National Accounting Review

NAR, 7(2): 196–220.
DOI: 10.3934/NAR.2025009
Received: 31 October 2024
Revised: 23 March 2025
Accepted: 10 April 2025
Published: 14 April 2025

https://www.aimspress.com/journal/NAR

Research article

Development of foreign direct investment in the context of government aid: A case study of the Czech Republic since 1998

Sylvie Kotíková[1,*] and Roman Vavrek[2]

[1] Department of Economics and Management, Faculty of Social and Economic Studies, University of Jan Evangelista Purkyně, Moskevská Street 54, Ústí nad Labem 400 96, Czech Republic
[2] Department of Management, Faculty of Economics, VŠB - Technical University of Ostrava, 17. listopadu 2172/15, Ostrava - Poruba 708 00, Czech Republic

* **Correspondence:** Email: sylvie.kotikova@ujep.cz.

Abstract: Investment incentives are policy instruments used by governments to stimulate economic growth, attract foreign capital, and develop business activities. This form of government aid plays an important role in decision-making processes regarding localization and host market selection. According to the core-periphery theory, investment incentives aim to reduce regional disparities and support the economic growth and development of structurally disadvantaged regions. Within the Czech Republic, 1070 investment incentives were granted, 599 of which were aimed at foreign investors. The objective of our research was to identify and describe trends and contexts in the development of foreign direct investment (which received an investment incentive) on the national and regional level in the Czech Republic from 1998 to the present (as of October 1, 2024). Overall, one main objective, two research hypotheses, and several partial objectives were defined. Already proven methods in this field, i.e., correlation analyses, the Kruskal-Wallis test, and Moran's coefficient, were used for the fulfilment of the set main objective and partial objectives. The number of foreign direct investments in the Czech Republic has already passed its golden era and similar patterns can be observed for follow-up reinvestments. It was identified that within the research set of 599 granted investment incentives, 113 cases represent reinvestments of original foreign investments. This fact signals that investors are staying in the region long term and shows growing satisfaction with the Czech business environment. However, the volume of these reinvestments has been continuously decreasing since 2014. From the spatial distribution point of view, the Ústí nad Labem Region (CZ042), the Moravian-Silesian Region (CZ072), and the Central Bohemian Region (CZ020) are clearly the most attractive.

Keywords: foreign direct investment; capital inflow; investment incentives; institutional support; regional development; economic growth; Kruskal-Wallis test; Moran's coefficient

JEL Codes: E32, F21, J24, L20, O30, O40, R11

Abbreviations: analysis of variance (ANOVA); Central and Eastern European countries (CEEC); foreign direct investment (FDI); local administrative unit (LAU); multinational companies (MNCs); partial objectives (PO); principal components analysis (PCA); public assistance (PA); research and development (R&D); research question (RQ)

1. Introduction

Foreign direct investment (FDI) is defined as an investment made by a resident of one country (the source country) in a business located in another country (the host country). The primary purpose of FDI is to establish a lasting interest and control over the operations of the host country's enterprise. This is distinct from portfolio investments, which are short-term and involve the purchase of securities without control over the enterprise (Moosa, 2002; Kuznetsov, 2020). Due to the forces of globalization that have made the world more connected than ever in recent decades and the general deregulation trends, foreign direct investment is now an integral part of almost every economy. At the same time, as the position of international companies on a global scale grows, more attention is paid to the effects that foreign direct investment brings to the host region through its localization.

FDI has its supporters and opponents among the professional public. Despite their potential benefits, FDI inflows can negatively affect the host country's economy. One of the main concerns is the impact on corporate tax revenues. Governments often offer investment incentives of a fiscal nature in the form of tax incentives (tax breaks or tax holidays) to attract foreign direct investment to their host environment. This phenomenon leads to something known as incentive redistribution, which distorts the market and can lead to the emergence of the so-called dual economy (Narula, 2018). On the one hand, governments support the influx of large capital-strong companies, providing them with tax breaks or, as is the case in Central European countries, other forms of (financial) investment incentives (grants for each new job created, employee training, etc.), and on the other hand, small and medium-sized companies operate in the same business environment—taxpayers who, due to their limited capital equipment, cannot compete with FDI (recipients of incentives) technologically or with a range of benefits and higher wages to maintain experts and the existing qualified and experienced workforce (Kotíková, 2019).

In addition, the type of foreign direct investment can influence its impact on economic growth. Not all FDI is equally beneficial, and the source and nature of the investment can significantly affect outcomes (Ross and Fleming, 2022). In Southeast European countries, the relationship between FDI and economic growth is complex, with different types of FDI (e.g., mergers and acquisitions versus greenfield investments) having different effects. This suggests that FDI can lead to economic inefficiency and underperformance if not aligned with the economic structure and needs of the host country (Derado and Horvatin, 2023).

The COVID-19 pandemic has highlighted vulnerabilities in economies dependent on foreign investment. The pandemic adversely affected FDI in the manufacturing sector and showed how

external shocks can disrupt FDI flows and, subsequently, economic stability (Lee et al., 2023). In short, while FDI can bring capital and expertise to host countries, it also presents several challenges. These include reduced tax revenues due to incentives, governance issues, vulnerability to geopolitical risks, and different impacts depending on the type and source of the FDI. Policymakers must carefully consider these factors to maximize the benefits of FDI while mitigating its negative effects. This requires robust institutional frameworks, strategic planning and a comprehensive understanding of the types of foreign direct investment that are aligned with national economic objectives.

This study aims to identify and describe trends and contexts in the development of FDI at the national and regional levels in the Czech Republic from 1998 to the present.

The Czech Republic was selected for research on FDI and investment incentives for several reasons. The country is located at the crossroads of major European trade routes, making it a natural hub for foreign investment. It provides easy access to both Western and Eastern European markets, attracting multinational corporations (Damborský, 2023). Since the 1990s, the Czech Republic has actively utilized FDI as a tool for economic transformation following the transition from a centrally planned to a market economy. The studied period (1998–2024) covers various economic cycles, including EU accession (2004), the financial crisis, and the COVID-19 pandemic (Lee et al., 2023). Investment incentives were introduced in 1998, enabling a long-term analysis of their impact (CzechInvest, 2024).

The Czech Republic serves as a suitable example for examining regional differences in FDI distribution. While Prague and industrial hubs attract the majority of investments, some structurally disadvantaged regions struggle to secure foreign capital (Damborský, 2023). Analyzing the spatial distribution of FDI provides valuable insights into the effectiveness of government incentives in reducing regional disparities (Belardi, 2022). The country has a well-defined system of investment incentives, regulated by Act No. 72/2000 Coll., which has been amended multiple times (CzechInvest, 2024). This research allows for an assessment of whether these incentives effectively attract investors and whether adjustments to their framework are necessary.

This study presents a methodological approach with the potential to enhance the understanding of the impact of FDI on regional business environments for policymakers and investors, facilitating more informed decision-making.

The paper is structured as follows: Section 2 presents the theoretical anchoring of foreign direct investment localization in the host market within various theoretical approaches and directions. Section 3 is focused on government aid in the form of investment incentives. This section examines how governments use investment incentives to stimulate economic growth, attract FDI, and encourage entrepreneurial activity. The text explores different types of incentives, including fiscal measures and direct subsidies, and evaluates their effectiveness in reducing regional disparities and stabilizing labor markets. Additionally, it highlights the complexities involved in implementing these policies, using the Czech Republic as a case study to illustrate various outcomes and challenges. Section 4 describes in detail the methodology. It contains information about the data used, defines the main objective and partial objectives, and describes the apparatus of the mathematical and statistical methods used. Section 5 presents research and analysis data for the Czech Republic and individual regions. Finally, Section 6 discusses the findings and policy implications, and presents a summary.

2. Theoretical concept of foreign direct investment

The latter half of the twentieth century saw FDI rise to prominence as a significant subject in scholarly debate. Theoretical frameworks pertaining to this subject can be regarded as relatively contemporary, such as Vernon's production cycle theory (Vernon, 1966) and Dunning's OLI paradigm, which encompasses an ownership advantage, localization advantage, and internationalization advantage (Dunning and Lundan, 2008).

There is no single definition of regional development in the professional literature, as its interpretation varies depending on theoretical approaches and the context in which it is examined (Blažek and Uhlíř, 2011). One of the key factors influencing regional development is FDI, which can contribute to economic growth, innovation, and regional competitiveness.

The principal inquiry pertains to how a specific economy or host business milieu may derive optimal and prolonged benefits from the localization of a distinct production factor within its jurisdiction. Explanations for this query and related inquiries concerning the potential ramifications of FDI on the business milieu are elucidated through various theoretical frameworks, including endogenous growth theory (Grossman and Helpman, 1994), localization theory, and new economic geography (Krugman, 2011), among others.

Location theory is fundamental to understanding the determinants of FDI location. Location theories, which include classical models and modern approaches such as new economic geography, provide a framework for understanding how FDI can be strategically located to maximize a competitive advantage (Damborský et al., 2012).

The foundational neoclassical frameworks, such as Solow's growth model, regard foreign investments merely as a single source of capital goods, neglecting to adequately assess their broader implications (Fagerberg et al., 2018).

In contrast to Solow's framework, endogenous growth theories incorporate the impact of externalities on knowledge and technological advancements within the production function (Pan and Ngo, 2016).

