



HUNGARIAN UNIVERSITY OF  
AGRICULTURE AND LIFE SCIENCES

# **DOCTORAL (PhD) DISSERTATION**

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SCIENCES

THE DOCTORAL SCHOOL IN MANAGEMENT AND  
ORGANIZATIONAL SCIENCES

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## 1. Introduction

Foreign Direct Investment has become a key factor for the operation of the present global economy with globalization processes and the focus of an extensive investigation by academics and multinational businesses. Foreign Direct Investment is one of emerging economies' major engines, bringing cash, technology, new management, etc., to recipient nations. Past empirical researches have shown that, based on the scale of the hosted national market, the tier of human resources, facilities, and host nation future prosperity, FDI could lead to desirable economic expansion, joblessness decrease, the favorable impact of these on the trading balance, advancement in human resources and entities. Therefore, theoretically, FDI is considered as a significant component which boosts economic growth (Lucas, 1998; Ramsey, 1928; Romer, 1986, 1990; Solow, 1956), decreases unemployment rate (Keynes, 1936), (Dunning, 1985), (Baldwin, 1995), (Moosa, 2002) and positively affects trade (Dunning, 1974, 1977, 1985, 1988), (Ethier, 1986; Ethier & Markusen, 1996; Grossman & Helpman, 2002; Helpman, 1984, 1985; Horstmann & Markusen, 1992; Markusen, 1984, 1997, 2002; Markusen & Venables, 1998a, 2000), (Moosa, 2002), (Solomon & Ingham, 1977), (Panic & Joyce, 1980), in host countries.

Turkey had many advantages that were considered factors that might easily convince investors to put capital into the Turkish economy as a host country. First, it would be great to mention about convenient geolocation of Turkey. Turkey is located in the hub of Asia and Europe, playing the role of the bridge between two continents. The benefits of Turkey from this location are widespread and cheap transportation which is one of the crucial factors that foreign investors considering before investing in the host countries.

Second, a cheap labor force is another vital factor that foreign investors consider before investing. If we compare the average wage of Turkey (285 Euro<sup>1</sup>) with western and eastern Europe in 2021, we can observe that the average wage in Turkey is much less than in European countries, which makes Turkey more attractive to foreign investors. Third, labor productivity is considered a crucial factor in the attraction of FDI. Based on the database of WorldBank,<sup>2</sup> the labor participation rate in Turkey is 66.5 % (2019) of the total population (ages 15-64), which is relatively high statistics in that field. However, having these advantages is not that countries will be prosperous in attracting FDI into their economies. Therefore, the economic and political stability of host countries is considered another crucial factor in attracting FDI.

Now, let us take a glance at the efforts of the Turkish state in attracting FDI into the economy of Turkey. They made crucial steps to attract the attention of foreign investors to its economy. One of the essential attempts was to practice the most liberal Foreign Capital Law of the period with Law No. 6224 in 1954, introduced in 1980<sup>th</sup>. (Doğrudan yabancı sermaye yatırımları özel ihtisas komisyonu raporu., 2000).

The first Five-Year Development Plan of Turkey (1963-1967) was put into reality by creating the State Planning Organization (SPO) in 1960. While import substitution policy was favored throughout the mentioned time, under the heading “Incentive Measures,” the question of attracting foreign capital to the private industry to achieve the specified objectives was addressed in the plan (Durgan et al., 2016).

In the context of “Economic Stability Measures of 24 January 1980,” rules on international capitals have been likewise drawn up. On 25 January

