FDIs are much greater. There has been a significant reduction in the supply of energy raw materials from Russia, as well as food, mainly cereals from Ukraine, resulting in a sharp increase in their prices. In many countries, including Poland, there has been a double-digit inflation and forecasts of its further increase, rendering real planning of investments, impossible both domestically and abroad, may lead to social unrest and political destabilization. In order to suppress the inflation, in general, interest rates have been raised

significantly. This has not reduced inflation, although it may have limited its growth rate. Certainly, however, high interest rates on loans and their possible further increase may contribute to a slowdown in global investment processes. According to common predictions, the emergence of risk in the fuel, food, and finance markets will result in a global recession, which will have a negative impact on FDI. In addition, the world is still feeling the effects of the pandemic. In China, the largest recipient of FDIs after the US, the 'zero Covid-19' policy has been implemented with lockdown re-introduced in certain regions that play an important role in global supply chains, which has reduced investment in related industries.

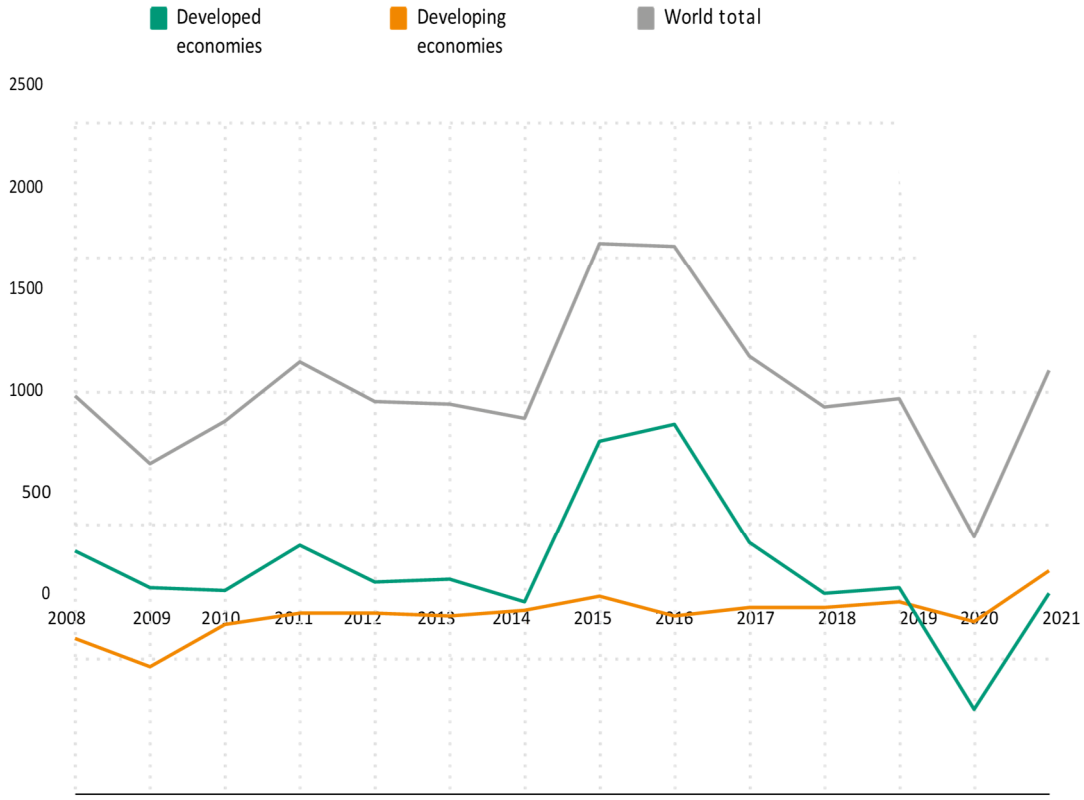

Figure 1. FDI Inflows, Global and by Economic Grouping 2008-2021 (billions of USD)
Source: UNCTAD, 2022.

Noteworthy, the amplitude of fluctuations in the inflow of FDIs to developed countries almost exactly corresponded to that of global FDIs, while the inflow to developing countries was highly stable after the global financial crisis and their collapse in 2020 was smaller than in the developed countries (Kalotay & Sass, 2021).

However, in the analysed FDIs trend in the years 2008-2022, it is impossible to see the impact of 4IR, due to the high level of data aggregation and the previously identified their potential, ambivalent impact on supply chains, *i.e.* both on their development and their limitation. Undoubtedly, however, the increase in risk and uncertainty resulting from the complexity, turbulence, volatility, and ambiguity of economic, political, social, and natural processes in the world will result in the desire to reduce them, where, in the long term, the use of inventions of the current industrial revolution may be of great help.

Motives and Barriers of Reshoring

As already mentioned, the significance of factors stimulating reshoring depends not only on macroeconomic factors existing on the side of the host country and the country of origin of the investment but also on specific factors related to the type of enterprise and industry sector. Since FDIs are carried out mainly by large companies from industries in which the input of human labour plays an important role, it is a logical conclusion that reshoring will mainly concern those companies.