Fagerberg (1987) and Verspanger (1991) critique theoretical frameworks that rely on production functions and their variations, deeming them excessively formalized. Fagerberg (1987) and Verspanger (1991) interpret economic growth as a consequence of technological absorptive capacity and the size of the technological gap. They consider the technological absorptive capacity to be a key factor in reducing the technological gap between the investor's country of origin (the FDI provider) and the FDI recipient. Due to a pronounced technological gap, FDIs may operate as what is referred to as "cathedrals in the desert," wherein these entities represent substantial production facilities that implement relatively sophisticated technology (the cathedral) with minimal connections to the surrounding region (the desert). Regions that thrive are those characterized by the absence of dominance by such singular entities (cathedrals) or those that possess a dense web of interconnections among various actors (Kotíková, 2019).

The term "cathedrals in the desert" refers to the phenomenon where FDI projects, especially those of multinational corporations, fail to integrate effectively into the local economy, resulting in limited benefits to the host region. Such FDI creates isolated economic enclaves that do not significantly contribute to local development or economic integration. Torre and Wallet (2016) define "cathedrals in the desert" as investment projects (particularly industrial) implemented in economically weak or

isolated regions that fail to deliver the expected development impact. These projects often lack integration with the local economy, resulting in limited economic growth.

One of the main negative impacts of FDI as cathedrals in the desert is the lack of significant local ties. This raises concerns about competitive pressures on domestic firms, which may struggle to compete with well-resourced foreign entities, potentially leading to a crowding-out effect or the emergence of a dual economy where local businesses are unable to thrive due to a foreign FDI presence. The absorptive capacity of the host country plays a key role (Szent-Ivanyi and Vigvári, 2012). If a country lacks sufficient trade openness or institutional quality, the benefits of FDI may be limited or even negative, as Vu and Trinh (2023) confirmed.

The secondary prevailing economic paradigm, which, akin to the novel economic geography, is rooted in the neoclassical economic tradition, identified as the new growth theory. This contemporary growth theory is frequently denoted as the endogenous growth theory within scholarly discourse.

A shared characteristic with the new economic geography is the premise of significant reliance on historical development (path dependence). However, in contrast to traditional neoclassical economics, on which the new theory of growth is based, it emphasizes the role of institutional elements. These factors are comprehended in an expansive manner (e.g., educational systems, intellectual property rights). Institutions substantially affect the milieu in which human capital, information, innovation, and knowledge are cultivated and utilized (Barasa et al., 2017; Cortright, 2001).

In accordance with the endogenous growth theory, knowledge produced through FDI is perceived as a public good that can be disseminated effectively under specific conditions; however, the fundamental prerequisite is an adequate supply of high-quality human capital, which may occur in particular regions or economies exhibiting a misalignment between educational frameworks and labor market requirements, thus posing a challenge or barrier to economic development.

Capital accumulation, advancements in technology, and labor force growth are key supply-side factors highlighted in neoclassical growth models. Conversely, the significance of demand is a fundamental aspect of Keynesian economic theories. The theoretical frameworks developed in the aftermath of the Second World War may be categorized within the so-called core-periphery paradigm (Blažek and Uhlíř, 2011). The distinction among polarization theories lies in the premise that development is not oriented toward achieving equilibrium but rather toward exacerbating disparities. It can be posited that polarization theory exerts pressure or compels economic policy to address and mitigate regional inequalities through the establishment of suitable institutional conditions (Kotíková, 2019).

Boudeville (1974) defines a growth center as a conglomerate of highly interconnected and dynamic industries that coalesce around a pivotal industry. Irrespective of geographical distance, the propagation of growth (and the genesis of spillover effects) transpires through customer-supplier relationships.

In light of escalating labor costs, energy expenses, and additional inputs, alongside regulatory frameworks governing labor relations and environmental safeguards, an increasing number of FDIs are transitioning segments of their operations to less-developed nations relative to the investor's home country (Bogataj et al., 2019). Typically, only managerial personnel with essential departments (such as research, development, design, marketing, or financial management) remain in the parent country. Consequently, the relocation of lower value-added processes to less-developed nations results in deindustrialization within the parent (developed) economy, along with a rise in gross value added and employment within the tertiary sector.

The theory regarding transformations in global production thus underscores the escalating reliance of less-developed economies on foreign investors. In contrast, this event can be seen as the preliminary phase of the diffusion process since it is achievable to recognize economies that have

adeptly surpassed this phase and reached a superior level of development. A pertinent illustration is provided by the so-called Asian tigers (Blažek and Uhlíř, 2011).

In accordance with this theory and broadly structuralist perspectives, MNCs strategically allocate their FDI to regions characterized by minimal production costs associated with fragmentation (Sako and Zylberberg, 2019). Given their substantial capital resources, these investors inherently possess considerable lobbying power compared to smaller enterprises. They can secure appealing investment benefits or incentives from governments engaged in the competition to attract FDI. To prevent further inequalities among regions, it is essential that we thoughtfully arrange investment incentives.

The neoclassical paradigm faces criticism from institutionalists for ignoring the social, cultural, psychological, and political dimensions, alongside the importance of institutional frameworks in the behavior and development of economies (Gambus and Almeida, 2018). Concurrently, they admonish the neoclassical approach for its implicit presumption regarding the supremacy of the market as the most efficient mechanism for allocating production factors (North and Weingast, 2000).

Due to the dynamically changing situation in the world, it can be assumed that MNCs will use the innovative capacity of the regions. Consequently, Amin and Thrift (1995) along-side Markowska et al. (2022) regard the region's adaptability and its capacity to integrate novel networks of contacts into the regional framework as a fundamental competency. These perspectives regarding regional development are not entirely novel. It can be posited that they are a continuation of Alfred Marshall's insights pertaining to agglomeration benefits, including both horizontal and vertical business interconnections (Šimanová and Trešl, 2011).

In accordance with the theory of global production networks, the state emerges as the pivotal actor responsible for the genesis of spillover effects, as it delineates and influences the formal institutional milieu within which the activities of other actors transpire. Given the global scope of this theory, the establishment of international standards assumes a critical significance (Blažek and Květoň, 2023). Therefore, this theory encompasses discussions on various elements such as the function of labor unions, environmental regulations, and the relevance of international quality benchmarks, exemplified by ISO 9000 certification, among others. Moreover, the theory of global networks highlights the increasing relevance of transnational standards that are defined by the corporate sector itself. A pertinent illustration of this phenomenon is encapsulated in the concept of Wintelism, which denotes the preeminence of the Windows platform, necessitating the compatibility of software from other firms and Intel, the principal chip supplier (Dicken et al., 2008).

A notable contribution of the global networks theory lies in its focus on the significance of antecedent development. This theory operates with the construct of path dependence, suggesting that prior developmental trajectories influence the present condition and future circumstances (Blažek and Květoň, 2023).

Theoretical frameworks concerning international trade examine the impact of trade liberalization on the commercial landscape. Posner (1961) articulated the technology gap theory, founded upon the criticality of innovation. A firm innovates by developing a new product that enhances its market position, thereby facilitating easier access to international markets. During the initial stages, there is a rise in profits and exports, which inherently incentivizes competitors to engage in imitation. With the advent of the imitation effect—recognized as one of the channels through which FDI generates spillover effects—the original producer experiences a diminution of its comparative advantage in the novel production process. In response to this erosion of its competitive edge, the producer will revert to innovation in order to reclaim the lost comparative advantage. The producer (investor, MNC) will temporarily maintain an absolute advantage until rival firms in other nations or regions commence production with greater efficiency. Consequently, the

innovative process gives rise to a temporally constrained technological gap between the original producer and all competing firms.

The American scholar Vernon (1966) advanced Posner's technology gap theory by introducing the production cycle theory. Vernon posited that the production cycle encompasses four distinct stages: innovation, growth, maturity, and decline. At first, the item boasts exceptional quality due to the firm's advanced technology; yet, as time passes, this edge fades because of imitation, causing the item to reach a level of uniformity. A substandard product may be produced in technologically less advanced areas.

The concept of localization in FDI is closely related to Dunning's eclectic paradigm, which emphasizes the importance of locational advantages in determining international investment regimes. These advantages include political, economic, and social factors that influence the interaction between countries and can significantly affect the competitiveness of FDI. The ownership advantage, location advantage, and internalization advantage are determinants of the firm's investment decisions (Dunning, 1981), which determine their propensity to engage in foreign direct investment rather than other forms of international business, such as exporting or licensing.

Ownership advantages refer to a firm's proprietary assets or capabilities, which may include technology, brand reputation, or managerial expertise. These advantages allow companies to compete effectively in foreign markets. Locational advantages refer to the specific attributes of the host country that make it attractive for investment, such as natural resources, market size, or a favorable regulatory environment. The advantages of internalization include the advantages of controlling foreign operations rather than licensing or another less capital-intensive market entry, which may include reducing transaction costs and protecting proprietary knowledge (Gorynia et al., 2016).

The influence of FDI on the business environment of the host economy and its impact on economic growth is based on various theoretical starting points. The theories presented in this article, to a greater or lesser extent, define the conditions for the development of the FDI's influence in the host economy (i.e., regional development, economic growth, the establishment of business or cooperative ties, the spillover effect, the agglomeration effect, or the effect of packing additional investments onto the original investment).

3. Investment incentives—a tool for attracting capital

Investment incentives are policy instruments used by governments to stimulate economic growth; attract foreign direct investment; and encourage entrepreneurial activity, the transfer of technology, and the creation of jobs. Investment incentives support entrepreneurs who develop the region through investments and help cultivate its environment (CzechInvest, 2024).

Investment incentives play a key role in increasing a country's attractiveness to foreign investors by addressing various economic and political factors that influence investment decisions. These incentives can take various forms, including fiscal measures, direct subsidies, and regulatory adjustments, each designed to create an enabling environment for foreign direct investment. However, the effectiveness of these incentives depends on their alignment with the specific needs and conditions of the host country.