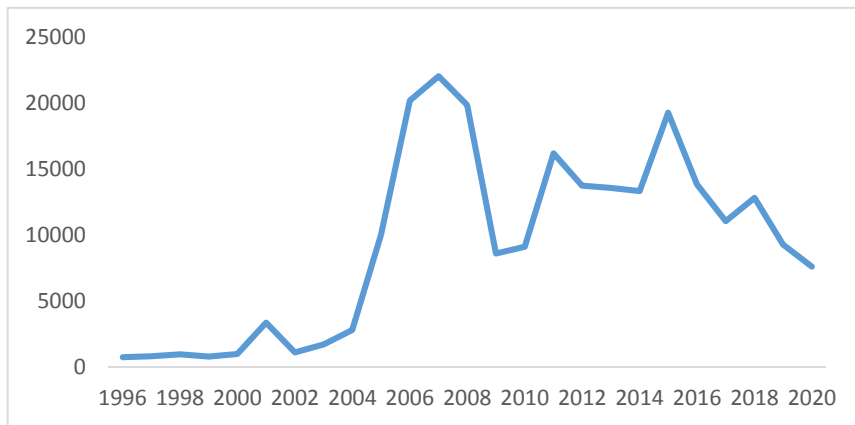
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<sup>1</sup> Türkiye İstatistik Kurumu  
<https://www.tuik.gov.tr/>

<sup>2</sup> The World Bank  
<https://data.worldbank.org/indicator/SL.TLF.ACTI.ZS>

1980, the Foreign Capital Framework Decree no. 8/168 came into action and was created with the State Planning Organization by the Foreign Investment Office linked to the Prime Minister (Doğrudan yabancı sermaye yatırımları özel ihtisas komisyonu raporu., 2000). The General Directorate of Foreign Affairs was integrated into the undersecretaries of the Treasury and Foreign Trade under the Decree of 17.7.1991 and numbered 436. With the creation of the Under-Secretariat of Treasury and Foreign Trades by Law no. 4059 of 9 December 1999, the General Directorate of Foreign Capital maintains its functions under the undersecretaries of Treasury (Doğrudan yabancı sermaye yatırımları özel ihtisas komisyonu raporu., 2000). The Framework Decisions were modified twice since 1980, in 1986 and 1992. In the subsequent time, the liberalization procedure was maintained, and with the Foreign Capital, Framework Decision numbered 95/6990 the latest legislation that led to significant amendments was implemented on 7 June 1995 (Doğrudan yabancı sermaye yatırımları özel ihtisas komisyonu raporu., 2000).

The consequences of these economic liberalizations and structural changes led to the increase of foreign investment inflows into the economy of Turkey (See Graph 1).



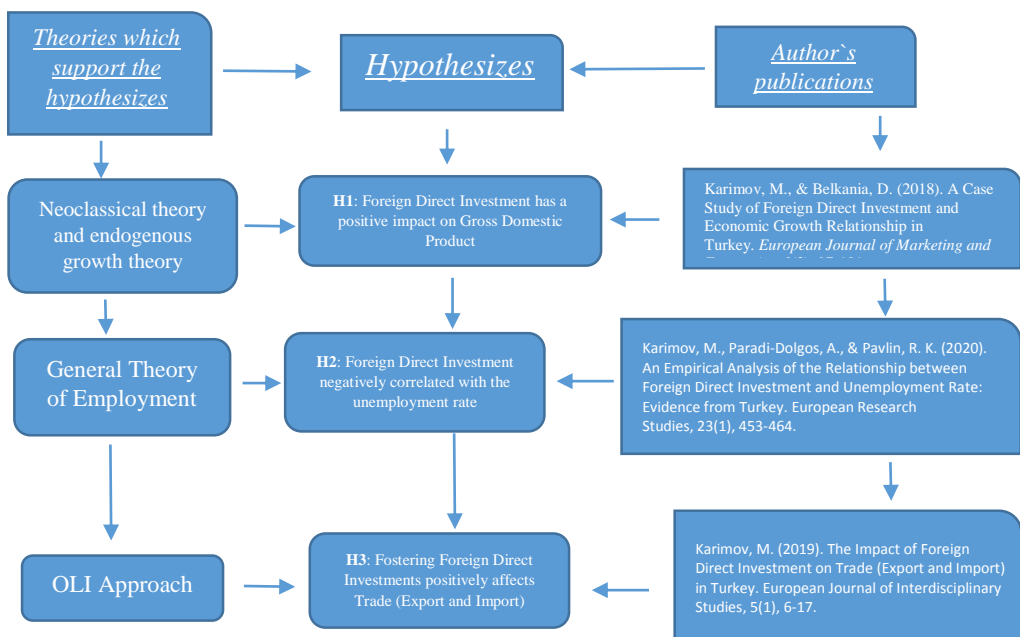
**Graph 1: Foreign direct investment inflows into Turkey (mln USD)**