There is extensive literature on the motives, barriers and effects of reshoring. Apart from the theoretical and speculative considerations, the authors have referred to case studies based on various number of companies – from one to several hundred. They have also presented their various classifications and number of motives (Albertoni *et al*., 2015; Ancarani *et al*., 2019; Benstead *et al*., 2017; Dachs *et al*., 2017; Di Mauro *et al*., 2018; Eltetö, 2019; Foerstl *et al*., 2016; Johansson & Olhager, 2018; Kramer, 2017; Nassimbeni *et al*., 2019; Wiesmann *et al*., 2017; Young, 2016). In this article, the motives have been divided into related to:

- the host country;
- the company's country of origin;
- the company's specific characteristics;
- the global supply chains.

The first group of motives includes such factors as:

- increase in wages, prices of raw materials, materials, energy, and general costs of doing business in the host country, changing the planned benefits of offshoring;
- economic, political, and social instability;
- large exchange rate fluctuations;
- high and growing inflation;
- increase in taxation and strict control over the use of transaction prices and other methods of tax optimisation;
- government interference in company operations;
- lack of suitably qualified workforce;
- lack of material infrastructure;
- limited availability of appropriate quality raw materials;
- low quality of manufactured products;
- lack of development and innovation of products and manufacturing processes due to the location of R&D centres mainly in the country of origin of the company or in highly developed countries;
- drainage of know-how from the company and lack of adequate protection of intellectual property;
- psychological and cultural distance;
- bureaucracy and corruption;
- general costs of foreign ownership.

The following motives for reshoring are related to the company's country of origin:

- decrease in labour costs due to the use of new technologies and production techniques;
- increase in the efficiency of manufacturing processes;
- shortening of the time of manufacture and delivery to customers;
- higher quality and innovativeness of production;
- increasing operational flexibility;
- effects of the national technological cluster and spillover;
- increasing customer satisfaction and satisfying their preferences to purchase domestically produced products (made in effect);
- reducing the distance to customers and greater possibility of product customization;
- reduction of unemployment;
- social and environmental responsibility of business;
- pressure from trade unions and the government;
- government subsidies for relocation;
- emotional elements (patriotism, loyalty);
- untapped production potential in the country.

Motives specifically related to the company include:

- correction of previous wrong decisions on investing abroad (*e.g.* overestimation of benefits and underestimation of costs);

- change of the company's business strategy;
- termination of contracts with suppliers;
- global reorganization of the company;
- changing the company's business model;
- imitation of competitors.

The last group of motives is related to global supply chains including:

- liquidation or shortening of supply chains;
- reduction of logistics costs;
- reducing the size and cost of inventories;
- elimination of customs, border, and trade costs;
- elimination of minimum delivery requirements;
- elimination of the risk of inadequate quality, size, and delivery times;
- elimination of the risk of supply chain disruption;
- elimination of the risk of damage or loss of chains (*e.g*. due to random events, terrorism, and piracy).

The negative aspects of reshoring primarily include the costs of liquidation of operations abroad and their transfer to the country of origin. The next stage involves launching production based on costly, new, labour-saving technology in this country. There emerges a need to employ highly qualified and therefore highly paid specialists, whose deficit is already noted, also in industrial countries. Not all raw materials and components may be available on the local market. Thus, it remains indispensable to maintain global supply chains to a limited extent. If the global value creation chains formed final products sold in the countries of the FDI location, their liquidation will require their export from the home countries of the transnational corporations with all the consequences related to logistics, costs and other consequences related to them, or launching their comprehensive production on site. Similarly to the overestimation of the positive effects of offshoring, an error in the assessment of the benefits of reshoring can also occur, causing a deterioration of the company's situation.

Trends in the Development of Reshoring

Data on reshoring are poor, fragmentary, estimated, and they sometimes differ from each other. For example, according to data from the Ministry of Trade, Industry and Energy of South Korea, in 2014-2018, on average, 482.2 companies worldwide reshored each year, while 10.4 companies returned to this country annually (Chang-Gyun, 2020). In the same period, Nassimbeni *et al*. (2019) counted 253 cases of reshoring and nearshoring to Europe and the number of jobs resulting from this relocation was 12 840. In turn, Reshoring Initiative, the industrial organization reported that since 2010, as a result of reshoring, 1.6 million jobs were reappointed in the USA, and in 2022 a record number of new jobs related to reshoring, *i.e.* 350 000, was to appear, because 1800 companies planned to completely or partially move their production from abroad (Ouellette, 2022).