However, their effectiveness can vary significantly depending on the implementation of these policies and the regional context. According to the core-periphery theory, investment incentives should be adequately targeted to reduce regional disparities and stabilize labor markets (Damborský, 2023). This highlights the complexities and challenges of designing effective investment incentive programs.

All applications for investment incentives are reviewed and approved by the government. This mainly considers the project's benefits for the region and the state. A necessary part of projects aspiring to obtain investment incentives is cooperation with research institutions or the area of its own research and development. When deciding on granting investment incentives, an emphasis is placed on the potential of involving local business entities in the supply network or contributing to the development of local infrastructure (CzechInvest, 2024; Belardi, 2022).

Investment incentives are intended for investors whose entrepreneurial activity contributes to the growth of the regions' technological level or the reduction of the unemployment rate. In the case of the Czech Republic, investment incentives are linked to the areas of technology centers, centers of strategic services, the manufacturing industry, and manufacturers of strategic products. Investment incentives are regulated by Act No. 72/2000 Coll. on investment incentives, as amended by Act No. 426/2023 Coll. (CzechInvest, 2024).

Investment incentives are examined mainly in the context of the fulfilment of their goals, i.e., in the context of regional development, the inflow of foreign capital, economic growth, and support for unemployment growth (Damborsky, 2023; Šimanová and Trešl, 2011).

Adámek and Rybková (2015) focused on evaluating the impact of investment incentives on employment and reducing regional economic disparities. Cedidlova (2013) evaluated the effectiveness of investment incentives using a sample of 30 investment incentive FDI recipients. The majority of companies that received incentives demonstrated higher efficiency, with the return on investment to the state budget exceeding 2.5 times the provided support for most firms.

Within the Czech Republic, the intended goal of directing investments to areas with high unemployment has not been consistently achieved, which indicates a mismatch between policy goals and results (Damborský, 2023). The relationship between foreign direct investment and employment is complex, with some studies suggesting that investment incentives do not always lead to increased employment. This is partly because multinational corporations can use labor-saving technologies (Evan and Bolotov, 2021).

Governments spend considerable financial sums to achieve set goals (inflow of foreign capital, support for job creation, regional development). However, the extent to which these goals have been met and whether granting investment incentives has brought about the desired effects can only be evaluated in the long term.

Both domestic and foreign economic entities can apply for an investment incentive within the Czech Republic. From 1998 to October 1, 2024, a total of 1070 business projects received this form of institutional support in the Czech Republic. Each applicant must meet the required criteria related to the minimum number of newly created jobs and the size of the investment. In the case of strategic service centers, it is also necessary that the applicant provides a minimum of 3 states. Investment incentives, governed by Act No. 72/2000 Coll., as amended, are available for projects in the areas of technology centers, strategic service centers, the manufacturing industry, and the production of strategic products. The amount of government support depends on the size of the investment and the company. The most common investment incentive is a corporate income tax relief for a period of 10 years. This form of support is intended for all businesses, regardless of their size (large enterprises, medium-sized, or small enterprises). This is the most common type of investment incentive, which almost everyone takes advantage of. Furthermore, investors can receive material support for a newly created job in the amount of EUR 8000 (CZK 200.000) per new job. Almost 41% of the FDIs surveyed received this form of support. A cash grant for employee training is a form of investment

incentive intended only for technology centers nowadays. However, in the period under review, 249 companies received this incentive. Conversely, material support for acquiring property of up to 20% of the eligible costs is linked to strategic investments in high-tech repair centers.

4. Materials and methods

As outlined above, FDI represents a significant economic tool that certainly deserves increased attention in the context of the 21st century. The present research focuses on FDI in the conditions of the Czech Republic at the NUTS3 level, i.e., 14 regions, asking two research questions (RQ):

RQ1: Is the Czech Republic an attractive target market for foreign investors?

RQ2: Is the Czech Republic a spatially homogeneous target market for foreign investors?

The research hypotheses are based on the results of the conducted literature review (see the previous sections). FDI can represent a major stimulus to a country's economic development and, at the same time, it can be a secondary indicator of the attractiveness of the country. A positive development of FDI may indicate higher economic growth, the nature of the economy in a given country, as well as the resilience of the national economy to endogenous and exogenous factors. With the intention of answering the two research hypotheses above, the objective of the present research is as follows:

To identify trends and contexts in the development of FDI that received an investment incentive on the national and regional level in the Czech Republic from 1998 to the present.

In order to meet the main objective, a total of 3 partial objectives are set, reflecting the nature of the mathematical and statistical methods used for their evaluation (1, 2, 3). Their variant processing reflects the FDI attribute being monitored and the level at which this attribute is evaluated (national or regional level), i.e., A, B, C, D. The first three partial objectives relate to FDI itself are:

PO1A: Identify the number of investments in the Czech Republic from 1998 to the present.

PO2A: Identify the volume of investments in the Czech Republic from 1998 to the present.

PO3A: Identify the volume of investment incentives (public assistance) related to investments in the Czech Republic from 1998 to the present.

The other three partial objectives follow the logic and nature of the previous ones but assess the reinvestments resulting from the original investments made in the Czech Republic. The specific wording is as follows:

PO1B: Identify the number of reinvestments in the Czech Republic from 1998 to the present.

PO2B: Identify the volume of reinvestments in the Czech Republic from 1998 to the present.

PO3B: Identify the volume of investment incentives (public assistance) related to reinvestments in the Czech Republic from 1998 to the present.

The other half is represented by partial objectives focusing on the regional level of the FDI attributes monitored. The specific wording is thus as follows:

PO1C: Identify spatial differences in the number of investments at the level of individual regions of the Czech Republic from 1998 to the present.

PO2C: Identify spatial differences in the volume of investments at the level of individual regions of the Czech Republic from 1998 to the present.

PO3C: Identify spatial differences in the volume of investment incentives (public assistance) related to investment at the level of individual regions of the Czech Republic up to 1998 to the present.

PO1D: Identify spatial differences in the number of reinvestments at the level of individual regions of the Czech Republic from 1998 to the present.

PO2D: Identify spatial differences in the volume of reinvestments at the level of individual regions of the Czech Republic from 1998 to the present.

PO3D: Identify spatial differences in the volume of investment incentives (public assistance) related to reinvestments at the level of individual regions of the Czech Republic up to 1998 to the present.

The data of the CzechInvest agency, which are freely available on its web portal, have been processed. The assessed period is 1998–2024, i.e., the entire time interval for which the data is available (until October 1, 2024).

4.1. Applied apparatus of mathematical-statistical methods

Overall, there are several types of partial objectives to which a separate apparatus of mathematical and statistical methods is attached. The normal distribution of the observed variables is tested as a prerequisite for the use of parametric and non-parametric methods, respectively.

The assumption of a normal distribution is verified using the Kolmogorov-Smirnov test calculated according to the formula:

$$D_{n_1,n_2} = \underset{-\infty < x < \infty}{sup} \left| F_{1,n_1}(x) - F_{2,n_2}(x) \right| \tag{1}$$

where $F_{1,n_1}(x)$ is the empirical distribution function of the sample (see variables tested), and $F_{2,n_2}(x)$ is the theoretical normal distribution.

In our case, the attributes of FDI are tested, i.e., the absolute observations of FDI or PA, and the amount of FDI or PA. Depending on the results obtained, the linear correlation is verified using Kendall's rank correlation coefficient (hereafter Kendall's coefficient), which is a non-parametric alternative to Pearson's coefficient, see the formula:

$$r_K = \frac{n_c - n_d}{n(n-1)/2} \tag{2}$$

where *n* is the number of observations, n_c is the number of matched pairs, and n_d is the number of mismatched pairs.

Kendall's coefficient is used to quantify the relationship between FDI and PA at the level of the whole country. Location theory (Krugman, 2011) explains why firms prefer certain locations for their investments based on costs, access to resources, and market conditions. The use of Kendall's correlation coefficient examines the relationship between the number of investments and factors such as labor availability, infrastructure, and tax incentives. The strength of Kendall's coefficient is lower; however, it is useful in the presence of outliers that significantly affect the value of the regression coefficients and hence the estimation of the residuals.

Depending on the results obtained, the difference in median value at the regional level is verified using the Kruskal-Wallis test, which is a non-parametric alternative to the ANOVA method, see the formula:

$$Q = \frac{12}{n(n-1)} \sum_{i=1}^{I} \frac{T_i^2}{n_i} - 3(n+1) \tag{3}$$

where n is the number of observations, n_i is the number of observations in the *i*-th sample, and T_i^2 is the total number of ranks in the *i*-th sample.

With the Kruskal-Wallis test, we monitor the differences in the position of the results at the level of the individual regions of the Czech Republic. The Kruskal-Wallis test examines differences in investment incentives among regions. This aligns with core-periphery theory, which suggests that economic benefits are not evenly distributed across space.

Moran's coefficient is not dependent on the results of the Kolmogorov-Smirnov test. The purpose of using this coefficient is to identify the spatial autocorrelation for a given set of regions, i.e., 14 regions of the Czech Republic.

$$I_i(d) = \frac{x_i - \bar{x}}{\frac{\sum_{j=1;i\neq 1}^{n} w_{ij}(d)}{n-1} - \bar{x}^2} \sum_{j=1;i\neq 1}^{n} w_{ij}(d)(x_j - \bar{x}) \tag{44}$$

where d is the critical distance, n is the number of spatial units, x_i is the value of the phenomenon in spatial unit *I*, $\bar{x}$ is the average value of the phenomenon, and $w_{ij}(d)$ is the weight for units *i*, *j* and distance *d*.

