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IMPACT OF FOREIGN DIRECT INVESTMENT ON HOST COUNTRY'S DEVELOPMENT: A CASE STUDY

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Abstract. *Purpose* is to assess the impact of the inward Nordic foreign direct investment on Lithuania's exports.

Research methodology – this research applied correlation and regression analysis, as well as the Augmented Dickey–Fuller test and the Granger causality test were used.

Findings proved that interlinkages between Lithuanian exports and foreign direct investment from the different Nordic countries might vary from weak (Iceland and Denmark) to strong (Norway, Sweden, Finland).

Research limitations – greater availability of a statistical dataset covering the classification of foreign direct investment according to the investing country and the distribution of these investments and gross domestic product by economic activity would allow a more accurate assessment of the relationship between Scandinavian foreign direct investment inflows in individual economic sectors and the economic indicators of these sectors.

Practical implications – based on the research results, Lithuania has the potential to stimulate exports from inward Nordic foreign direct investment, especially Norwegian foreign direct investment in manufacturing.

Originality/Value – this study contributes to the internationalization theory by extending it from the sectorial angle, especially emphasizing the need to analyze the impact of foreign direct investment from a single country on the host economy and its economic structure.

Keywords: foreign direct investment, exports, economic growth, technology transfer.

JEL Classification: F29.

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1. Introduction

Foreign direct investment (FDI) plays a vital role in stimulating economic growth and development. According to the United Nations Conference on Trade and Development (2020), global FDI reached $1.39 trillion in 2019, highlighting their importance. FDI also brings capital, technology, and management knowledge, which can significantly improve the productivity and competitiveness of the country. For example, a World Bank (2020) study showed that FDI can increase productivity. FDI contributes to the growth of exports, providing countries access to international markets.

According to the Organization for Economic Co-operation and Development [OECD] (2017), exports intensity of companies supporting FDI tends to be higher than that of domestic companies. FDI facilitates technology transfer and innovation. The International Monetary Fund studies show that FDI is positively associated with higher R & D expenditure in beneficiary countries (International Monetary Fund, 2020). In addition, FDI can help diversify the country's industrial base. For example, in Malaysia, FDI played a crucial role in developing the electronics and electrical sectors, reducing the country's dependence on traditional industries. Studies show that FDI positively impacts domestic investment, stimulating investment and economic growth. FDI can help improve infrastructure in host countries. According to Organization for Economic Co-operation and Development [OECD] (2022) data, FDI can finance public services and infrastructure development. For example, China's FDI is crucial in financing and developing infrastructure projects in various countries through the Belt and Road Initiative. FDI can help countries and their exporting companies to integrate into global supply chains, allowing them to specialize in specific stages of production and benefit from economies of scale. FDI can increase the productivity and competitiveness of export-related industries.

The study aims to assess the impact of the inward Nordic FDI on Lithuania's exports. The research applied correlation and regression analysis, as well as the Augmented Dickey–Fuller test and the Granger causality test were used. This study is constructed from several sub-chapters. First, it starts with a literature review, and later, it presents the empirical research design and the research results. Finally, concluding remarks and further research directions are given.

2. Literature review

FDI is important in supporting the country's export activities. Capital flows from FDI can significantly strengthen the country's balance of payments since it generates foreign exchange profits through various mechanisms (Zomchak & Nehrey, 2022). FDI often leads to export-oriented industrial growth, increasing the volume of domestic exports and the associated income in foreign currency. The growth of exports supported by FDI may lead to a trade surplus, as foreign exchange revenues from exports exceed import costs. FDI can help reduce the trade deficit by expanding the export base and increasing the competitiveness of domestic products in international markets. A stronger FDI-based export sector can contribute to the appreciation of the country's currency and further strengthen its balance of payments Chandrasekhar and Ghosh (2010), reducing import costs and increasing export activity due to higher foreign exchange income from FDI, which can stabilize the country's balance of payments and strengthen its currency (Baek & Okawa, 2001). Income from FDI can be used to service foreign debt, improve the country's creditworthiness, and reduce the need for external credit. The increase in exports leads to a positive balance of payments, indicating economic stability, as this allows the country to fulfill its international economic obligations and attract additional foreign investment. A strong balance of payments, which creates a self-consolidated foreign investment cycle Stoian (2004), attracts more FDI and stimulates export growth, making the host country a more attractive investment destination

with a growing consumer base and an attractive place for foreign investors who want to take advantage of opportunities in global markets. In addition, FDIs can help diversify the export portfolio, facilitate the country to expand its range of export products, reduce dependence on a single sector Bohle and Regan (2021), and reduce economic risks. In the long run, a diversified export portfolio reduces the risk of dependence on domestic markets and makes the recipient country more attractive for long-term investments. Summing up, capital flows from FDI can significantly improve the country's balance of payments by increasing exports, reducing the trade deficit, and contributing to the stability and growth of the economy (Awan & Mukhtar, 2019; Shmarlouskaya et al., 2021; Kato & Chiloane-Tsoka, 2022). The ratio of FDI to exports is symbiotic since one supports the other, promoting economic growth, diversification, and stability in the beneficiary country while attracting more FDI.

FDI can significantly increase a country's production and export capacity in various ways. For example, FDI provides direct capital investments in the country's economy, allowing companies to invest in new equipment, technologies, and infrastructure, increasing their production capacity. By increasing production capacity with FDI, enterprises can take advantage of economies of scale, reduce the unit's production cost, and increase the competitiveness of their products in international markets. According to Jahanger (2021), FDI can facilitate access to foreign markets, as foreign investors can use the host country as a base for exporting goods and services to other countries. FDI often occurs by creating export-oriented enterprises that are well-prepared to meet international demand and increase the country's exports potential.