In general, empirical evidence indicates that reshoring processes of companies originating from the European Union, the United States and Japan have intensified in the last 10 years, especially from China, with the greatest extent related to large and medium-sized high-tech industries (Consultancy.eu, 2022; Pla-Barber, Villar, & Narula, 2021). A number of studies conducted in numerous corporate populations (1700, 1300, 840) in the US and Europe found a positive and significant relationship between 4IR and reshoring (Kamp & Gibaja, 2021; Raza *et al*., 2021; Tilley, 2017). In such industries as machinery, electrical, electronics, and means of transport, reshoring was influenced primarily by economic factors, including automation, increased flexibility, and shortening of delivery times that are generally related to 4IR inventions. On the other hand, in the industries of semiconductors, medical products, pharmaceuticals and chemicals, political factors played a greater role, *i.e*. security of supply chains weakened by Covid-19, regional competitiveness, and protectionism. The war in Ukraine and the possibility of an armed conflict between China and Taiwan also seem to have had an impact on the management of transnational corporations increasing their positive attitude to reshoring. According to the Kearney reshoring index, 92% of the surveyed CEOs in the US presented such an attitude towards reshoring, and 79% of those related to manufacturing in China have already moved part of their operations to the US or planned to

do so in the near future as part of the implementation of the China plus investment strategy. A significant part (70%) of the respondents were in the process of executing or planned nearshoring, *i.e.* relocation of a part of delivery chains to Mexico, Canada, or Middle America (Stone, 2022).

In turn, research conducted by BCI Global among CEOs of 125 companies, including 70 from Europe, 40 from the USA, and 15 from Asia from the pharmaceutical, machinery, automotive, and consumer packaged goods industries showed that 60% of them planned moving part of the production from its current location in Asia (BCI Global, 2022).

Reshoring also takes place in Asia. Due to rising labour costs there and the desire to diversify suppliers, Japanese companies, in particular, are moving their production from China to Thailand, Indonesia, Vietnam, and the Philippines (Enderwick & Buckley, 2020). However, substituting China, which is the 'factory of the world,' is not an easy task. It accounts for 60% of global exports of consumer goods and 41% of global exports of the TMT industry: technology, media, telecommunications (WEF, 2020). For example, 75% of blood thinners imported by Italy, 60% of components for the production of antibiotics imported by Japan and 40% by Germany, Italy, and France come from China. Several dozen per cent of imports of various other medical supplies to the G7 countries (bandages, dressings, plasters, antibiotics, etc.) come from China (Javorcik, 2020).

It should be noted that the policy of highly developed countries that supports such activities of companies has a large impact on reshoring. It is conducted intensively in the USA, which was mainly related to President Trump's America First policy, as well as in France, the United Kingdom, Germany, Japan, Taiwan, and Australia. It involves governments providing subsidies, tax reductions and tax holidays, consulting support, removing bureaucratic obstacles, and implementing regional, individualized support programs (Elia *et al*., 2021).

However, the scale of reshoring and its impact on the economy and employment in the home countries of multinational corporations has been small so far. The main and growing role is played by FDIs' returns from China and other Asian countries, and in the case of Europe, also intra-EU flows and outflows from Russia, in connection with the sanctions imposed on it, to the countries of Central and Eastern Europe, *i.e.* Poland, the Czech Republic and Hungary, as well as to Turkey.

DISCUSSION

The Fourth Industrial Revolution means a transition to the implementation of a business model based on the development strategy and implementation of innovative and ground-breaking technologies for the production of goods and services. Predictive analysis of their potential impact on offshoring leads to the conclusion that artificial intelligence, the Internet of Things, big data, cloud computing, blockchain, and autonomous vehicles will have the most important positive impact on it (Korzynski *et al*., 2023, Wach *et al*., 2023).

The use of these devices will optimize global supply chains (WEF, 2017). First of all, the delivery time will be significantly shortened. Advanced methods of forecasting such as predictive and prescriptive information analysis will allow much more accurate predictions of changes in trends in consumer demand. Planning will be conducted and continued in real time of the delivery cycle. It will be shortened and will enable a dynamic response to changes in demand and supply. The growing flexibility of the delivery process will allow customers to change their orders in terms of type, size and destination shortly before the agreed delivery date of the products. Modern means of transport, such as drones, will allow the delivery to be made on the day of placing and accepting the order. This will be particularly important for just-in-time emergency deliveries and perishable products. The storage of products will be minimized, and the entire process will be automated, which will significantly reduce its costs.

The complexity of supply chains will be reduced, they will become more transparent and much better monitored (Capgemini Consulting, 2017; De Beule & Nauwelaerts, 2018; Schrauf & Bettram, 2016; Strange & Zucchella, 2017; WEF, 2017). This will be related to their effective and constant control and the exchange of information between their stakeholders. Business networks and cloud-based platforms will enable them to use the same database. This database integration across the entire supply

chain and its real-time availability will increase its agility. Collaboration between companies and customers will become easier, closer, and more efficient. All participants of the network will have full information on stocks, demand, transport, logistic and production capacities, etc. They will receive information about bottlenecks and ways to remove them in real time. The use of advanced, digital (intelligent), and automated management systems and cost optimization models will mean that supply chain goals can be set and implemented automatically. These systems will be able to recognize risks and emerging threats in supplies and change their parameters in order to remove potential failures.

In turn, decisions to relocate investments to the home countries of TNCs or their neighbouring countries will be particularly favourably influenced by the use of such inventions as advanced robotics, 3D printing, nanotechnology, augmented reality, and digital production simulation.