The core-periphery theory assumes that investment should contribute to the equalization of regional disparities by attracting capital to peripheral areas. The use of Moran's coefficient tests whether investment is actually spatially evenly distributed or whether it is concentrated in specific regions, thereby exacerbating disparities.

The purpose of using this coefficient is to identify relationships in the observed attributes of FDI (absolute observations of FDI or PA, amount of FDI or PA) at the level of individual regions of the Czech Republic. Rook-type weights are used and therefore only areas adjacent to the investigated area are taken into account, which is also reflected in the neighborhood matrix, see the following table (Table 1):

Table 1. The neighborhood matrix of the Czech Republic at the regional level (NUTS3).

	CZ010	CZ020	CZ031	CZ032	CZ041	CZ042	CZ051	CZ052	CZ053	CZ061	CZ062	CZ071	CZ072	CZ080
CZ010		1												
CZ020	1		1	1		1	1	1	1	1				
CZ031		1		1						1	1			
CZ032		1	1		1	1								
CZ041				1		1								
CZ042		1		1	1		1							
CZ051		1				1		1						
CZ052		1					1		1					
CZ053		1						1		1	1	1		
CZ061		1	1						1		1			
CZ062			1						1	1		1		1
CZ071									1		1		1	1
CZ072												1		1
CZ080											1	1	1	

Note: For the list of evaluated regions, see Table A.1. (Appendix).

All of the mentioned methods are regularly and successfully used in connection with FDI. Tsinaridze and Makharadze (2023) identified a significant correlation between FDI and employment, gross domestic product, and exports/imports to analyze the pace of development of Georgia's investment environment. Costaiche and Niculae (2016) found that FDI had a direct and highly significant correlation with the gross domestic product in Romania. Based on the research of Bano and Tabbada (2015), FDIs are closely associated with high levels of gross domestic product, high domestic savings, large foreign reserves, and export orientation in Asian developing countries. Capik (2021) used the Kruskal-Wallis test to investigate the statistical significance of differences in mean values between the three countries (Czechia, Slovakia, and Poland). Mishrif and Khan (2024) used this test to assess the impact of spillovers on the performance of the surveyed companies in Oman. Fitala et al. (2023) applied this method to identify statistically significant differences between the chosen factors and individual variables relating to (de)centralization in Slovakia. Moran's I was used by many authors too. The research of Tang et al. (2018) showed that energy consumption has a significant and positive effect on haze pollution in China while foreign direct investment has a significant and negative effect on haze pollution. Sun and Sun (2020) used it to measure and analyze the spatial autocorrelation of carbon emissions among the provinces in China. For other applications, see, e.g., Cao et al. (2022) and Xu et al. (2022). The logic of using individual methods is illustrated in the following diagram.

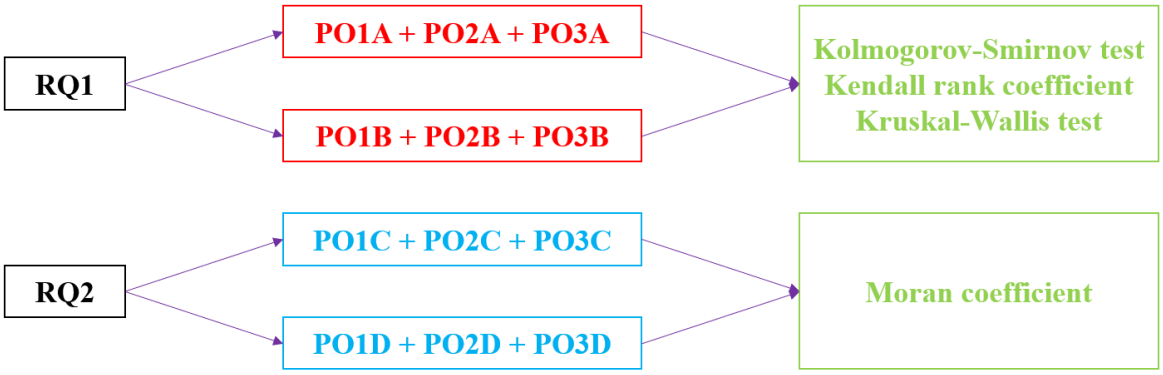

Figure 1. Illustration of research methodology. All data are processed and evaluated in MS Office Excel and Statistica 14.

5. Results

The results of the present research can be divided into three parts. In the first one, we discuss foreign direct investment with the intention of fulfilling the partial A-type objectives (Section 4.1). In the second subsection we deal with reinvestments, i.e., firms that were established from reinvested profits generated in the Czech Republic from the original FDI. The intention of the second subsection is to meet the partial objectives of type B (Section 4.2). The last part is a spatial assessment at the level of the individual regions of the Czech Republic, through which the partial objectives of type C and D are fulfilled (Section 4.3).

The following two tables describe the basic characteristics of the observed attributes/variables. The first one (Table 2) contains information at the level of the Czech Republic for the whole period under consideration.

Table 2. Moment characteristics of the observed attributes at the national level (1998 to the present).

	Investments—overall			Reinvestments—overall		
	frequency	amount of FDI	amount of PA	frequency	amount of FDI	amount of PA
Mean	18.00	603.07	189.51	4.19	87.24	24.52
Median	10.00	337.64	77.92	1.00	19.90	4.98
Min.	0	0	0	0	0	0
Max.	97.00	2554.32	1068.84	31.00	575.16	166.03
Std. Dev.	22.05	714.48	240.72	6.93	146.05	40.97
Coef. Var.	122.50	118.47	127.02	165.55	167.42	167.04
Skew.	2.29	1.62	2.17	2.65	2.14	2.18
Kurt.	6.00	2.18	5.90	8.25	4.39	4.76

Source: Our own calculations based on CzechInvest data (2024).

The second one (Table 3) shows data at the regional level, i.e., at the level of 14 regions. The presented data cover the whole period under study, i.e., from 1998 to the present (until October 1, 2024).

Table 3. Moment characteristics of the observed attributes at the regional level (1998 to the present).

	Investments—overall			Reinvestments—overall		
	frequency	amount of FDI	amount of PA	frequency	amount of FDI	amount of PA
Mean	34.71	1160.22	364.48	8.07	168.24	47.30
Median	25.00	738.71	269.13	6.00	93.67	27.77
Min.	1.00	90.74	6.87	0	0	0
Max.	95.00	3520.84	1138.01	19.00	697.10	161.19
Std. Dev.	25.44	1108.44	308.92	6.34	187.86	47.50
Coef. Var.	73.27	95.54	84.75	78.58	111.66	100.44
Skew.	1.25	1.45	1.56	0.82	1.96	1.39
Kurt.	1.18	0.59	1.99	−0.57	4.25	1.29

Source: Our own calculations based on CzechInvest data (2024).

5.1. Assessment of FDI in the Czech Republic since 1998

The first part of the subsection focuses on the absolute number of FDI or PA (which is automatically linked to FDI) over the entire period under review since 1998. Subsequently, the volume of funds for both indicators under consideration and the differences in each year are assessed. In the third part, the linear relationship between them is quantified through correlation analysis.

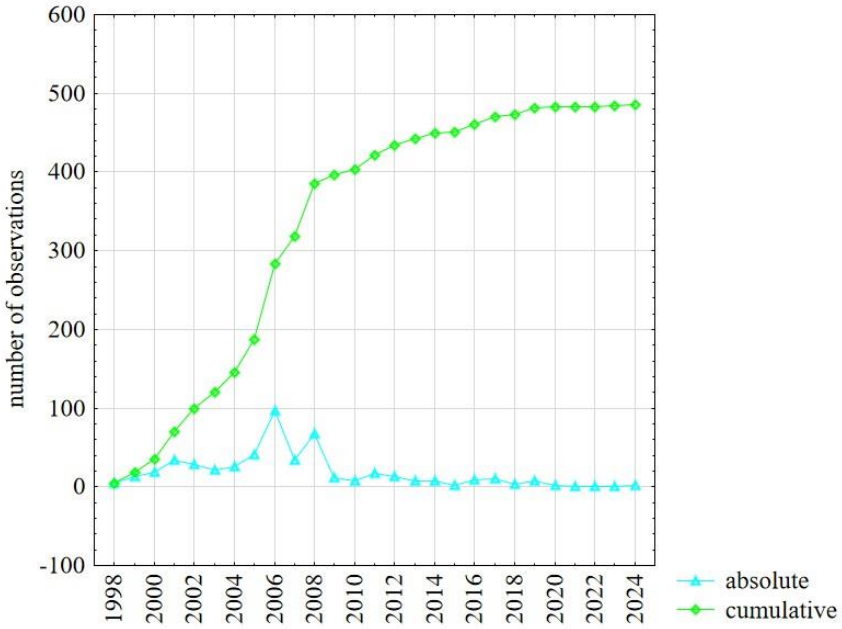

Figure 2. Absolute and cumulative frequency of FDI/PA in the Czech Republic since 1998.

The development of the absolute number of investments culminated since 2000, when we observe the largest number of FDI in the Czech Republic, e.g., in 2006, it was 97, and then in 2008, there were 67 investments. Due to the low absolute values, we observe a double- or triple-digit year-on-year increase only up to the aforementioned years, 2006 and 2008, respectively. This is followed by a period of decline and stabilization, with the number of FDI not exceeding 5 after 2020.