FDI can contribute to developing export-oriented industries. Foreign investors have often created global networks and distribution channels that allow the local industry to export its products more efficiently (Villar et al., 2020; Burinskas et al., 2021). FDI is a critical factor in a country's export activity, providing the resources, know-how, and market access necessary to promote economic growth and stability. FDI is significant in this regard, as it provides much-needed capital that can be used to expand and modernize export-oriented industries (Kalandia, 2023). FDI provides large flows of foreign capital that can be invested in developing and modernizing export-oriented industries. This financial support will allow these industries to increase their production. At the same time, a group of foreign companies can strengthen the international reputation of the host country Kowalski (2020) and make it a more attractive place for foreign investment and trade. Foreign investors can contribute to the cluster effect and create an environment favorable for export and growth, supporting the development of diversified and interconnected business ecosystems. The presence of several foreign companies can create a competitive environment that encourages local businesses to innovate.

When foreign companies invest in the country, they often decide to set up a factory for several compelling reasons. First, foreign companies can use lower production costs when setting up production facilities in the host country. This is often due to lower labor costs, low tax breaks, and the availability of cheaper raw materials, which makes it economically attractive. Secondly, local production facilities can effectively serve the internal market. This proximity to the market reduces shipping costs, shortens delivery times, and allows companies to respond quickly to the changing needs of consumers. Thirdly, domestic production allows companies to circumvent trade barriers and tariffs that can be applied to imported

goods, thereby increasing their competitiveness in the single market. Fourth, these raw materials can become integral to the global supply chain, allowing companies to serve international markets more efficiently. Products manufactured in the host country can be exported to other countries, increasing the company's international reach. Fifthly, foreign companies often set up production facilities to meet certain legal or quality standards that are required in the host country. This ensures compliance with local laws and regulations and improves the reputation and reliability of the company. Sixthly, it can lead to the transfer of technology and the development of skills in the host country (Te Velde et al., 2007). In cooperation with foreign experts, local employees gain valuable knowledge and practical experience, which contributes to the development of the human capital of the host country (Bublienė et al., 2019; Laužikas & Miliūtė, 2020; Laužikas et al., 2021). Seventhly, such investments can boost economic growth by creating jobs Adams et al. (2014), strengthening local businesses in the supply chain, and contributing to the overall economic development of the host country. In addition, infrastructure development due to FDI will create jobs at the construction stage and in the long term since these facilities will require constant maintenance and operation. In addition, foreign investors can help develop the infrastructure needed for efficient exports, such as port infrastructure, transport, and logistics. Cling and Letilly (2001) stated that FDI can be directed towards export promotion areas where investors benefit from tax exemptions and favorable conditions for export-oriented production. Better infrastructure allows local businesses to enter international markets more efficiently, reducing delivery costs and delivery times Chen and Lin (2018), which is critical for export competitiveness. Eighth, establishing local production facilities Kawai (2009) can facilitate knowledge sharing, stimulate innovation, and improve the host country's industrial capacity over time (Keller, 2021). When foreign companies invest in the country and build production facilities, they can have many economic, strategic, and socio-economic benefits that serve both domestic and international markets. FDI and export support enable integration into global value chains and allow domestic companies to produce goods with global demand (Adarov & Stehrer, 2021; Martínez-Galán & Fontoura, 2019; Gonos et al., 2022).

FDI can promote diversification of exports and reduce dependence on a single export sector that may be vulnerable to economic fluctuations. FDI can provide access to foreign markets and allow domestic companies to export their goods and services to a broader international audience. Furthermore, it often brings technology Park and Tang (2021) know-how, production processes, and management practices that can improve the growth, efficiency, and competitiveness of exporting companies, from which local companies can learn and ultimately improve their preparedness and export capacity (Brussevich & Tan, 2019). Such experiences and best practices can increase the productivity of the domestic industry (Goldar & Banga, 2020; Belanová et al., 2023).

Based on advanced technologies, competition from companies investing abroad can encourage domestic manufacturers to improve the quality of products, help them modernize their production processes and meet global standards, and increase their competitiveness in international markets by introducing strict quality control (Morck et al., 2008; Molociniuc (Hritcan) et al., 2022) and guarantee measures that must comply with international standards and certificates. It improves the quality of products and keeps them at a higher level, which is necessary for entering the world market.

On the other hand, FDI can encourage the transfer of skills and knowledge, as domestic workers cooperate with foreign professionals to improve the overall capacity and efficiency of the workforce (Vallejo & Mekonnen, 2021). Thus, FDI stimulates the growth of export-oriented industries and creates jobs, reducing unemployment (Mishra & Palit, 2020). In general, these factors indicate that FDI can significantly increase the production and export capacity of the country Rustamov (2020), which leads to better economic development and global competitiveness.

FDI can boost research and development and enable local businesses to develop innovative, globally competitive products (Lee et al., 2021). Local companies working with foreign investors can carry out joint R & D projects and support the development of new export-friendly products (Joseph et al., 2019). Foreign investors' marketing and market research experience helps local companies find new opportunities in global markets and adapt their products or services to international demand (El Menyari, 2021). With the help of foreign know-how, domestic companies can diversify their product lines. FDI can create export-oriented strategies and networks that allow local companies to increase their participation in international markets and export volumes. Host countries can provide access to local marketing and advertising experiences to help foreign investors tailor their marketing efforts to local markets and international audiences (Crescenzi et al., 2021). Host countries' resources can provide market research and information to help foreign investors make informed decisions about their marketing and advertising strategies, thereby increasing the competitiveness of their exports. Foreign investors can also help local businesses integrate into global markets and open new opportunities. It is important to emphasize that local workers working with FDI experts can acquire valuable knowledge and skills that contributing to human capital development (Bajrami & Zeqiri, 2019). In short, it stimulates economic growth and increases the country's competitiveness on a global scale. FDI is a channel for transferring knowledge and skills, leading to higher quality and diversification of exported products.