Advanced robotics includes devices that can function autonomously and communicate with each other and with people. They are equipped with artificial intelligence, which enables them to learn from experience, *i.e.* perform recursive manufacturing processes. Their configuration can be easily changed, which allows for a flexible and quick response to changes in projects. Reprogramming of production, as a result of *e.g.* a change in demand, which in a normal factory requires human intervention and stopping machines can be done autonomously in a 'smart' factory. This is of particular importance in single and low-volume production. Basing production on cyber-physical devices will mean, first of all, a far-reaching reduction in the employment of not only manual workers, but also technical personnel, which is the most important element of production costs in highly developed countries. Thus, this invention can be considered the most important in stimulating reshoring (Gronau, 2015; Habib, 2020; Toorajipour *et al*., 2021).

Moreover, 3D printing or additive manufacturing consists in manufacturing products in accordance with their programmed digital pattern or drawing by applying successive layers of the appropriate material. In this way, a uniform product with a very complex shape can be created. Laborious and time-consuming preparation of models or dies is eliminated, labour, material, and energy costs are reduced (Abeliansky *et al*., 2015; Chetan, 2022; Dilberoglu *et al*., 2017; Laplume *et al*., 2016; Rayna & Striukowa, 2015).

Direct contact between producers and consumers will enable quick adaptation of production to their changing tastes, *i.e.* customization of products with a further impact on the increase in demand and sales. This will mean the shortening or liquidation of many global supply chains. Intermediate stages of production located in different countries and flows of intermediate goods will be eliminated. It seems that 3D printing can be classified as the second most significant thing for reshoring.

Nanotechnology is the manipulation of atoms and extremely small particles to create materials with high efficiency, negligible weight, great strength, adaptability, and recyclability. The materials can be used to produce intelligent products, *e.g.* with the memory of the previous shape and reacting to changes in external conditions. This technology will be used with an increasing range in the smart factories and 3D production, mainly related to the location in highly developed countries, home countries of TNCs, and thus, they will favour reshoring.

A similar positive impact on reshoring and production in the above-mentioned location will be exerted by augmented reality and digital production simulation. The first device is also referred to as digital prototyping, because it is helpful in the design of machines and devices. It is used in a digital simulation of production, based on the use of special computer software to plan the implementation and testing of the production process and to create its new model. These technologies are developed in R&D centres of transnational corporations and, combined with 3D printing, increase the efficiency and reduce the cost of TNCs production in the countries where their headquarters are located, which has a positive effect on reshoring.

It should be noted that a strict separation of 4IR inventions into those that support offshoring and those that positively affect reshoring is not possible, because, for example, artificial intelligence, the Internet of Things, big data, and cloud computing can be used to support both options. The division presented here means that some of them stimulate the first option more strongly than others.

In general, the impact of 4IR on FDIs will be individualized, *i.e.* it will depend primarily on the degree of advancement of the implementation of its inventions in individual TNCs. This has been taking place with varying intensity, with companies from the United States, China, Germany, Japan, South Korea, and

the United Kingdom being at the forefront (Rymarczyk, 2022). The leaders in these processes are digital platforms such as Facebook, Amazon, Apple, Google, Netflix, Instagram, LinkedIn, Yahoo, Alibaba, and transnational industrial corporations, including General Motors, General Electric, Microsoft, Toyota, IBM, Panasonic, Lenovo, Siemens, Volkswagen, Toshiba, Huawei, Oracle, Sony, Samsung, Mitsubishi, ABB, BMW, Tesla, Bosch, and many others. In general, it is estimated that in recent years, *i.e.* more or less since 2016, the industry has slowed down in the implementation of new technologies and almost 70% of companies in the world are stuck in the pilot stages of their development (*90 Manufacturing*, 2021). However, there are reasons to accept the thesis that in the near future there will be a trend reversal, *i.e.* acceleration of the implementation of 4IR inventions, especially those supporting reshoring.

In general, it should be expected that factors stimulating and inhibiting it will affect it with different time horizons. They will include:

- offshoring stimulated by the improvement of supply chains as a result of the use of 4IR inventions (positive, long-term impact);
- reshoring stimulated by the use of 4IR inventions (negative, long-term impact);
- regionalization, *i.e.* a transition from global investments determined by the pursuit of regional efficiency, looking for outlets and from investments in vertical segments of supply chains to investments at the level of the industrial base and clusters. There will be a shortening of supply chains and nearshoring (negative, long-term impact);
- abandoning single sourcing and geographical diversification of supply sources (positive short and mid-term impact);
- replication (geo-redundancy) of supply sources, *i.e.* several suppliers of the same component (positive, short-term impact);
- economic protectionism and nationalism (negative, long-term impact);
- the growing importance of the imperative of sustainable development (negative, long-term impact);
- Covid-19 (negative, short-term or medium-term impact);
- war in Ukraine (negative, medium-term impact);
- changing the inventories management strategy, instead of just in time just in case, *i.e.* adjusting the size of inventories in the warehouse to the expected demand. This enables *e.g*. replacement of air transport with cheaper rail or sea transport (negative, short-term impact);
- reduction of irreversible DFIs (negative, long-term impact);
- concluding more flexible investment agreements instead of formal, relational ones (negative, long-term impact);
- cooperation in supply chains with other participants in the form of strategic alliances, joint ventures, mergers and acquisitions (positive, long-term impact).