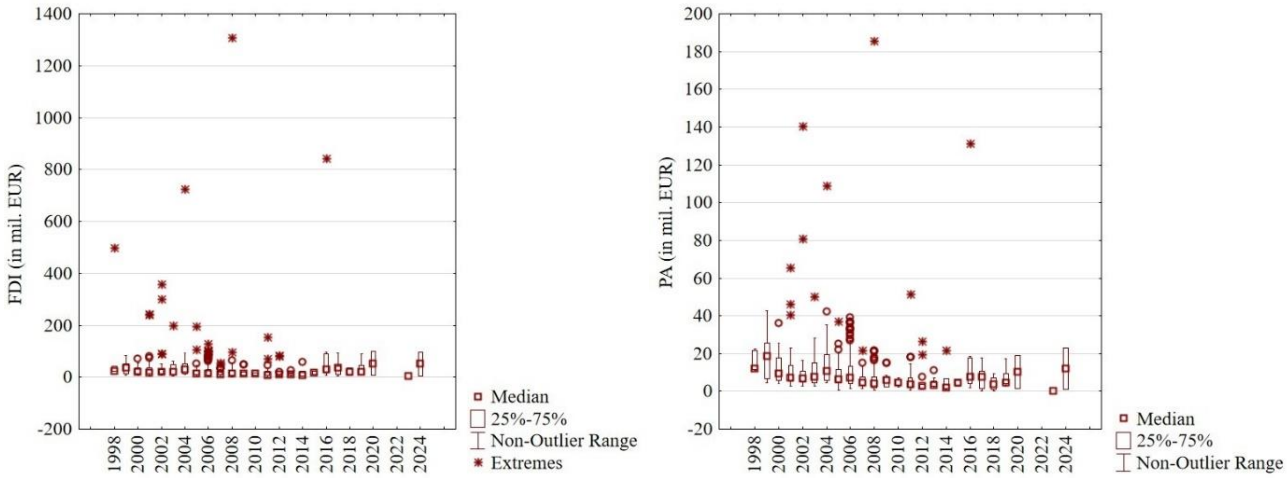

Figure 3. Amount of FDI/PA in the Czech Republic since 1998.

In terms of both FDI and PA volumes, we observe significant differences both between and within years. This is evidenced by the occurrence of outliers as well as extreme values, which are captured in Figure 3. The significant difference in the mean value (median) is confirmed through the Kruskal-Wallis test for FDI ($Q = 63.313$; $p < 0.001$) as well as for public assistance, PA ($Q = 91.946$; $p < 0.01$). On the

basis of these results, it is not possible to identify a clear trend in the development of the indicators under study; however, given the development in the last years of the period under review, no significant changes can be expected.

It is also interesting to note that a higher absolute number of FDI as well as public assistance does not automatically imply a higher volume of funds (FDI: $r_K = 0.7359$; $p < 0.05$; PA: $r_K = 0.8283$; $p < 0.05$).

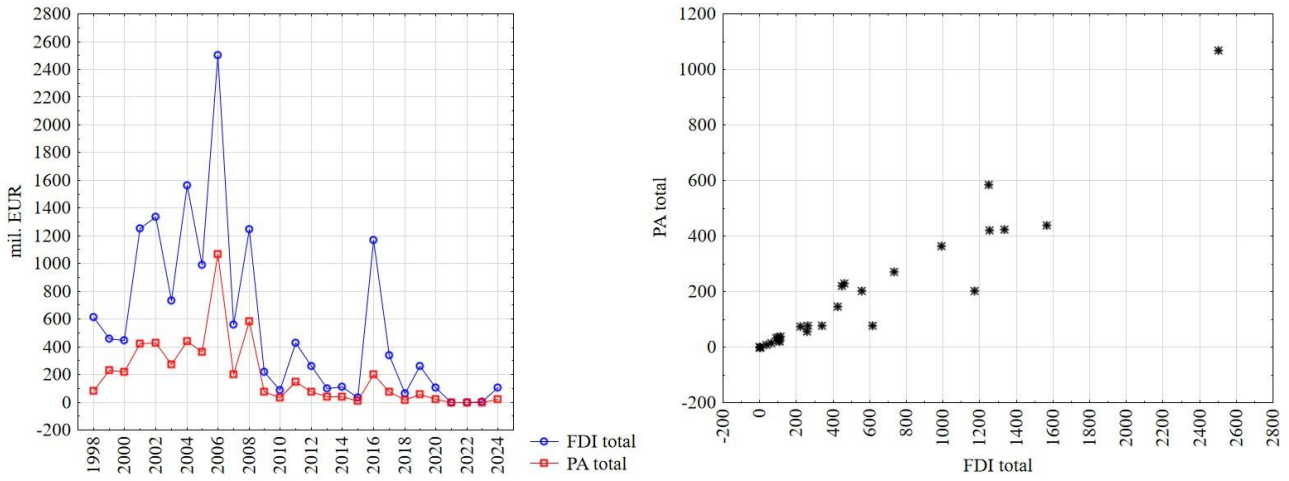

Figure 4. Relationship of FDI and PA in the Czech Republic since 1998.

The evolution of FDI follows the evolution of PA, as documented in the figure above (Figure 4). This relationship can be described as statistically significant and the linear correlation as high ($r_K = 0.88$; $p < 0.05$). As FDI grows, investment incentives (public assistance) also grow.

5.2. Assessment of reinvestments in the Czech Republic since 1998

The structure of the second analysis follows the structure of the previous one (for the sake of easier comparison). In the first subsection, the absolute number of FDI or PA (which is automatically linked to FDI) is assessed for the whole period assessed since 1998. Following this, we assess the volume of FDI for the two indicators under study and the differences between them. In the third section, the linear relationship between FDI and PA is investigated and verified using a correlation analysis.

The evolution of the number of reinvestments in the first half of the period under review is stagnant, as documented by the measured peak of 3 until 2012 (see Figure 5). The following seven years can be described as the best in terms of reinvestments, with the highest number of reinvestments recorded in 2014 (31). After 2019, the number of reinvestments starts to decline, with the last few years being more of an exception (only one reinvestment is recorded in the last 3 years).

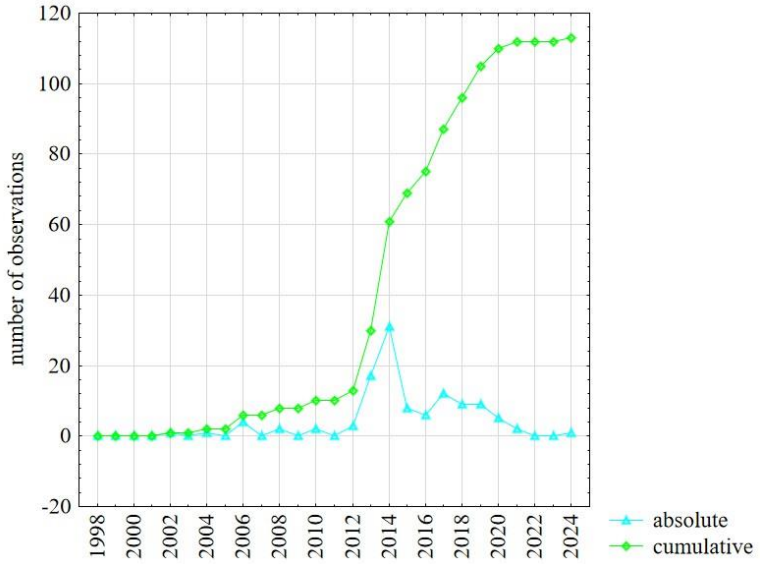

Figure 5. Reinvestments—absolute and cumulative frequency of FDI/PA in the Czech Republic since 1998.

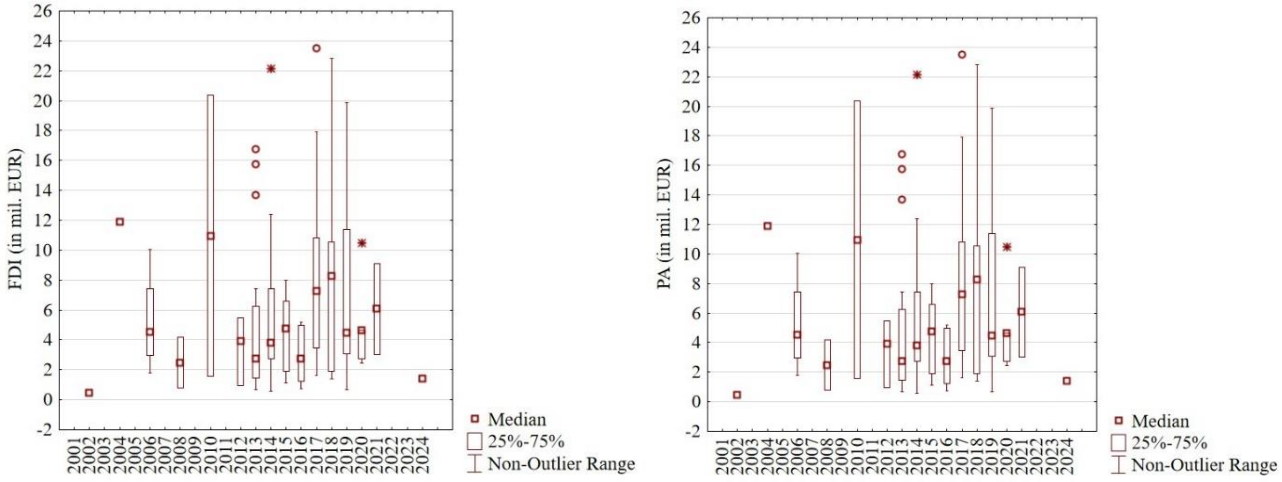

Figure 6. Reinvestments—amount of FDI/PA in the Czech Republic since 1998.