FDI can play an important role in diversifying a country's export base and reducing dependence on various products or markets in the following ways: Foreign investors often bring experience from many different sectors. Investing in other sectors allows the beneficiary country to expand its export portfolio (Husain et al., 2021). FDI facilitates the transfer of advanced technologies that local businesses can use to develop new export products and services. Foreign investors often set up shops in the markets of different countries. Local businesses can use these networks to enter new markets and reduce their dependence on existing markets (Nguyen, 2019). Diversified exports can lead to more significant economic growth, reducing different sources of income and reliance on a single sector or market. In conclusion, FDI can help diversify the country's exports base by expanding into new industries and markets, reducing dependence on a limited number of products or markets, and promoting economic resilience and sustainability (Khan et al., 2020).

Foreign investors can facilitate local businesses' access to international markets through their distribution networks and market knowledge (Kratz et al., 2020). Foreign investors often have well-developed distribution networks that allow domestic companies to reach international customers more effectively. This reduces the time and cost of setting up new sales channels. Foreign investors provide valuable information and knowledge about the markets, including consumer preferences, market trends, and regulatory requirements, and help local

companies adapt their products or services to international markets (Santos et al., 2019). Foreign investors often maintain strong local ties and partnerships in international markets, which can provide critical connections and relationships with local companies and facilitate and improve market access (Andrenelli et al., 2019). Many foreign investors have extensive experience in international trade and exports, which they can share with local companies and help them enter global markets (Yu, 1990). Foreign investors can help local businesses navigate complex international regulations and compliance requirements Yang et al. (2020) and ensure that their products or services meet the standards to enter global markets. They help local companies better assess and reduce market risks, drawing on foreign investors' knowledge and increasing their chances of success in international markets (Taburchak et al., 2022; Kopencova et al., 2022; Arayssi & Yassine, 2023).

By leveraging distribution networks and market knowledge for foreign investors, local companies can expand faster and reach a wider audience Capik (2019), making them more competitive globally. Foreign investors play a crucial role in facilitating local business development, ensuring access to the distribution networks of existing partners and consumers.

Foreign investors can provide local businesses with a portal to global supply chains Gulley et al. (2019), allowing them to increase exports. By integrating FDI into global supply chains, local companies can learn from international partners and apply this knowledge to their exports (Bae, 2020). By participating in global supply chains, local companies can take advantage of economies of scale as they become part of larger, more efficient production and distribution networks (Glushkova et al., 2019). Access to global supply chains gives local companies a competitive advantage as they can purchase materials, components, and know-how from various international sources and improve the quality and profitability of their products. By diversifying supply sources and market positions in global supply chains, local companies can better reduce the risks associated with internal market volatility (Awan & Ali, 2022). Participation in global supply chains is often inseparable from increased exports, as local companies are better equipped to meet international demand and reach a wider customer base. Local businesses can also learn from foreign investors and global supply chain partners Alam and Bagchi (2011) and gain insights into best practices, efficiency, and innovation. In short, foreign investors act as bridges for local businesses to enter global supply chains, promote international integration, increase their competitiveness, and ultimately increase their export capacity. FDI often includes foreign investors who associate their activities with global supply chains (Glushkova et al., 2019). To do this effectively, they need a solid infrastructure to encourage the host country to invest in developing these services. Foreign investors often bring logistics knowledge that can be used to upgrade, optimize, and simplify the existing logistics infrastructure. The development of logistics infrastructure Lu et al. (2010) can attract other foreign investors looking for a well-prepared business environment and contribute to a positive investment climate (Sekkat & Veganzones-Varoudakis, 2007). Better logistics infrastructure can also reduce bottlenecks and inefficiencies in export operations, leading to more straightforward and reliable export operations (Kneller & Pisu, 2007). FDI can contribute to developing critical export infrastructures that can benefit the host country's economy by improving connectivity, reducing costs in supply chains, and increasing the attractiveness of international trade. This participation in global supply chains can significantly contribute to the growth and development of the country's economy (Zeibote et al., 2019).

3. Research methodology

The choice of export as an indicator for the study was based on the fact that FDI in different sectors of the economy can affect the growth of a country's exports. Scientists distinguish that FDI in the production sector positively affects the export orientation of the country receiving the investments (Pečarić et al., 2021). This study claimed that inward FDI oriented into different economic sectors significantly impacts the export. Furthermore, most of the researchers analyze the structure of the economies of different countries in the context of three main sectors: agriculture (primary economic sectors), industry (secondary economic sectors), and services (tertiary economic sectors, (Li & Koustas, 2019). Meanwhile, structural changes are a much broader process involving changes in production and employment between all sectors of the economy, the emergence of new sectors, and the disappearance of old ones (Gabardo et al., 2017). Due to such changes, quaternary sectors (research and development, consulting, education, financial services) and quinary sectors (artificial intelligence) might extend the division of economic structure. Both the quaternary and quinary economic sectors include knowledge-based sectors. Furthermore, quaternary and quinary economic sectors are part of the tertiary sector. For example, tertiary and quaternary sectors employ 76% of the workforce in the United Kingdom. The search for similarities in patterns of structural change goes back to Clark's (1940) and Fisher's (1939) works. At that time, attention was focused on the interrelationships between agriculture and manufacturing and, to a lesser extent, on services. This study was based on a three-sector model which was developed by Clark (1940), Balance (2018), Swiecki (2017), Cardinale and Scazzieri (2018). The sectoral data were structured according to the economic activities corresponding to the NACE classification of economic activities in the European Union, i.e., subdivided into primary, secondary, and tertiary economic sectors based on the standard industrial classification. The primary sector included agriculture, forestry, fisheries, mining and quarrying. The secondary sector covered manufacturing, electricity, gas, water supply, and construction. The tertiary sector referred to wholesale and retail trade, accommodation and catering services, transport and storage, information and communications; financial, insurance activities, real estate and business services; public administration and defense; community, social and personal services. The descriptive statistical analysis of inward Nordic FDI was performed on the classification of primary-secondary-tertiary sectors (Table 1). Considering the fact that the export indicator was not classified according to the types of economic activity, and for this reason, there is a limitation to dividing this variable according to economic sectors; the study chose to use the general expression of export in order to determine the relationship between FDI in the secondary and tertiary sectors of each of the Nordic country and Lithuania's exports.