Source: <https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD>,

retrieved 04.02.2022

With the establishment of political and economic stability, Turkey started to follow an open economy policy, and with these implementations, the incentives have been given to foreign investors. The significant achievements with the attraction of foreign direct investment inflows have been registered after accepting Turkish candidacy for the European Union in 1999 at the Helsinki summit of the European Council.

This dissertation assumes that through FDI inflows Turkish state was able to solve the problems with economic growth, unemployment rate, and trade. Thus, it should be assumed that there is a positive impact of FDI on the economy of Turkey. This research aims to analyze and find out the impact of FDI on the economy of Turkey. For that purpose, in other sections of this thesis, it is planned to make a theoretical and empirical literature review and afterward run statistical tests to find out the relationship between FDI and macroeconomic variables such as GDP, Unemployment rate, and Trade (Export and Import).



**Chart 1: A flow chart of dissertation**



Source: Author`s own invention

Abovementioned, Chart 1 will make the dissertation easy to follow and introduce the support of the literature each hypothesis, and the relation of the author`s previously published articles with the hypothesizes of the research.

## 2. Literature Review

### 2.1 Concept of Foreign Direct Investment

#### 2.1.1 General overview of FDI

Foreign direct investment may be rendered in various forms like establishing a branch or affiliate business in a foreign country, a controlling stake obtained in an actual international firm, or a partnership or holding company with a foreign corporation. A minimal ten percent share in an international firm shall be the criterion for foreign direct investment that sets managed interest according to the standards provided by the OECD.

For both the investor country and the country engaged in it, Foreign Direct Investments carry a vital role in the production and prosperity of countries, and this is particularly significant for developing nations that are resource-insufficient.

#### 2.1.2 Types of FDI

As Caves notes, foreign direct investment takes place mainly in sectors with some business systems in the “lender” (or home) and “borrowing” (or host) nations (Caves, 1971a). Transactional operations of multinational companies and specific types of diversifying their actions are the main types of direct investment. Caves state that the extension of the business into a

newer, geographically separate manufacturing plant will take three types: horizontal expansion (manufacturing the same products), vertical expansion (addition of an early or later stage of development that exists than the critical processing phase of the company), or conglomerate diversification (Caves, 1971a). Whether horizontal extension to manufacture the identical or a related goods range overseas or vertical expansion into the manufacture of raw material is a significant part of direct investments. Nevertheless, product diversification throughout domestic borders is nearly unidentified, and it can be seen that the essential foreign investors include the industries and companies that are the most ambitious in conglomerates fusions in the US.

Therefore, as Wang notes, a company may maintain an entirely owned joint venture in a country by establishing a joint venture from the ground up, known as the Greenfield strategy, or by obtaining a company on the target market, so-called M&A (Wang, 2009).

## 2.2 Theories of Foreign Direct Investment

### 2.2.1 Hymer's Industrial Organization Theory

Stephen Hymer's dissertation was published in 1976 with delay for 16 years. It was considered a significant contribution to the worldwide literature of FDI. Till 1960, before Hymer's theory, none of the scientists remarked the critical role of the MNE (Multinational enterprise) as a driver of capital movements in the form of FDI. Before Hymer's FDI theory came out, the neoclassical financial theory considered the capital movements through the portfolio investment. Therefore, FDI was not recognized as a separate theory till 1960.