It can be assumed that in the short and medium term, the size of FDIs will be subject to strong fluctuation, *i.e.* they will decrease or increase depending on changes in the external environment of TNCs. However, in the long term, the large-scale application of 4IR inventions will result in both an increase in new investments in the home countries of TNCs or in neighbouring countries and their return from distant foreign locations. However, a radical and permanent decline in FDIs should not be expected. The world economy is highly related to them. About 12% of GDP formation depends on them, and in the case of Germany, it is even 17%. (Flach *et al*., 2020). Due to the efficiency and pressure of competition, TNCs will continue to choose to use arbitrage and comparative advantages of labour-intensive production in low-wage countries. Moreover, access to raw materials not found in the home countries of TNCs, close access to their sale markets, and lower environmental protection costs will have a positive impact on FDIs.

CONCLUSIONS

For a long time, FDIs were treated as a one-way flow of capital from the country of origin to the host country. The issue of disinvestment, *i.e.* a situation where, for various reasons, an investor was forced to resign from further business activity in a foreign country, was discussed marginally. Most often, these

were issues related to political risk. Relatively recently, however, the phenomenon of transferring foreign investments to the home country, *i.e.* reshoring or the neighbouring country, *i.e.* nearshoring, has been observed. Its size, in relation to offshoring, is relatively small. However, the emergence of breakthrough inventions in the sphere of communication, transport, production, and distribution and their gradual implementation in highly developed countries give rise to grounds for withdrawing from offshoring. Their complex has been called the Fourth Industrial Revolution or Industry 4.0. Probably, the application of its breakthrough inventions on a wider scale than at present will result in a paradigm shift in foreign direct investment. So far, the most important motive for investing in developing countries and emerging markets, *i.e.* cheap labour, will significantly lose its importance. On the other hand, the most important factor in production and services will be modern technology and human capital. Large resources of highly qualified employees and scientists related to new production methods and business models will determine the location of investments. As high technology clusters are located mainly in highly developed countries, they will concentrate on the manufacturing of modern products with high added value. Furthermore, the production of traditional industries such as clothing, textile, leather, and metal, which has so far been carried out in low-wage locations as part of offshoring, may be relocated to home countries, because automation, robotization, and 3D printing will reduce the share of human labour to a minimum, almost completely eliminating unskilled workforce.

Generally, 4IR may mean a weakening of the tendency to globalization or its slowdown (slowbalization). Let us note that the scenario of the development of the situation in the field of foreign direct investment presented in the article is futurological in nature and is based both on the views presented in the literature on the subject and on the author's predictive analysis. Few studies on the impact of 4IR on foreign direct investment have appeared so far. They generally focus on studying the motives behind offshoring and backshoring from the theoretical and limited practical side, *i.e.* based on the case study method of single or more cases, usually in the context of a specific country. This is probably due to the fact that the 4IR industry and its most important devices for FDIs are *in statu nascendi*, so it is difficult to study the impact of something that will take place to a greater extent only in the future. Nevertheless, the discussed phenomena require constant, thorough observation and analysis as well as actions on the part of national governments and intergovernmental organizations, because their effects can be very serious in the economic and social spheres. In particular, the industrialization strategy in developing countries may fail, thus leading to mass unemployment and increased emigration.

REFERENCES

Abeliansky, A.L., Martínez-Zarzoso, I., & Prettner, K. (2015). The Impact of 3D Printing on Trade and FDi. *CEGE Discussion Paper,* 262.

Albertoni, F., Elia, S., Piscitello, L., & Fratocchi, L. (2015). Returning from Offshore: What we Know?. *AiB Insights*, *15*(4), 9-12. https://doi.org/10.13140/RG.2.1.1683.7525

Ancarani, A., Di Mauro, C., & Mascali, F. (2019). Backshoring Strategy and the Adoption of Industry 4.0: Evidence from Europe. *Journal of World Business*, *54*(4), 360-371. https://doi.org/10.1016/j.jwb.2019.04.003

Arik, M. (2013). Framing the Offshoring and Reshoring Debate: A Conceptual Framework. *Journal of Global Business Management*, 9(3), 73-83.

Ashby, A. (2016). From Global to Local: Reshoring for Sustainability. *Operations Management Research*, *9*(4), 75-88. https://doi.org/10.1007/s12063-016-0117-9

BCI Global (2022, February 17). *Reshoring Production Back to Europe and the US on the Rise, Particularly For Critical Parts and Final Production Process*. Retrieved from https://bciglobal.com/en/reshoring-production-back-to-europe-and-the-us-is-on-the-rise-particularly-for-critical-parts-and-final-production-processes on December 10, 2022.