The assessment of the impact of inward Nordic FDI on Lithuania's economy has been performed in three stages. First of all, were analyzed the trends of inward Nordic FDI flows then performed correlation-regression analysis, and the Granger causality test applied to the research. In order to find out the changes in the volume of Nordic FDI inflows and the percentage in the context of the total FDI received. The first part of the study aimed to identify which sectors of the Lithuanian economy attract the most of Nordic FDI. The sectors receiving the most Nordic FDI were included in the correlation analysis and Granger causality test. After

Table 1. Summary of empirical studies examining the impact of FDI on economic indicators

Authors	Region	Method	Results
Mukhtarov et al. (2019)	Jordan	ARDL	A positive and statistically significant effect of FDI on export growth was determined.
Sahoo and Dash (2022)	97 developing countries	Panel modelling	FDI complements exports, and the complementary effect is contingent upon the development levels of the host country.
Franco (2013)	16 OECD countries	Correlation-regression	Asset exploiting motivations, and in particular market-seeking FDI, are those that affect export intensity to a greater extent.
Li et al. (2021)	China	Correlation-regression	FDI positively increases the export share of foreign-invested enterprises and firms with processing trade. In addition, FDI expands the export sophistication of privately owned enterprises, ordinary trade, and intermediate goods.
Farid et al. (2023)	Pakistan	Panel modelling	FDI has a positive impact on exports via export development.

determining the significant correlation coefficients between inward Nordic FDI and Lithuanian economic indicators, the pairwise linear regression method was applied. In order to determine the Granger causality test, whether the analyzed variables satisfy the assumption of stationarity was checked. Stationarity testing was performed using the unit root ADF test to ensure that the variance, mean, and covariance of the time series of the variables remained constant over time. A time series *X* demonstrated to Granger-cause *Y* if it might be shown, usually through a series of t-tests and F-tests on lagged values of *X* (and with lagged values of *Y* also included), that those *X* values provide statistically significant information about future values of *Y*. Thus, a variable *X* that evolved over time Granger-causes another evolving variable *Y* if predictions of the value of *Y* based on its own past values and on the past values of *X* were better than predictions of *Y* based only on *Y*'s past values. Granger defined the causality relationship based on two principles: the cause happens prior to its effect, or the cause has unique information about the future values of its effect (Granger, 1980).

$$\Delta y_t = y_{t-1} + u_t , \tag{1}$$

δ – coefficient; u_t – white noise; t is a time variable.

A null hypothesis was developed that there was a unit root, the test of which was based on the obtained p-value of the ADF statistic, which was assessed according to the chosen level of significance (Tanaya & Suyanto, 2022). Considering that 5% was used in this study significance level, the null hypothesis was rejected if the p-value did not exceed the 0.05 level, and the alternative hypothesis was accepted, according to which the time series was considered stationary. If the p-value of a variable exceeded the significance level, time series differencing was applied. After assessing the stationarity of the time series, a vector autore-

gression (VAR) model was constructed by choosing the maximum lag order number. The lag order to be applied to the causality analysis was determined by the information criteria estimated by the model (Tanaya & Suyanto, 2022). Then, a Granger causality test was performed to determine the direction of causality. Two regression equations were used for this test (Setyanti & Wahyudi, 2021):

$$Y_t = \sum_{i=1}^{m} a_i Y_{t-1} + \sum_{i=1}^{m} \beta_j X_{t-j} + v_t; \quad (2)$$

$$X_t = \sum_{i=1}^{m} a_i X_{t-1} + \sum_{i=1}^{m} \beta_j Y_{t-j} + v_t, \quad (3)$$

Y – dependent variable; X – independent variable; m – sequence of delays; a, β – coefficient of variables; v - error. The results obtained from the Granger causality test were assessed according to the values of the Fisher's criterion statistic. If the obtained F-statistic p-values were greater than the chosen significance level of 0.05, the null hypothesis was rejected, and the alternative hypothesis was accepted, indicating that the analyzed variable was the cause of changes in the other variable.

4. Research results

The export of Lithuanian goods has been growing steadily since 2005, with a slight decline during the global crisis in 2009, and in the last three years, the export of Lithuanian goods has grown by more than 57%. The average annual exports showed that Lithuania exported the greatest volume of goods to Russia over the period 2005–2022. Russia was the main trade partner for years (Figure 1). Moreover, even some of Lithuania's business sectors have become dependent on the Russian market. Hence, this situation changed when the EU introduced sanctions on Russia for attacking Ukraine. Lithuanian businesses started to search for new markets and opportunities. Presently, Lithuania closely collaborates with the Nordic countries. It might be noted that Nordic countries, except Iceland, are among the 20 main trade partners. For example, exports to Nordic countries increased significantly over the last three years. In 2021, Norway was the 12th largest export market for Lithuanian goods, accounting for 2.6% (EUR 907 million) of the total export of Lithuanian goods. In 2021, 87% of all exports to Norway were goods made in Lithuania or the export of goods of Lithuanian origin, and the rest (13%) was the re-export of goods. Compared to 2020, the export of Lithuanian goods to Norway increased by 7.2%, mainly due to the increase in the export of furniture. During 2022, the total export of Lithuanian goods to Norway compared to the corresponding 2021 increased by 19% (25 million euros). In 2021, Denmark was the 13th largest export market for Lithuanian goods, accounting for 2.5% (848 million EUR) of the total export of Lithuanian goods. The bilateral trade between Lithuania and Denmark consisted of the export of goods of Lithuanian origin (83%), and the rest (17%) was the re-export of goods. Compared to 2020, the export of Lithuanian goods to Denmark increased by 14%, mainly due to the increase in the export of furniture and ships, boats, and floating equipment. During 2022, the total export of Lithuanian goods to Denmark compared to 2021 increased by 34%