In contrast to the previous theory, Hymer assumed that the portfolio investment was insufficient to explain the capital movements from one

country to another. Thus, Foreign Direct Investments appeared to be the result of capital movements due to the company's international activities (Hymer, 1976). Hymer noted two types of FDI. In the first type, he assumed that the foreign investors want to secure themselves and control the investments in host countries. In my opinion this issue occurs because of distrust of investors due to the possibility of expropriation and exchange rate risk in host countries. According to Hymer, the second type of FDI was about profit by controlling foreign companies abroad. In this case, when MNEs enter the foreign market, they will practice disadvantages in hosting countries: language, culture, government regulations, exchange rate, consumer preferences, and so on (Hymer, 1976). Therefore, Hymer pointed out that the MNEs have the power to separate markets and create a monopoly to avoid these disadvantages and prevent competition with existing local enterprises. Nowadays we have lots of examples that prove Hymer's claim about monopoly created by MNEs.

On the other hand, because of the ownership-specific advantages of MNEs, their asset power can be threatened by other rival MNEs which released new product lines combining newly developed technologies. That is also wellknown method to compete with another rival company which produces the identical products or gives the same services in current time. On the other hand, Hymer mentioned that mostly the MNEs started to cooperate with each other's and create duopolies instead of losing benefits by competing with each other's (Hymer, 1976). Therefore, Hymer assumed that some companies might have advantages in their businesses. Thus, these advantages can be turn out as a result of the establishment of new businesses abroad in the form of FDI. Therefore, the MNEs have diversified advantages. The advantages can be listed further: cheap production costs, differentiated products, efficient production, etc. Hymer also mentioned that those companies who own these advantages could license or rent them to local

companies. However, due to fear of losing those owned advantages, MNEs mostly prefer to invest in FDI instead of licensing these advantages to companies abroad. Because the companies who gained these advantages from MNEs can learn it by themselves and collect customers by adopting these advantages (Hymer, 1976). I do not agree with the last statement because local companies are not strong enough to compete with MNEs because they don't have a strong competence to learn and implement those advantages in the short term.

Furthermore, another crucial theories about MNEs were developed by Caves (D. W. Caves et al., 1982), Hymer and Kindleberger (Caves, 1971a; Hymer, 1970, 1976; Kindleberger, 1969). According to Caves and Kindleberger's theory, the MNEs, the local companies are supposed to have advantages to compete. They noted that the FDI would be successful if an imperfect market structure existed in the economy of recipient countries. Therefore, the MNEs may enter into the market of host countries in the form of duopoly and have more advantages against local companies that lack capital, managerial skills, technology, and product diversification.

### 2.2.2 Vernon's Product Life Cycle theory

Vernon noted that the companies in any advanced economies of the world were very identical in their access to scientific knowledge and how they use this obtained knowledge. On the other hand, he assumed that they could secure all the knowledge in advanced economies (Vernon, 1966). As Vernon remarked, due to the large gap between the scientific principles of advanced countries, it could not be assumed that all those equally existed scientific knowledge could be equally applied in creating the new product. Therefore, Vernon mentioned that the highest probability of introducing a new product would be done by companies that we are aware of in that market

than companies located elsewhere. The USA would be an excellent example of this issue. The market of the USA consisted the customers with a high level of income compared to other markets.

On the other hand, expensive labor cost was a trigger factor in the early development of technologies and innovations. For instance, expensive labor costs stimulate the market of the USA to utilize robots in manufacturing to decrease the expensive labor force. In my opinion, this assumption is fair enough, nowadays in developed countries, robotization is in priority in order to reduce the labor force and consequently to save money. But on the other hand, it is not that easy to implement robotization due to high prices for advanced technologies, not all entrepreneurs can afford it to themselves. Hence, due to these issues, most of MNEs in developed countries invest abroad in developing countries due to cheap labor by utilizing labor-intensive technologies. Therefore, producers in the USA have more expenditure than others (Vernon, 1966). They spend more than their same companies for the development of new products abroad. However, it should not be considered as ambiguous run to innovations, and it should be considered a compelling transmission between the potential market and potential supplier of the market. Vernon underlined that his claims are relevant to innovation in a specific form of commodities connected with a high-income level and substituted the capital for labor. Based on Vernon`s opinions, producers of the USA market were the first to snoop the opportunity for high income and labor-saving new products. However, it affirmed that those productions would be placed in the USA near to markets except for the commodities that could be produced and distributed from that place with the lowest costs. The least-cost consideration should be made by producers abroad (Vernon, 1966). As Vernon mentioned, it was also possible that the USA`s international transportation costs and import duties could be so high that it would not be