Benstead A.V., Stevenson, M., & Hendry, L.C. (2017). Why and how do Firms Reshore? A Contingency– Based Conceptual Framework. *Operations Management Research*, *10*(1), 85-103. https://doi.org/10.1007/s12063-017-0124-5

Capgemini Consulting (2017). *Digital Transformation of Supply Chain.* Retrieved from https://www.capgemini.com/wp-content/uploads/2017/07/Digital_Transformation_of_Supply_Chains.pdf on May 16, 2021.

Chang – Gyun, L. (2020, May 10). Pandemic Prompts Companies to Weight Reshoring. *Korea JoongAng Daily*. Retrieved from https://koreajoongangdaily.joins.com/2020/05/10/finance/company-korean-companies-korea-companies/20200510203500109.html on May 16, 2021.

Chetan, T. (2022). 3D Printing. Basic Principles and Applications. *Material Study Proceedings*, *51*(1), 842-849. https://doi.org/10.1016/j.matpr.2021.06.272

Consultancy.eu (2022, March 2). *European Companies Increasingly Moving to Reshore Asia*. Retrieved from https://www.consultancy.eu/news/7430/european-companies-increasingly-moving-to-reshore-asia-production on May 16, 2021.

Dachs, B., Kinkel, S., & Jäger, A. (2017). Bringing it all Back Home? Backshoring of Manufacturing Activities and the Adoption of Industry 4.0 Technologies. *MPRA Paper*, No. 83167.

De Beule, F., & Nauwelaerts, Y. (2018). *The Impact of Industry 4.0 on FDi, MNE, GVC, and Developing Countries: A Conceptual Note*. Retrieved from https://fgks.in/images/pdf/conf/2018/1_Filip.pdf on May 18, 2020.

Dilberoglu, U.M., Gharehpapagh, B., Yaman, U., & Dolen, M. (2017). The role of additive manufacturing in the era of industry 4.0. *Procedia manufacturing*, *11*, 545-554. https://doi.org/10.1016/j.promfg.2017.07.148

Di Mauro, C., Fratocchi, L., Orzes, G., & Sartor, M. (2018). Offshoring and backshoring: A multiple case study analysis. *Journal of Purchasing and Supply Management*, *24*(2), 108-134. https://doi.org/10.1016/j.pursup.2017.07.003

Di Stefano, C., & Fratocchi, L. (2019). Manufacturing back-shoring and sustainability: a literature review. *Sinergie Italian Journal of Management*, *37*(2), 119-143. https://doi.org/10.7433/s109.2019.07

Dunning, J.H., & Lundan, S.M. (2008). *Multinational enterprises and the global economy*. Edward Elgar Publishing.

Elia, S., Fratocchi, L., Barbieri, P., Boffellid, A., & Kalchschmidt, M. (2021). Post-pandemic Reconfiguration from Global to Domestic and Regional Value Chains: the Role of Industrial Policies. *Transnational Corporations*, *28*(2), 67-94.

Ellram, L.M. (2013). Offshoring and Reshoring; An Update on the Manufacturing Location Decision. *Journal of Supply Chain Management*, *49*(2), 14-22. https://doi.org/10.1111/jscm.12019

Éltető, A. (2019). *Effects of Industry 4.0 on reshoring investments-Hungarian experiences* (No. 251). Institute of World Economics, Centre for Economic and Regional Studies, Hungarian Academy of Sciences.

Enderwick, P., & Buckley, P.J. (2020). Rising regionalization: will the post-COVID-19 world see a retreat from globalization?. *Transnational Corporations Journal*, *27*(2), 99-112.

Flach, L., Aichele, R., & Braml, M. (2020). Status quo und Zukunft globaler Lieferketten. *ifo Schnelldienst*, *73*(5), 16-22.

Foerstl, K., Kirchoff, J.F., & Bals, L. (2016). Reshoring and insourcing: drivers and future research directions. *International Journal of Physical Distribution & Logistics Management*, *46*(5), 492-515. https://doi.org/10.1108/IJPDLM-02-2015-0045

Fratocchi, L., & Di Stefano, C. (2020). Industry 4.0 technologies and manufacturing back-shoring: a European perspective. *Acta IMEKO*, *9*(4), 13-20.

Fratocchi, L., Ancarani, A., Barbieri, P., Di Mauro, C., Nassimbeni, G., Sartor, M., … & Zanoni, A. (2016). Motivations of manufacturing reshoring: an interpretative framework. *International Journal of Physical Distribution & Logistics Management, 46*(2), 98-127. https://doi.org/10.1108/IJPDLM-06-2014-0131

Gray, J.V., Skowronski, K., Esenduran, G., & Johnny Rungtusanatham, M. (2013). The reshoring phenomenon: what supply chain academics ought to know and should do. *Journal of Supply Chain Management*, *49*(2), 27-33. https://doi.org/10.1111/jscm.12012

Gronau, N. (2015). Der Einfluss von Cyber-Physical Systems auf die Gestaltung von Produktionssystemen. *Industrie Management*, *31*(3), 16-20.