(42 million Eur). In 2021, Sweden was the eighth largest export market for Lithuanian goods, accounting for 4.4% (1.54 billion EUR) of the total export of Lithuanian goods. Similarly, to export to Denmark, almost 83% of exports to Sweden in 2021 were Lithuanian goods, and the rest was the re-export of goods. Compared to 2020, the export of Lithuanian goods to Sweden increased by 17%, mainly due to the increase in the export of iron and steel (ferrous metals) and tobacco. During 2022, the total export of Lithuanian goods to Sweden compared to 2021 increased by 15% and made 34 million Eur. In 2021, the export of goods of Lithuanian origin to Iceland made up 64.92 million euros, which is 49% more than in 2020. Further, Lithuania's exports to Iceland were 80.3 million Eur in 2022. More than 30% of all exports to Iceland were furniture, lighting signs, prefabricated buildings (25 million Eur), wood and articles of wood, and wood charcoal made up 9 million Eur.

During January–September 2023, the most important export partners were Latvia (10.7%), Poland (8.9%), and Germany (7.6%). Most of the goods of Lithuanian origin were exported to Poland (9.7%), Germany (9%), Latvia (8%), the Netherlands (8%), and the United States (7.6%). Sweden was the ninth trade partner, and exports into Sweden made 4% out of all exports. Norway and Denmark shared 13th and 14th places with the 2.5 and 2.3% share of total exports. Meanwhile, Norway was the fifth trade partner in imports, making 5.4%.

2005–2022, the calculated average of annual inward FDI showed that Lithuania received the largest FDI flows from Sweden (57%), followed by Denmark (18%), Finland (13%), and Norway (12%). FDI from Iceland accounted for just 1%. In Lithuania, Sweden invested the most in the tertiary sector, i.e., service and knowledge-intensive business sectors, which accounted for an average of 93% during the considered period. Especially Swedish companies mainly target the banking, insurance (54%), and information technologies (24%) sectors (Figure 2).

Finland (67%), Denmark (73%), and Norway (75%) invested somewhat less in the tertiary sector during the considered period. The manufacturing sectors attract the greatest part of inward FDI from Denmark (29%), Iceland (71%), and Norway (34%). The wholesale and retail trade business sectors attract 41% of Finnish inward FDI (WIPO, 2023). Iceland invested only 54% in Lithuania's tertiary sector. It is also worth noting that the total flow inward Nordic FDI

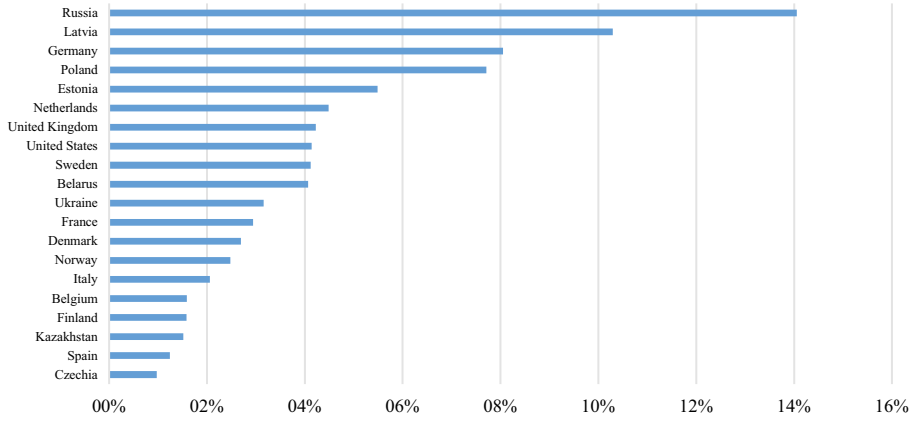

Figure 1. Main partners in exports during the period of 2005–2022

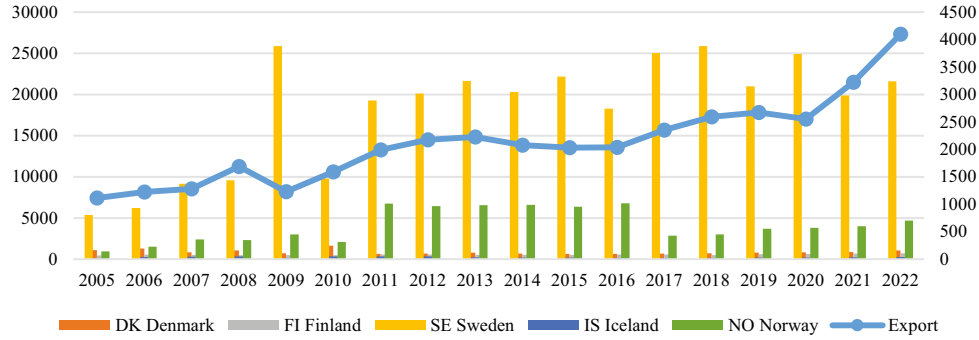

Figure 2. Trends in Lithuanian exports and inward FDI of Scandinavian countries in millions

during the 2005–2022 period accounted for 31.26% of all investments. The flows of inward Nordic FDI fluctuated over the entire period. From the presented data, it can be noted that Iceland's FDI in Lithuania was the lowest in the considered period compared to other Nordic countries. Meanwhile, in 2008, Denmark's FDI in Lithuania decreased by 61%, Finland's by 2%, and Iceland's by 48%, compared to 2007. These changes can be explained as the consequences of the global financial crisis. Since 2005, Denmark's FDI in Lithuania increased by 78%, Finland's by 65%, Sweden's and Norway's by 87%, and Iceland's by 80%. The correlation results between exports to Nordic countries and Lithuania are presented in Table 2.