profitable to produce outside and import goods into the market of the USA. Vernon mentioned that scholars had done many types of research to find out and explain the cost-minimizing conditions, and emphasized these empirical studies as follows. He noted that the producers countered the various critical problems due to unstandardized new products in the primary stage of presenting a new product. Vernon emphasized three implications that have been endured in the early stage of a new product (Vernon, 1966). First, the degree of freedom and cost of the inputs have been especially concerned by manufacturers at this stage.

Nevertheless, so far, the character of these inputs could not be corrected earlier with a guarantee. The estimation of the value should consider the primary necessity for flexibility in any location preference. Second, low level of the price elasticity of demand for the output of separate companies, whether it comes from a high degree of product differentiation or the presence of monopoly in the primary phases. Third, the manufacturer's demand for prompt and efficient relations with consumers, providers, and even rivals is exceptionally high at this phase. This is because significant numbers of ambiguity persist due to the market's final sizes, the competitors' attempts to preempt that market, spec of the resources required for manufacturing, and the spec of the commodities apparently to be the most recent important prosperous in the achievement. Vernon remarked that a specific degree of standardization occurred due to expanding a commodity's needs (Vernon, 1966). However, it did not mean that product differentiation processes ended up. In adverse, that kind of attempt may even enhance, as rivals try to escape the full brunt of price rivalry.

Furthermore, diversity might emerge as an outcome of specialization. Vernon mentioned as an example the acquired particular forms of radio. For instance, the automobile, clock, portable radios, etc. First, Technical possibilities come out with a commitment to some set of products, and

through this mass production, they achieve economies of scale. Second, worry about output characteristics started to be replaced by concern about manufacturing expenditure. Even though boosted price rivalry did not exist, decreasing the operation's ambiguities strengthens the utility of the value predictions and enlarges the attention devoted to expenditure (Vernon, 1966). Completely agree with this assumption, the economies of scale achieved in order to decrease the expenditures and compete with rival companies without any loss.

Imagine the company that practices producing the high income or labor-saving commodities that focus on our dispute. Let us conclude that the company started its business in the USA to the degree of mass manufacturing. Even though the primary large-scale market probably was located in the USA, some need for the output starts roughly at once to arise somewhere else. For example, forklift cars could have a relatively small market in Spain because of cheap unskilled labor costs. Hence, some limited need for the output will emerge as soon as the commodities' presence is known (Vernon, 1966).

Vernon noted that if the output had a high-income elasticity of demand or a suitable alternative for expensive labor, the demand would start to increase quickly in comparatively developed countries such as Western Europe. As soon as the market broadened in such developed countries, entrepreneurs would start to discuss whether the day had come to take the risk of establishing domestic producing objects. As far as the marginal cost and transportation cost of the commodities exported to the USA market was below the average cost of estimated producing in the country of import, USA manufacturers would probably prefer not to invest in that country. For instance, when contrasting US manufacturing ability in other advanced countries, Vernon highlighted its location theory: the visibility of manufacturing costs differentiating between the rival operation areas was

mainly differentiated by sizes and labor cost differences (Vernon, 1966). If the manufacturer was a multinational company with manufacturing locations in various countries, its financing capital expenditures at the various areas might not be different enough to mean significantly. The primary distinction between any two places was labor costs if economies of scale are entirely operated. Thus, it would be suitable for multinational companies to serve third country markets from a new spot. Therefore, if the labor cost was significant enough to compensate transportation costs, subsequently exporting the commodities back to the USA might be possible (Vernon, 1966). I do agree with Vernon's assumption, investing in abroad is not always the best option. Because cheap labor force is not just an important factor, the companies also should take into consideration the other crucial factors like taxes, transportation costs, storage costs and etc. If those last mentioned factors will be more than cheap labor force that means that the best option for a company would be to stay at home and manufacture products.