Compared to initial investment (see Section 4.1), the variability of both reinvestment and PA is significantly higher, as documented in Figure 6. At the same time, significant differences in the mean value (median) are confirmed for both FDI ($Q = 45.969$; $p = 0.009$) and follow-on public assistance ($Q = 48.098$; $p = 0.005$). Thus, also in this case, it is not possible to identify a trend in the development of the monitored indicators.

In the case of reinvestments, the number of FDI as well as public assistance is not linearly correlated with the amount of funds (FDI: $r_K = -0.1788$; $p > 0.05$; PA: $r_K = -0.1851$; $p > 0.05$). The nature of the relationship for both indicators is the same and at the same time not statistically significant.

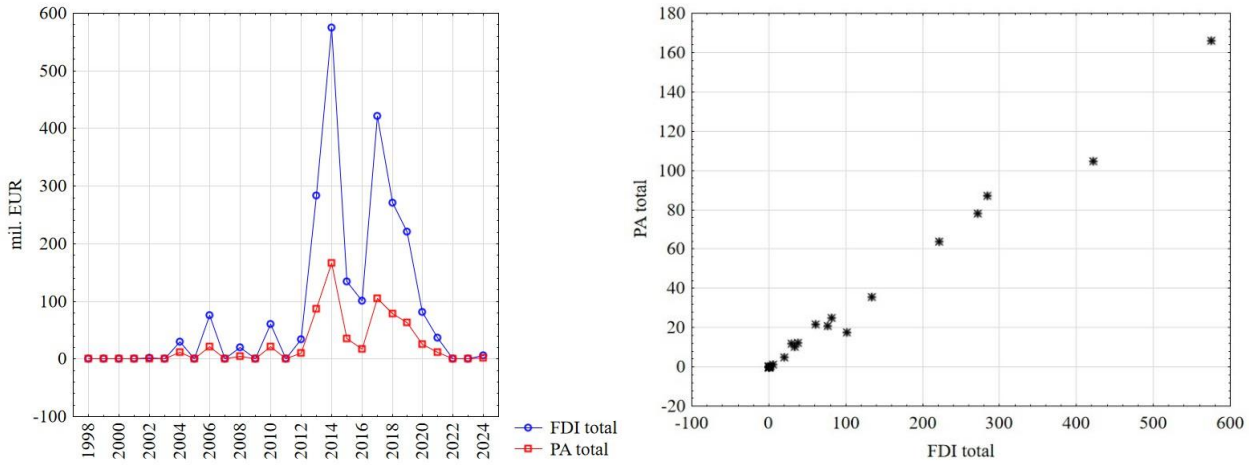

Figure 7. Reinvestments—relationship of FDI and PA in the Czech Republic since 1998.

The relationship in FDI and public assistance (PA) is also highly positively correlated in the case of reinvestments ($r_K = 0.966$; $p < 0.05$). As the volume of FDI increases, the volume of public assistance (investment incentives) also increases, and this correlation can be described as very high.

5.3. Spatial assessment of investments and reinvestments in the Czech Republic since 1998

The last and therefore third subsection is devoted to the spatial distribution across the 14 regions of the Czech Republic for all attributes assessed so far.

Figure 8. Absolute frequency of investments and reinvestments in the Czech Republic since 1998.

In terms of the absolute number of investments and reinvestments, the Ústí nad Labem Region (CZ042) is the best, followed by the Moravian-Silesian Region (CZ072) and the Central Bohemian Region (CZ020). The results of the other regions are relatively balanced, which is underlined by the spatial randomness of the measured results ($I_I = -0.023$; $I_{REI} = -0.016$).

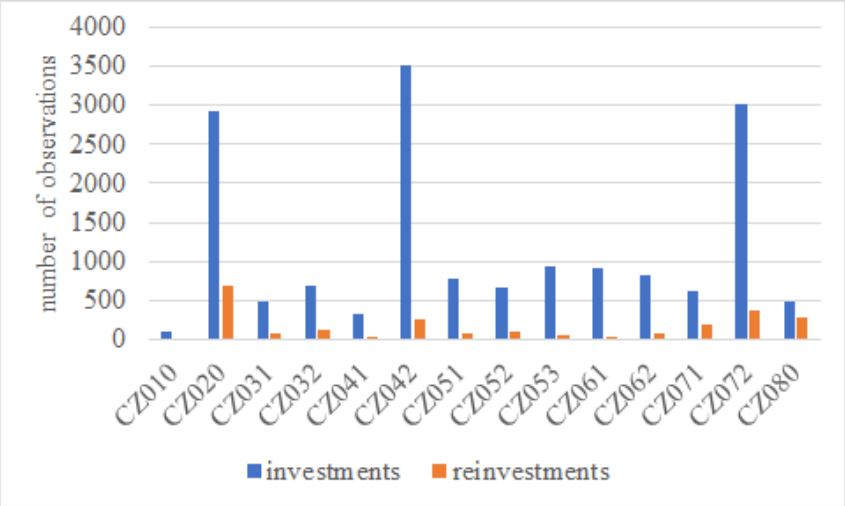

Figure 9. Amount of FDI as investments and reinvestments in the Czech Republic since 1998.

Given the confirmed high correlation between the volume of FDI and the amount of public assistance provided, the results are very similar across regions. In relation to the absolute number of investments (reinvestments) themselves, we note the dominance of the trio of previously mentioned regions, i.e., the Ústí nad Labem Region (CZ042), the Moravian-Silesian Region (CZ072), and the Central Bohemian Region (CZ020). In this case we also find spatial randomness, as the Moran coefficient oscillates around the values −0.022 to −0.23 each time.

The above results and their descriptions confirm the assumptions outlined in the previous theoretical section. The following section is devoted to their confrontation with the results of other research.

6. Discussion

Of the 1070 investment incentives granted since 1998, 599 of them went to foreign investors. From the conducted research, it was found that 486 of them represented the entry of new FDI into the Czech business environment. The remaining 113 cases involved reinvestment projects. These 113 projects (companies) were founded in the Czech Republic from the reinvested profit of the original FDI that received an investment incentive. The total value of these projects exceeded EUR 2355 million. This can be considered a signal by foreign investors who want to remain in the host business environment of the Czech Republic. It expresses their satisfaction with both the business and institutional environment of the host region and economy. At the same time, this eliminates the risk of the outflow of capital (in the form of reinvested profit) back to the parent economy. Unfortunately, since 2014, the value of reinvestments has been continuously decreasing.

While investment incentives can potentially stimulate economic growth and employment, their success depends on careful design and implementation. Factors such as regional targeting, the nature of incentives, and the economic context play a crucial role in determining their effectiveness. As Adámek and Rybková (2015) pointed out, the effectiveness of investment incentives on the labor market may only be temporary if investments are not properly maintained. This is also consistent with the findings, as the decline in reinvestments since 2014 may indicate a decreasing attractiveness of the Czech Republic for long-term foreign investments. Cedidlová (2013) warned that some companies

may shift their activities elsewhere after the end of the incentives, which reduces the long-term benefit of these investments.

The recommendation for economic policy is, among other things, to get rid of a rigid system of setting investment incentives (Evan and Bolotov, 2021). The regional policy of this institutional support should respond flexibly to changes in regional development and situations in the labor markets. The setting of investment incentives should not be fixed but, on the contrary, flexibly linked to economic changes and economic development in the individual regions. Only in this way can the potential of capital inflow be used in all its functions for the sustainable development of the host market.

It is necessary and desirable that the system of investment incentives supports the creation of links between FDI and domestic economic entities. Without the right conditions, FDI can become isolated, like "cathedrals in the desert" that fail to stimulate broader economic integration or growth (Vu and Trinh, 2023). In addition, the socio-economic impacts of FDI can vary greatly from region to region. In Belt and Road countries, foreign direct investment has shown mixed results (Sattar et al., 2022). At the same time, differences within states can be more significant than between states. Therefore, it is necessary to identify local effects in lower territorial units (Driffield and Hughes, 2003; Kotíková, 2019).

This variability underlines the risk that (significant in terms of volume) foreign direct investment projects will become isolated investments without the connection of domestic economic entities to the supply-customer chain. This, in practice, means zero or negligible emergence of desirable spillover effects—backward linkages and forward linkages (Lenaerts and Merlevede, 2012).

Excessive tax incentives and regulatory relief may not always bring the desired economic results. For example, while tax benefits are often used to attract foreign direct investment, they may have a limited or negative impact on corporate tax revenues due to incentive redistribution (Kotíková, 2019). This can strain public finances and reduce the ability of governments to invest in necessary infrastructure and services, further isolating FDI projects from the local economy.

It is necessary to point out that it is not so much FDI itself but relatively rigid investment incentive systems that cause market distortions in the host business environment. Suppose the setting of granting investment support allows strong MNCs or their FDI to draw fiscal or financial incentives that small and medium enterprises cannot achieve. In that case, it leads to the frustration and demotivation of entrepreneurs to implement their business activities and plans. MNCs with limited capital resources find themselves in the triple trap of institutions:

1. Taxes apply, which are redistributed in the form of investment incentives for capital-intensive companies (especially FDI).
2. Due to limited capital resources, they cannot invest in technological progress and innovation on the same scale as recipients of investment incentives.
3. Due to limited resources, they cannot offer existing employees, especially experts and qualified workers, a similar range of benefits and the level of wages offered (even thanks to the investment incentives) by FDI (the recipient of incentives).

Investment incentives were supposed to reduce unemployment in structurally disadvantaged regions, but research shows that this effect is not achieved across the board. Institutional economic theories (e.g., North and Weingast, 2000) explain this discrepancy by rigid conditions for granting incentives that are not flexible to the specific needs of individual regions. This suggests the need to revise investment policies to reflect real economic conditions and increase the effectiveness of FDI support in less-developed regions.