It has been noted that there is a weak and statistically insignificant correlation between Denmark's FDI inflows and Lithuania's exports since the p-value of the correlation coefficient of these variables exceeds the 0.05 significance level. For this reason, the Danish FDI variable will not be used in further calculations. Meanwhile, a statistically significant relationship exists between the FDI of Finland, Sweden, Iceland, Norway, and Lithuania's exports. It is estimated that a strong positive correlation exists between Finnish and Swedish FDI and Lithuanian exports. Meanwhile, a moderate positive correlation exists between Iceland and Norway's FDI and Lithuania's exports. Except for the variables of FDI of the Scandinavian countries – Finland, Sweden, Iceland, and Norway – which have a significant correlation with Lithuanian exports, four models and the statistical values of their coefficients of determination and Fisher's criterion were assessed (Table 3).

Table 2. Evaluation results of the correlation between inward Nordic FDI and Lithuanian exports (compiled by the authors, based on SPSS software package calculations)

Correlation between Y and X	Pearson's correlation coefficient	p-value	Result
Danish FDI and Lithuanian exports	0.179	0.082	Weak positive correlation
Finnish FDI and Lithuanian exports	0.851	<0.001	Strong positive correlation
Swedish FDI and Lithuanian exports	0.891	<0.001	Strong positive correlation
Icelandic FDI and Lithuanian exports	0.435	<0.001	Moderate positive correlation
Norwegian FDI and Lithuanian exports	0.687	<0.001	Moderate positive correlation

Table 3. Results of the assessment of the suitability of Scandinavian FDI and Lithuanian export models (compiled by the authors, based on SPSS software package calculations)

Model	R^2	Standard error	F statistics	The p-value of the F statistic
Finnish FDI with Lithuanian exports	0.725	1429680.85	247.614	<0.001
Swedish FDI with Lithuanian exports	0.793	1239955.73	360.152	<0.001
Icelandic FDI with Lithuanian exports	0.189	2454057.44	21.943	<0.001
Norwegian FDI with Lithuania's export	0.471	1981438.09	83.849	<0.001

Notably, the coefficient of determination of the model examining the impact of Iceland's FDI on Lithuanian exports is lower than 0.20. For this reason, the mentioned model was not included in further calculations. Meanwhile, the coefficient of determination of Finland's FDI is equal to 0.725, which explains 72.5% of the distribution of Lithuanian exports; the coefficient of determination of Swedish FDI reaches 0.793, which explains 79.3% of the scattering part; The coefficient of determination of Norway's FDI is equal to 0.471, which explains 47.1% of the distribution of export. Further, the constructed models were considered significant, considering Fisher's criterion values lower than the significance level. Since the Finnish, Swedish, Norwegian FDI and Lithuanian export models satisfied the significance conditions of correlation and determination coefficients and Fisher's criterion statistics, the coefficients of these models and their significance were assessed (Table 4).

According to the data presented in Table 4, in the models that examine the impact of Finnish, Swedish, and Norwegian FDI on Lithuanian exports, the p values of the T Student's criterion of these independent variables were lower than the significance level. For this reason, these independent variables are considered significant and impact Lithuanian export changes. The results showed that if Finland's FDI had increased by 1 million euros, Lithuania's exports would have grown by 20.239 thousand euros on average. In addition, if the inward Sweden's FDI had increased by 1 million euros, Lithuania's exports would have been more considerable by 1912.733 thousand euros on average. Furthermore, an additional one million euros of Norwegian FDI would have stimulated Lithuanian exports by 5435.685 thousand

Table 4. The results of the evaluation of the coefficients of the pairwise linear regression model of inward Nordic FDI and Lithuanian exports and their significance (compiled by the authors, based on SPSS software package calculations)

Model		Unstandardized coefficients		Standardized coefficients	t-statistics	p-value
		B	Error	Beta		
2	Constant	–2573692.235	476043.937		–5.406	<0.001
	Finnish FDI	14910.884	947.581	0.851	15.736	<0.001
3	Constant	707140.864	239083.639		2.958	0,004
	Swedish FDI	1912.733	100.789	0.891	18.978	<0,001
5	Constant	1925229.987	351392.976		5.479	<0,001
	Norwegian FDI	5435.685	593.614	0.687	9.157	<0,001

euros on average. The impact of inward Nordic FDI on exports was determined by applying the Granger causality test. This study aimed to determine whether Denmark, Finland, Sweden, Iceland, and Norway's FDI in the secondary and tertiary sectors impact exports. Hence, before applying the Granger causality test, the correlation was estimated between inward Nordic FDI and Lithuanian export (Table 5).