### 2.2.3 Dunning's Paradigm- Electric theory

John H. Dunning's Electric-Paradigm Theory, also known as OLI framework (Ownership, Location, and Internalization), was published in 1977. The primary goal of Dunning's study was to dispute approaches in which manufacturing invested by FDI, namely, that launched by multinational enterprises, had influenced our opinions about the international distribution of resources and the swap of commodities and services between countries (Dunning, 1977).

The rising convergence between international trade and production theories was taken as a starting point by study. The analysis disputed the issue for a unified way to international economic concern, based on the



location-specific endowments of countries and the ownership-specific endowments of companies (Dunning, 1977).

Dunning noted that the economic participation of countries outside their state borders might be discerned in two approaches. First, it indicated how much the economic actors used their resources put at their boundaries to produce goods or services beyond their boundaries: or how much they contributed to resources or commodities of supplies located in another nation. Trade of resources in inputs and outputs was the interpretation of orthodox international economics (Dunning, 1977). Therefore, a country's participation might signify the scope to that its peculiar economic operators serve international companies with goods and services, regardless of where the resources demanded to implement this are placed or utilized, and the scope to which its peculiar economic operators were delivered commodities by foreign companies, regardless of where the manufacturing is launched. As a result, a nation's economic capability is determined mainly by the marketplaces controlled by national organizations than by its geospatial frontiers (Dunning, 1977).

Dunning stated that economic participation by one MNEs of the country might be to provide the home and foreign markets. He noted that manufacturing for a particular foreign market might be wholly or partly placed in the home, in the foreign market, in a third state, or a merging of three. Identically, manufacturing for the home market might be implemented from a foreign or domestic location (Dunning, 1977). Wholly agree with this assumption due to different factors it depends to manufacture in the domestic country or to shift production to abroad in order to supply foreign market or just to produce in outside of the local country due to cheap labor force, raw materials, transportation, low taxes and etc.

Dunning noted that domestic companies' ability to provide, whether a global or domestic marketplace out of an international manufacturing basis,

relies on owning specific productive resources that other nations' companies do not have access to or utilize. Moreover, he noted that physical resources like natural materials, labor, capital, and immaterial assets such as information, organizational and entrepreneurial abilities, and entrance to marketplaces were included for resource endowments (Dunning, 1977). This kind of endowments might be location-specific to the home state, which occurring only from the home country's resources but accessible to all companies, or they might be property peculiar, that is subjective to the companies of the state of origin however able of being utilized by else assets in the domestic nation or somewhere else. Generally, the location and ownership-specific endowments influenced competitiveness (Dunning, 1977). Resource endowments are very crucial for MNE's and local companies, and I agree with assumption that location and ownership-specific endowments have a great impact on competitiveness in market.

On the other hand, Dunning stated that it was also acceptable for the outsourcing state to have a position endowment benefit over the purchasing state. That is to say, it was not needful for the transferring companies to get proprietorship amount of wealth than domestic companies in the purchasing state. This kind of commerce has been noticed among industrialized and non-industrialized states. However, contrary to the previous opinion, the trade between advanced industrialized countries was according to the ownership attribute benefits of the transferring companies due to the intensely competitive nature of consumption goods. Therefore, it considered those suspects applying for such benefits together alongside destination advantages in the sending country (Dunning, 1977). Dunning noted that if those recent endowments favored the importing country, foreign production would replace the trade. Hence, the location-specific endowments in foreign production favor a foreign state, and ownership-specific endowments favor

home-state companies. These actions were applied to get over expenses gained during production in foreign countries (Dunning, 1977).