The international competition of states for FDI inflow sharpens these problems. The fiscal benefits of FDI may not always offset the costs of these incentives.

The current setting of investment incentives in the Czech Republic does not often emphasize the principles of sustainable development, as Chrobocińska (2021) emphasizes in the case of regions geographically close to Poland. For regional competitiveness, it is crucial to implement the dimensions of sustainable development within the framework of setting institutional conditions. If the granting of investment incentives reflects the principles of sustainable development, there will be greater cultivation of the business environment. Investment incentives will begin to link long-term sustainable investments to peripheral regions.

Based on the above results, the following can be stated:

- The number of investments in the Czech Republic has already passed its golden era; we can currently speak of stagnation and investments in the order of units. These results correspond, for example, with Ho and Gan (2021). Uncertainty caused by pandemics has been shown to negatively affect FDI inflows, potentially leading to project shutdowns and economic disruptions. This highlights the vulnerability of economies dependent on foreign investment to external shocks.
- The volume of FDI in individual years shows a high variability both in terms of the number and volume of governmental aid (and the associated public assistance).
- Similar patterns can be observed for reinvestments, which have been in continuous decline since 2014.
- With the increase in the number of investments, the volume of funds also increases linearly; this correlation can be described as very high, but in the case of reinvestments, this relationship has not proved to be statistically significant.
- In terms of spatial distribution at the level of the individual regions of the Czech Republic, the Ústí nad Labem Region (CZ042), the Moravian-Silesian Region (CZ072), and the Central Bohemian Region (CZ020) are clearly the most attractive. Nevertheless, the distribution across the territory is random, as documented by the values of Moran's coefficient around zero.

The setting of investment incentives is based on the principles of core-periphery theory. The set institutional support should improve the situation in structurally affected regions (Damborský, 2023). The results found correspond to the conclusions of Beraldi (2022), who emphasized the uneven distribution of investment incentives in the Czech business environment with significant clustering in some regions, such as the Ústí nad Labem Region, Central Bohemian Region, and Moravian-Silesian Region.

In conclusion, while foreign direct investment has the potential to support economic growth and development, its effectiveness depends on the ability of the host country to integrate these investments into the business environment (Blažek and Květoň, 2023; Kotíková, 2023). Without sufficient absorptive capacity, institutional quality, and resilience to external shocks, FDI can result in isolated projects that resemble "cathedrals in the desert" and have limited benefits for the host region or the economy. Therefore, policymakers must focus on creating enabling environments and set appropriate public assistance that maximize the positive impacts of FDI while mitigating their potential disadvantages (crowding-out effect, creation of dual economy, etc.).

7. Conclusions

We consider the main objectives to have been met, as well as the partial objectives. This study contributes to filling gaps in the literature by providing a detailed analysis of the impact of investment

incentives on regional development, spatial distribution, and effectiveness within the Czech Republic. While it is generally acknowledged that investment incentives can influence FDI, their actual impact on individual regions and their long-term benefits for local economies have not been sufficiently explored. The findings of this study reveal that a significant portion of FDI consists of reinvestments—profits reinvested by foreign investors back into the Czech business environment. This aspect of FDI has not been sufficiently emphasised in previous research despite the fact that reinvestments are a key indicator of investor satisfaction with the host environment and the long-term sustainability of FDI.

Another significant contribution of this study lies in analyzing the spatial distribution of FDI and the effectiveness of investment incentives within the framework of core-periphery theory. While theoretical approaches suggest that investment incentives should primarily be directed toward economically weaker regions to reduce regional disparities, empirical findings indicate an uneven distribution of these incentives in the Czech Republic. The highest volumes of FDI and reinvestments are concentrated in a few key regions, particularly the Ústí nad Labem, Moravian-Silesian, and Central Bohemian regions, while some structurally disadvantaged areas remain less accessible to investments. These findings highlight the need to reconsider investment incentive policies to better reflect regions' real needs and contribute to a more balanced economic development across the country.

It would also be interesting to confront the identified trends/results with the situation in neighboring countries, e.g., V4 countries. For this purpose, we plan to compare the basic moment characteristics and regression coefficients in linear and nonlinear models. If the conditions are met, we will also use cluster analysis and multicriteria analysis methods. In further research, we also plan to complement and confront these results with other attributes related to FDI, namely the number of jobs created, the number of jobs supported, and others. Based on the characteristics of the variables under further study, the plan is to use a wide apparatus of parametric and non-parametric methods, e.g., the ANOVA method on the one hand, and the Levene test on the other.

For the purposes of the research presented here, methods previously used in the research of other researchers were used, see Tsinaridze and Makharadze (2023), Fitala et al. (2023), Cao et al. (2022), Xu et al. (2022), and others. When selecting methods for further continuous research, we want to be inspired by Zanoli and Pepe (2023), and Bildirici and Gokmenoglu (2020), for example, who used the ANOVA method to determine the most suitable number of principal components in PCA or for testing the homogeneity between selected countries in Asia. As an inspiration for the use of the Levene test, we use the research of Bellak et al. (2007), who verified the variability of the host country statutory corporate income tax rates and bilateral corporate effective average tax rates of seven major home countries of FDI in eight major CEEC host countries.

The first limitation we see is in the apparatus of the mathematical-statistical methods used, which can be arbitrarily modified or extended (in the context of the problem addressed). The spatial results are largely determined by the size of the nomenclature unit under study, i.e., this is the second limitation of the research carried out. Therefore, in the follow-up research we plan to focus on LAU2 units (districts), which will allow for a more detailed spatial analysis and expand the possibilities of statistical verification of the obtained results. The reason is that the effects and impact of FDI are primarily local or regional. Jobs, investment construction, infrastructure development, the influence of expatriates, and other effects are manifested locally.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Author Contributions

Sylvie Kotíková: Conceptualization, Methodology, Validation, Investigation, Resources, Data Curation, Writing—Original Draft, Writing—Review & Editing, Visualization, Supervision, Project administration, Funding acquisition. Roman Vavrek: Conceptualization, Methodology, Software, Validation, Formal analysis, Data Curation, Writing—Original Draft, Writing—Review & Editing, Visualization, Project administration. All authors have read and approved the final version of the manuscript for publication.

Conflict of interest

All authors declare no conflicts of interest in this paper.

References

Adámek E, Rybková L (2015) Influence of investment incentives on development of regional unemployment in the Czech Republic. *Eur J Bus Sci Technol* 1: 5–14. https://doi.org/10.11118/ejobsat.v1i1.33

Amin A, Thrift N (1995) Globalization, Institutional Thickness and the Local Economy, In: Healey, P., Camerson, S., Davoudi, S., et al., *Managing Cities: The New Urban Kontext*, Chichester: Wiley, 322.

Bano S, Tabbada J (2015) Foreign Direct Investment Outflows: Asian Developing Countries. *J Econ Integr* 30: 359–398. https://doi.org/10.11130/jei.2015.30.2.359

Barasa L, Knoben J, Vermeulen P, et al. (2017) Institutions, Resources and Innovation in East Africa: A Firm Level Approach. *Res Policy* 46: 280–291. https://doi.org/10.1016/j.respol.2016.11.008

Belardi J (2022) Spatial distribution of granted investment incentives in the Czech Republic. *Acta Acad Karvin* 22: 5–15. https://doi.org/10.25142/aak.2022.011

Bellak C, Leibrech M, Romisch R (2007) On the appropriate measure of tax burden on foreign direct investment to the CEECs. *Appl Econ Lett* 17: 603–606. https://doi.org/10.1080/13504850500474202

Bildirici M, Gokmenoglu SM (2020) The impact of terrorism and FDI on environmental pollution: Evidence from Afghanistan, Iraq, Nigeria, Pakistan, Philippines, Syria, Somalia, Thailand and Yemen. *Environ Impact Assess Rev* 81: 106340. https://doi.org/10.1016/j.eiar.2019.106340

Blažek J, Květoň V (2023) Towards an Integrated Framework of Agency in Regional Development: The Case of Old Industrial Regions. *Reg Stud* 57: 1482–1497. https://doi.org/10.1080/00343404.2022.2054976

Blažek J, Uhlíř D (2011) *Teorie regionálního rozvoje: nástin, kritika, implikace*. Edited by Táborský, J. Vydání druhé, Přepracované a rozsířené. Prague, Czech Republic: Karolinum.

Bogataj D, Bogataj M, Drobne S (2019) Interactions between Flows of Human Resources in Fluctional Regions and Flows of Investors in Dynamic Processes of Global Supply Chains. *Int J Prod Econ* 209: 2015–2225. https://doi.org/10.1016/j.ijpe.2017.10.018

Boudeville JR (1974) *Problems of Regional Economic Planning*, Reprint. Edinburgh: Edinburgh University Press.

Cao P, Li XX, Cheng Y, et al. (2022) Temporal-Spatial Evolution and Driving Factors of Global Carbon Emission Efficiency. *Int J Environ Res Public Health* 19: 14849. https://doi.org/10.3390/ijerph192214849

Capik P (2021) Intensity of foreign investment promotion and development levels in Central-Eastern European regions. *J Place Manag Dev* 14: 114–133. https://doi.org/10.1108/JPMD-07-2019-0070

Cedidlova M (2013) The effectiveness of investment incentives in certain foreign companies operating in the Czech Republic. *J Competitiveness* 5: 108–120. https://doi.org/10.7441/joc.2013.01.08

Chrobocińska K (2021) Comparative Analysis of Regional Competitiveness in Poland from 2010–2019 in the Context of the Concept of Sustainable Development. *Sustainability* 13. https://doi.org/10.3390/SU13063202

Cortright J (2001) New Growth Theory, Technology and Learning: A Practitioner's Guide. Available from: https://e-tcs.org/wp-content/uploads/2012/10/Cortright-nueva_teoria_del_crecimiento.pdf.