It was established that there is a statistically significant relationship between inward Nordic FDI in the Lithuanian secondary sector and exports, considering that the p values of the correlation coefficient are lower than the chosen significance level of 0.05. A strong correlation was observed between inward Finnish and Norwegian FDI and Lithuanian exports. On the other hand, Swedish and Danish FDIs in the secondary sector had a moderately strong correlation with Lithuanian exports, while Iceland's FDIs and Lithuanian exports had a weak correlation. After analyzing the correlation between selected countries and Lithuania's exports in the secondary sector, the correlation between Nordic countries' FDI in the tertiary sector and exports was further assessed (Table 6).

Table 5. The results of the correlation between the inward Nordic FDI in the secondary and Lithuanian export (compiled by the authors, based on SPSS software package calculations)

		Lithuanian export
Danish FDI in the secondary sector	Correlation coefficient	0.460
	p-value	<0.001
Finnish FDI in the secondary sector	Correlation coefficient	0.753
	p-value	<0.001
Swedish FDI in the secondary sector	Correlation coefficient	0.550
	p-value	<0.001
Iceland's FDI in the secondary sector	Correlation coefficient	0.237
	p-value	0.039
Norwegian FDI in the secondary sector	Correlation coefficient	0.859
	p-value	<0.001

Table 6. The results of the correlation between the inward Nordic FDI in the tertiary sector and Lithuanian export (compiled by the authors, based on SPSS software package calculations)

		Export
Danish FDI in the tertiary sector	Correlation coefficient	–0.407
	p-value	<0.001
Finnish FDI in the secondary sector	Correlation coefficient	0.507
	p-value	<0.001
Swedish FDI in the tertiary sector	Correlation coefficient	0.791
	p-value	<0.001
Iceland's FDI in the tertiary sector	Correlation coefficient	0.334
	p-value	0.003
Norwegian FDI in the tertiary sector	Correlation coefficient	0.408
	p-value	<0.001

The statistical relationship between FDI from four Nordic countries (Denmark, Finland, Sweden, and Norway) and Lithuanian exports was significant. Denmark's FDI in the tertiary sector and Lithuania's export had a weak inverse relationship. Further, a moderately strong correlation existed between Finnish FDI in tertiary sectors and exports. Meanwhile, a strong correlation between Sweden's FDI in the tertiary sector and exports has been observed. A weak correlation existed between Iceland's and Norway's FDI in the tertiary sector and Lithuania's exports. Therefore, this analysis started with a unit root test for all the variables. The augmented Dickey–Fuller (ADF) method has been employed for this purpose. Applying ADF, two hypotheses (H0 and H1) were checked, such as H0: variables are not stationary and have unit root, and alternative hypothesis H1: variables are stationary. ADF checks the hypothesis about the stationarity of the particular variables at the significance level of 1% and 5%. In the ADF test, two models, constant and trend, were considered (Table 7).

Table 7. Augmented Dickey–Fuller test statistic (compiled by the authors, based on Eviews software package calculations)

Indicator	Sector	Differentiation queue	ADF-test	P-value
Danish FDI	Secondary	1	–9.3026	0.0000
	Tertiary	1	–5.4954	0.0000
Finnish FDI	Secondary	1	–10.2489	0.0001
	Tertiary	0	–2.9619	0.0432
Swedish FDI	Secondary	1	–13.0206	0.0001
	Tertiary	1	–7.7220	0.0000
Icelandic FDI	Secondary	1	–14.9506	0.0001
	Tertiary	1	–8.8428	0.0000
Norwegian FDI	Secondary	1	–9.6579	0.0000
	Tertiary	1	–8.5146	0.0000
Lithuanian export	Total	1	–2.9147	0.0486

After converting the particular variables into stationary variables, it is possible to use the Granger causality test to check the direction of causality between the variables under consideration. The next section estimates inward FDI from each Nordic country in secondary and tertiary sectors and Lithuanian export causality (Table 8).

The null hypothesis has been rejected if the probability associated with the F-statistic was below 0.05. Conversely, the null hypothesis has been accepted if the associated probability of F statistic was greater than 0.05. The results of the Granger causality test provided new empirical insights into the Lithuanian export and FDI into secondary and tertiary sectors from Nordic countries nexus. The results proved that unidirectional causality ran from Norwegian FDI in the secondary sectors and Lithuanian exports. In this case, the increase in inward Norwegian FDI would positively impact the growth of Lithuanian exports. This implied that policymakers should focus on promoting FDI from Norway in order to support Lithuanian exports.

Table 8. The result of the assessment of the causal relationship between the inward Nordic FDI by sector and Lithuania's export (compiled by the authors, based on Eviews software package calculations)

Sector	Null hypothesis	Observations / Lags	F statistics	P-value	Test results
Denmark					
Secondary	Danish FDI_2SECT ⇏ Lithuanian Export	71	1.75014	0.1504	Accepted
	Lithuanian Export ⇏ Danish FDI_2SECT		1.25059	0.2991	Accepted
Tertiary	Danish FDI_3SECT ⇏ Lithuanian Export	70	0.93186	0.4671	Accepted
	Lithuanian Export ⇏ Danish FDI_3SECT		0.34091	0.8860	Accepted
Finland					
Secondary	Finish FDI_2SECT ⇏ Lithuanian Export	73	0.24325	0.7848	Accepted
	Lithuanian Export ⇏ Finnish FDI_2SECT		2.61660	0.0804	Accepted
Tertiary	Finish FDI_3SECT ⇏ Lithuanian Export	74	2.29666	0.1341	Accepted
	Lithuanian Export ⇏ Finnish FDI_3SECT		0.67599	0.4137	Accepted
Sweden					
Secondary	Swedish FDI_2SECT ⇏ Lithuanian Export	68	1.78358	0.1100	Accepted
	Lithuanian Export ⇏ Swedish FDI_2SECT		0.80227	0.5891	Accepted
Tertiary	Swedish FDI_3SECT ⇏ Lithuanian Export	64	1.54709	0.1521	Accepted
	Lithuanian Export ⇏ Swedish FDI_3SECT		1.01975	0.4470	Accepted
Iceland					
Secondary	Icelandic FDI_2SECT ⇏ Lithuanian Export	74	0.01990	0.8862	Accepted
	Lithuanian Export ⇏ Icelandic FDI_2SECT		1.77768	0.1867	Accepted
Tertiary	Icelandic FDI_2SECT ⇏ Lithuanian Export	73	0.87021	0.4235	Accepted
	Lithuanian Export ⇏ Icelandic FDI_2SECT		0.88473	0.4175	Accepted
Norway					
Secondary	Norwegian FDI_2SECT ⇏ Lithuanian Export	73	3.45198	0.0373	Rejected
	Lithuanian Export ⇏ Norwegian FDI_2SECT		1.12126	0.3318	Accepted
Tertiary	Norwegian FDI_2SECT ⇏ Lithuanian Export	69	0.64470	0.6940	Accepted
	Lithuanian Export ⇏ Norwegian FDI_2SECT		0.77566	0.5924	Accepted