Habib, M.K. (2020). *Advanced Robotics and Intelligent Automation in Manufacturing*. IGI Global.

Javorcik, B. (2020). Global Supply Chains Will not be the same in the Post-Covid-19 World. In R.E. Baldwin, S.I. Evenett (Eds.), *Covid-19 and Trade Policy: Why Turning Inward Wan 't Work* (pp. 111-116). CEPR Press.

Johansson, M., & Olhager, J. (2018). Comparing offshoring and backshoring: The role of manufacturing site location factors and their impact on post-relocation performance. *International Journal of Production Economics*, *205*, 37-46. https://doi.org/10.1016/j.ijpe.2018.08.027

Kalotay, K., & Sass, M. (2021). Foreign direct investment in the storm of the COVID-19 pandemic and the example of Visegrad countries. *Acta Oeconomica*, *71*(S1), 73-92. https://doi.org/10.1556/032.2021.00030

Kamp, B., & Gibaja, J.J. (2021). Adoption of digital technologies and backshoring decisions: is there a link?. *Operations Management Research*, *14*, 380-402.

Koronawirus pokazał, że nadmierne uzależnienie od Chińskich fabryk szkodzi Europie [*Coronavirus demonstrated that an Excessive Dependence on Chinese Factories was Harmful to Europe*] (2020, April 26). Onet Politico. Retrieved from https://wiadomości.onet.pl/politicio/koronawirus on May 8, 2020.

Korzynski, P., Kozminski, A.K., & Baczynska, A.K. (2023). How does technology help leaders over-come constraints? Analysis of ChatGPT, virtual reality, human capital management systems, robotic process automation, and social media. *International Entrepreneurship Review*, *9*(2).

Korzynski, P., Mazurek, G., Altmann, A., Ejdys, J., Kazlauskaite, R., Paliszkiewicz, J., Wach, K., & Ziemba, E. (2023). Generative artificial intelligence as a new context for management theories: analysis of ChatGPT. *Central European Management Journal*, *31*(1). https://doi.org/10.1108/CEMJ-02-2023-0091

Kramer, M. (2017). *Reshoring Challenges after the Reshoring Decision an Exploratory Study*. University Tilbury.

Laplume, A.O., Petersen, B., & Pearce, J.M. (2016). Global value chains from a 3D printing perspective. *Journal of International Business Studies*, *47*, 595-609.

Le, P.N. (2021). Literature review on the impacts of foreign direct investment in the emerging economy: The Case of Vietnam. *Open Journal of Business and Management*, *9*(2), 851-857. https://doi.org/10.4236/ojbm.2021.92044

Letsou, E., & Pantelidis, P. (2020). *Foreign Direct Investments: A Literature Review*. MPRA Paper 98429. Retrieved from https:mpra.ub.uni-muenches.de on November 7, 2020.

Młody, M. (2016). Reindustrialization of the European Union Member States in the Context of Reshoring. *International Business and Global Economy, 35*(1), 455-467.

Nassimbeni, G., Sartor, M., Wan, L., Ancarani, A., Di Mauro, C., Mascali, F., ... & Orzes, G. (2019). *Reshoring in Europe: Overview 2015-2018*. Eurofaund.

Otieno, W.O., & Aduda, J. (2022). Foreign Direct Investments and Economic Growth: A Critical Literature Review. *International Journal of Finance*, *7*(3), 34-60.

Ouelletee, M. (2022, August 29). *Reshoring is Soaring in 2022 – 350000 New Jobs Predicted*. Engineering.com. Retrieved from https://www.engineering.com/story/reshoring-is-soaring-in-2022350000-new-jobs-predicted on October 3, 2022.

Paul, J., & Feliciano-Cestero, M.M. (2021). Five decades of research on foreign direct investment by MNEs: An overview and research agenda. *Journal of Business Research*, *124*, 800-812. https://doi.org/10.1016/j.jbusres.2020.04.017

Pla-Barber, J., Villar, C., & Narula, R. (2021). Governance of global value chains after the Covid-19 pandemic: A new wave of regionalization?. *BRQ Business Research Quarterly*, *24*(3), 204-213. https://doi.org/10.1177/23409444211020761

Popovic, A., & Milijić, A. (2020). Impact of Reshoring in Industry 4.0 on Economic Development in the Wave of COVID-19 Crisis. 51-st International Scientific Conference „Digital Economy, Chances, Risks, Sustainable Development*",* Niš, October 2020.

Rao, P.K. (2003). *The Economics of Transaction Costs. Theory, Methods and Applications*. Palgrave Macmillan.

Raza, W., Grumiller, J., Grohs, H., Essletzbichler, J., & Pintar, N. (2021). *Post Covid-19 value chains: Options for reshoring production back to Europe in a globalised economy*. European Training Foundation. Retrieved from https://policycommons.net/artifacts/3165233/post-covid-19-value-chains/3963615/ on October 3, 2022.