Costaiche GM, Niculae I (2016) The Evolution and Impact of Foreign Direct Investments in Romania. *Sci Pap-Ser Manag Econ Eng Agric Rural Dev* 16: 111–116.

CzechInvest Investment Incentives. CzechInvest, 2024. Available from https://www.czechinvest.org/en/For-Investors/Investment-Incentives?force.

Damborský M (2023) Regional unemployment and investment incentives in Czechia. *Geogr J* 75: 107–124. https://doi.org/10.31577/geogrcas.2023.75.2.06

Damborský M, Šhovíková G, Rajtr R (2012) Regional Localization of the Automotive Industry in the Czech Republic. *Acta Oecon Prag* 20: 21–39. https://doi.org/10.18267/J.AOP.361

Derado D, Horvatin D (2023) FDI and Economic Growth Perspective of Southeast European Countries. *Zagreb Int Rev Econ Bus* 26: 119–148. https://doi.org/10.2478/zireb-2023-0006

Dicken P, Coe N, Hess M (2008) Global production network: realizing the potential. *J Econ Geogr* 8: 271–296. https://doi.org/10.1093/jeg/lbn002

Driffield N, Hughes D (2003) Foreign and Domestic Investment: Regional Development or Crowding Out? *Reg Stud* 37: 277–288. https://doi.org/10.1080/0034340032000065433

Dunning JH (1981) International Production and the Multinational Entreprise. *J Int Bus Stud* 1981: 171–173.

Dunning JH, Lundan SM (2008) *Multinational Enterprises and the Global Economy*, 2nd ed. Northampton, MA: Edward Elgar.

Evan T, Bolotov I (2021) Can Investment Incentives Cause Unemployment? An Empirical Analysis of The Relationship Between FDI and Employment Based on The OLI Framework. *Cent Eur Bus Rev* 11: 1–16. https://doi.org/10.18267/J.CEBR.291

Fagerberg AJ (1987) A technology Gap Approach to Growth Rates Bigger. *Res Policy* 16: 87–99. https://doi.org/10.1016/0048-7333(87)90025-4

Fagerberg AJ, Lundvall BA, Srholec M (2018) Global Value Chains, National Innovation Systems and Economic Development. *Eur J Dev Res* 30: 533–556. https://doi.org/10.1057/s41287-018-0147-2

Fitala P, Kozakova J, Skypalova R, et al. (2023) Strategic Management: Factors influencing (De)centralization in Multinational Corporations operating in Slovakia. *Mark Manag Innov* 14: 223–238. https://doi.org/10.21272/mmi.2023.4-17

Gambus I, Almeida F (2018) Three Decades after James Street's. "The Institutionalist Theory of Economic Development": What Does Institutional Approach to Economic Development Mean Today? *J Econ Issues* 52: 455–463. https://doi.org/10.1080/00213624.2018.1469902

Gorynia M, Nowak J, Trpczyński P, et al. (2016) Determinants of FDI establishment mode choice of Polish firms: The OLI paradigm perspective. *Argum Oecon* 2: 67–92. https://doi.org/10.15611/aoe.2016.2.03

Grossman GM, Helpman E (1994) Endogenous Innovation in the Theory of Growth. *J Econ Perspect* 8: 23–44. https://doi.org/10.1257/jep.8.1.23

Ho LT, Gan C (2021) Foreign Direct Investment and World Pandemic Uncertainty Index: Do Health Pandemics Matter? *J Risk Financ Manag* 14. https://doi.org/10.3390/jrfm14030107

Kotíková S (2019) Potential of the Czech business environment assumes the effects of foreign direct investment. *E M Ekon Manag* 22: 18–35. https://doi.org/10.15240/tul/001/2019-4-002

Kotíková S (2023) Spillover effects: A challenging public interest to measure. *Natl Account Rev* 5: 373–404. https://doi.org/10.3934/NAR.2023022

Krugman P (2011) The New Economic Geography, Now Middle-Aged. *Reg Stud* 45: 1–7. https://doi.org/10.1080/00343404.2011.537127

Kuznetsov A (2020) Foreign Direct Investment, In: Kobayashi, A., *International Encyclopedia of Human Geography* (Second Edition), 219–227. https://doi.org/10.1016/B978-0-08-102295-5.10070-8

Lee HH, Hayakawa K, Park CY (2023) The Effect of COVID-19 on Foreign Direct Investment. *Global Econ Rev* 52: 1–17. https://doi.org/10.1080/1226508X.2023.2171459

Lenaerts K, Merlevede B (2012) Horizontal or Backward? FDI Spillovers and Industry Aggregation. Available from: https://www.etsg.org/ETSG2011/Papers/Lenaerts.pdf.

Markowska M, Hlavacek P, Strahl D (2022) Knowledge-Intensive Business Services Employment Structure and Economic Development in EU Regions. *Comp Econ Res* 25: 109–133. https://doi.org/10.18778/1508-2008.25.32

Mishrif A, Khan A (2024) Do Free Trade Agreements Facilitate FDI Spillover Effects on Domestic Firms? Empirical Evidence from Oman. *Economies* 12: 141. https://doi.org/10.3390/economies12060141

Moosa, Imad A (2002) Foreign Direct Investment, In: *International Financial Operations. Finance and Capital Markets Series. Palgrave Macmillan*, London: Palgrave Macmillan, 318–340. https://doi.org/10.1057/9781403946034_12

Narula R (2018) An extended dual economy model. *Int J Emerg Mark* 13: 586–602. https://doi.org/10.1108/IJoEM-10-2017-0375

North DC, Weingast BR (2000) Introduction: Institutional Analysis and Economic History. *J Econ Hist* 60: 414–417. https://doi.org/10.1017/S0022050700025158

Pan WH, Ngo XT (2016) Endogenous Growth Theory and Regional Performance: The Moderating Effects of Special Economic Zones. *Communist Post-Communist Stud* 49: 113–122. https://doi.org/10.1016/j.postcomstud.2016.04.005

Posner MV (1961) International Trade and Technical Change. *Oxf Econ Pap* 13: 323–341. https://doi.org/10.1093/oxfordjournals.oep.a040877

Ross AG, Fleming N (2022) The impact of Chinese foreign direct investment on host country economic growth. *Local Econ* 37. https://doi.org/10.1177/02690942231162850

Sako M, Zylberberg E (2019) Supplier Strategy in Global Value Chains: Shaping Governance and Profiting from Upgrading. *Socio-Econ Rev* 17: 687–707. https://doi.org/10.1093/ser/mwx049

Sattar A, Hassan A, Hussain MN, et al. (2022) Impact of foreign direct investment on socio-economic development in belt and road countries. *Cogent Econ Financ* 10. https://doi.org/10.1080/23322039.2022.2143772

Šimanová J, Trešl F (2011) Vývoj Průmyslové Koncentrace a Specializace v Regionech NUTS3 České Republiky v Kontextu Dynamizace Regionální Komparativní Výhody. *E M Ekon Manag* 14: 38–52.

Sun ZQ, Sun T (2020) The Impact of Multi-Dimensional Urbanization on China's Carbon Emissions Based on the Spatial Spillover Effect. *Pol J Environ Stud* 29: 3317–3327. https://doi.org/10.15244/pjoes/114508

Szent-Ivanyi B, Vigvári G (2012) Spillovers from Foreign Direct Investment in Central and Eastern Europe. *Soc Econ* 34: 51–72. https://doi.org/10.1556/SocEc.34.2012.1.5

Tang DL, Xu H, Yang YH (2018) Mutual Influence of Energy Consumption and Foreign Direct Investment on Haze Pollution in China: a Spatial Econometric Approach. *Pol J Environ Stud* 27: 1743–1752. https://doi.org/10.15244/pjoes/78046

Torre A, Wallet F (2016) Policies of Regional Development and Planning, In: *Regional Development in Rural Areas*, Springer Briefs in Regional Science. Springer, Cham, 35–49. https://doi.org/10.1007/978-3-319-02372-4_4

Tsinaridze R, Makharadze N (2023) The Role of Foreign Direct Investment in the National Economy and Correlation Analysis. *Access-Sci Business Innov Digit Econ* 4: 46–59. https://doi.org/10.46656/access.2023.4.1(4)

Vernon R (1966) International Investment and International Trade in the Produkt Cycle. *Q J Econ* 80: 190–207. https://doi.org/10.2307/1880689

Verspanger B (1991) A New Empirical Approach to Catching up or Falling Behind. *Structural Change and Economic Dynamics* 2: 359–380. https://doi.org/10.1016/S0954-349X(05)80008-6

Vu TH, Trinh NTT (2023) The impact of FDI on economic growth in developing countries: the role of FDI inflow and trade openness. *Econ Finance Lett* 10: 216–229. https://doi.org/10.18488/29.v10i3.3519

Xu J, Lv T, Hou XR, Deng X, Li N, Liu F (2022) Spatiotemporal characteristics and influencing factors of renewable energy production in China: A spatial econometric analysis. *Energy Econ* 116: 106399. https://doi.org/10.1016/j.eneco.2022.106399

Zanoli SM, Pepe C (2023) Design and Implementation of a Fuzzy Classifier for FDI Applied to Industrial Machinery. *Sensors* 23: 6954. https://doi.org/10.3390/s23156954

AIMS Press