5. Discussion and conclusions

The relation specified in scientific studies between FDI and export activities is evident in different ways. The host country is benefiting from FDI as FDI increases the country's export potential by introducing new technologies and management practices and entering international markets. Technology transfer is one of the main advantages of FDI since it involves exchanging knowledge, skills, and technology between foreign investors and domestic enterprises. FDI supports technology transfer by introducing advanced production, research, development, and innovation processes. FDI can help diversify products in beneficiary countries by introducing new products, services, and previously absent or underdeveloped technologies. Diversifying products through FDI can help beneficiary countries reduce dependence on a limited number of sectors or products and make their economies more resilient. FDI can help reduce unemployment in host countries by creating new jobs, creating foreign businesses, and expanding existing ones (Zomchak & Nehrey, 2022). FDI contributes to the development of global supply chains by developing new production facilities, obtaining raw materials from different countries, and facilitating the cross-border movement of goods. Global supply chains are networks of interconnected companies producing and distributing goods and services in other countries. FDI can positively impact a country's export potential, shortening global supply chains, reducing unemployment, technology transfer, and product diversification, and contributing to economic growth and development (Hilmarsson, 2021).

This study's findings proved that interlinkages between Lithuanian export and FDI from the different Nordic countries might vary from weak (Iceland and Denmark) to strong (Norway, Sweden, Finland), which is in line with the study of Farid et al. (2023) who considered FDI as an additional determinant of export. They found that in manufacturing, FDI has an impact on exports via export development in the long run. In addition, interlinkages between Lithuanian exports and Nordic FDI depend on the sector as well. For example, Lithuania receives the lowest amount of FDI from Iceland compared to the other Nordic countries. Thus, it might be noticed in the results of correlation. Icelandic FDI has a weak correlation relationship with Lithuanian exports. On the other hand, Sweden is the main Nordic investor in Lithuania; however, a stronger relationship exists between Swedish FDI in the tertiary sector and Lithuanian exports. Meanwhile, Granger causality has been observed on neither the Swedish FDI from secondary nor the Swedish FDI from the tertiary sector and Lithuanian export. Furthermore, a weak correlation relationship exists between inward Norwegian FDI in tertiary and Lithuanian exports. Meanwhile, strong interlinkages between inward Norwegian FDI in the secondary sectors and Lithuanian exports have been noticed. In addition, only inward Norwegian FDI in the secondary sector behaves as a driving force for Lithuanian exports. A recent study Šimelytė and Tvaronavičienė (2023) proved that in the Baltic States, inward FDI from Nordic Countries has a significant impact on economic growth. However, it does not play a significant role in the high-tech trade or knowledge-intensive sectors. Furthermore, the sectoral distribution of inward Nordic FDI in Lithuania includes sectors such as financial and insurance activities, manufacturing, and real estate services (Cieślik & Gurshev, 2021). This suggests that FDI has been concentrated in these sectors, which can also have implications for the country's economic structure and exports. Hence, the Granger causality test proved

that Norwegian FDI stimulates exports from manufacturing sectors where Norwegian MNCs dominate. The other study on the sectoral distribution of inward FDI in Lithuania includes financial and insurance activities, manufacturing, and real estate services (Cieślik & Gurshev, 2021). This suggested that FDI has been concentrated in these sectors, which can have implications for the country's economic structure. For example, Hilmarson (2021) highlighted the close interlinkage between the Nordic-Baltic region through trade, investment, mobility of people, and banking, emphasizing the depth of cooperation between the two regions.

This study filled a gap in regional internationalization theory by exploring the impact of neighboring countries. The finding should be useful for policymakers in investment promotion. As it clearly shows the gap where Lithuania could benefit. The stimulation of Norwegian FDI would increase exports even more. Further, a strong or weak relationship between FDI and export showed that promoting FDI from specific countries might benefit. In this case, although Granger causality does not exist between Danish, Finnish, and Icelandic FDI, FDI from these countries should be promoted. Sweden invests mainly in the tertiary sector, as it already has strong interlinkages with exports, so it is worth further promoting Swedish FDI in the tertiary sector. Hence, to attract targeted Swedish FDI, analyzing why there is no Granger causality between inward FDI from Sweden and Lithuanian exports is necessary.

Future research could be oriented to inward Nordic FDI and economic development or high-tech export. Thus, a more detailed sectorial analysis would allow targeted Nordic companies to be attracted, which might contribute to greater exports. In addition, greater availability of a statistical dataset covering the classification of FDI according to the investing country and the distribution of these investments and gross domestic product by economic activity would allow a more accurate assessment of the relationship between Scandinavian FDI inflows in individual economic sectors and the economic indicators of these sectors.

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