Rayna, T., & Striukowa, L. (2015). From Rapid Prototyping to Home Fabrication: How 3D Printing is Changing Business Model Innovation. *Technological Forecasting and Social Change*, *102,* 214-224.

Riker, D.A., & Wickramarachi, H. (2020). *A review of economic literature on foreign direct investment*. US International Trade Commission.

Rymarczyk, J. (2017). *Finanse biznesu międzynarodowego* [*Finance of International Business*]. WSB.

Rymarczyk, J. (2020). Technologies, Opportunities and Challenges of the Industrial Revolution 4.0: Theoretical Considerations. *Entrepreneurial Business and Economics Review, 8*(1), 185-198. https://doi.org/10.15678/EBER.2020.080110

Rymarczyk, J. (2021). The impact of industrial revolution 4.0 on international trade. *Entrepreneurial Business and Economics Review, 9*(1), 105-117. https://doi.org/10.15678/EBER.2021.090107

Rymarczyk, J. (2022). The Change in the Traditional Paradigm of Production under Influence of Industrial Revolution 4.0. *Business, 2*(2)*,* 118-200. https://doi.org/10.3390/businesses2020013

Schrauf, S., & Bettram, P. (2016). *Industry 4.0. How Digitalization Makes the Supply Chain More Efficient, Agile and Customer – Focused*. PWC Strategy & Germany.

Stone, J.M. (2022, August 23). *USA: Reshoring as a Trending Choice for Manufactures*. L&E Global. Retrieved from https://leglobal.law/2022/08/23/usa-reshoring-as-a-trending-choice-for-manufacturers/ on September 16, 2022.

Strange, R., & Zucchella, A. (2017). Industry 4.0, Global Value Chains and International Business. *Multinational Business Review*, *25*(3), 174-184. https://doi.org/10.1108/MBR-05-2017-0028

Tate, W., & Bals, L. (2018). Outsourcing / Offshoring Insights: Going beyond Reshoring to Rightshoring. *International Journal of Physical Distribution & Logistics Management*, *47*(2/3), 106-113.

Tilley, J. (2017, September 7). *Automatization, Robotics and the Factory on the Future*. MccKinsey & Company. Retrieved from https://www.mckinsey.com/capabilities/operations/our-insights/automation-robotics-and-the-factory-of-the-future on December 10, 2022.

Toorajipour, R., Sohrabpour, V., Nazarpour, A., Oghazi, P., & Fischl, M. (2021). Artificial intelligence in supply chain management: A systematic literature review. *Journal of Business Research*, *122*, 502-517. https://doi.org/10.1016/j.jbusres.2020.09.009

Trąpczyński, P. (2013). Determinants of Foreign Direct Investment Performance? A Critical Literature Review. *Oeconomia Copernicana*, *4*(2), 117-132.

UNCTAD (2022). *World Investment Report 2022. International tax reforms and sustainable investment.* UN.

Wach, K., Duong, C.D., Ejdys, J., Kazlauskaitė, R., Korzynski, P., Mazurek, G., Paliszkiewicz, J., & Ziemba, E. (2023). The dark side of generative artificial intelligence: A critical analysis of controversies and risks of ChatGPT. *Entrepreneurial Business and Economics Review*, *11*(2), 7-24. https://doi.org/10.15678/EBER.2023.110201

Wan, X. (2010). A Literature Review on the Relationship between Foreign Direct Investment and Economic Growth. *International Business Research*, *3*(1), 52-56. https://doi.org/10.5539/ibr.v3n1p52

WEF (2017). *Impact of the Fourth Industrial Revolution on Supply Chain*. World Economic Forum.

WEF(2020, June 22). *The Ongoing Impact of COVID-19 on Global Supply Chain*. Retrieved from https://www.weforum.org/agenda/2020/06/ongoing-impact-covid-19-global-supply-chains/ on December 12, 2022.

Wiesmann, B., Snoei, J.R., Hilletofth, P., & Eriksson, D. (2017). Drivers and barriers to reshoring: a literature review on offshoring in reverse. *European Business Review*, *29*(1), 15-42. https://doi.org/10.1108/EBR-03-2016-0050

World Bank (2020). *Foreign Direct Investment and Productivity. A Literature Review on the Effects of FDi on Local Firm Productivity*. World Bank Group.

90 Manufacturing Sites are Scaling Innovations on learning Network of World Economic Forum (n.d). The Smart City Journal. Retrieved from https://www.thesmartcityjournal.com/en/companies/90-manufacturing-sites-are-scaling-innovations-on-learning-network-of-world-economic-forum on May 7, 2022.

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Acknowledgements and Financial Disclosure

I would like to thank anonymous reviewers for constructive feedback and comments.

Conflict of Interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Published by Krakow University of Economics – Krakow, Poland

Ministry of Education and Science
Republic of Poland

The journal is co-financed in the years 2022-2024 by the Ministry of Education and Science of the Republic of Poland in the framework of the ministerial programme "Development of Scientific Journals" (RCN) on the basis of contract no. RCN/SP/0251/2021/1 concluded on 13 October 2022 and being in force until 13 October 2024.