Dunning introduced the MNEs, the firms that launched businesses outside of home country barriers, into his discussions. They do a foreign production regarding the relative proprietorship benefits toward target country firms and relative geographical advantages of domestic and international states. (Dunning, 1977). He classified them like that, incentives based on geography were extraneous to the MNEs which utilize them, and proprietorship-distinct priorities were inner to specific MNEs. The MNEs subsisted of physical and non - physical assets, which could increase resource utilization efficiency. In contradiction to location-specific endowments, most proprietorship-specific incentives are acquired on the quality of products; that is to say, their marginal utilization expense is null or minimum (Dunning, 1977).

Dunning distinguished three kinds of ownership advantages for his purposes. The first contained those which might be existed o`er else company in the same place. This benefit might occur due to entry to marketplaces or basic supplies that were not accessible to rivals. Furthermore, these advantages may result from size or unique control of non - physical resources, such as inventions, trademarks, managerial abilities, and so on, that enabled it to attain a large scale of technological or pricing effectiveness or gain higher considerable market dominance. Such benefits occurred through monopolistic strength, size, and improved supply facility and utilization (Dunning, 1977). In my opinion, not all local companies can resist the pressure from foreign MNEs even though with those existing unique ownership advantages.

The second benefit was that a subsidiary factory of a domestic company might have above a new company, again manufacturing in the identical place. Therefore, this emerged because, while the affiliated factory

might favor from lots of the incentives of the investing firm, for instance, such as access to inexpensive components, business information, centralized bookkeeping processes, organizational encounter, etc., at null or minimal marginal cost, the new company would typically carry one`s total expenses (Dunning, 1977).

The third form of advantage emerged mainly from the internationality of a firm and was an expansion of the other two. It would be better to take advantage of various factor endowments and market situations because it operates in distinctive economic environments (Dunning, 1977).

Dunning noted how the global competition of a country`s goods was not merely the ownership of excellent assets of its companies but either the ambition and capability of MNEs to internalize the benefits occurring from that ownership. Hence, providing the foreign market via foreign manufacturing assigns exclusive benefits of this type. For instance, companies that want to change or not utilize the market mechanism instead of distributing resources by their form of control. Hence, due to internalization, not only the enterprises obtained, others might lose as well. Thus, internalization was a necessary power for acquisitions and a helpful implement in the technique of oligopolists (Dunning, 1977).

#### 2.2.4 Cave`s theory: Horizontal and Vertical FDI

Caves` theory about FDI, an extension of Hymer`s industrialization theory, was published in 1971. He differentiated the FDI into horizontal and vertical FDI due to particular market structures in host and home countries. Briefly, Caves noted that vertical foreign direct investments were aimed to produce a raw material or other input to their manufacturing operations at home country. On the other hand, the horizontal foreign direct investments aimed to produce identical products manufactured in the home country.

#### 2.2.4.1 Horizontal foreign direct investment

Caves noted for the question, why MNEs applied horizontal form of FDI in order to launch the identical products abroad, was answered by Hymer and others. They suggested that with the company's unique assets in the form of the patented invention or a differentiated product, the companies might earn maximum profits via foreign production (Caves, 1971b).

Two conditions should be fulfilled for some extraordinary asset to lead the company to invest in abroad. Primarily, the asset took part of the character of public product within the company, such as knowledge which was crucial to the manufacturing of a profitable product. Any advantage connected with technique, information, and knowledge that gave positive feedback over market expenses could do the same in other markets without spending those sunk expenditures again. The second aspect of the asset was that the revenue done in the invested country should hinge on local production (Caves, 1971b).

Caves noted that the foreign investors had disadvantages in the host country's entrepreneurs, in specific social, economic, legal, and cultural conditions. Thus, the urgency of those two characteristics occurred to be crucial to get over those disadvantages in host countries (Caves, 1971b). Caves stated that the product differentiation would be the needful characteristics of companies to compete with the rivals in host countries with a minor fabrication difference, brand name, the diversity established by advertising, etc. Thus, the basis of the horizontal form of FDI is that a company that produces successfully differentiated goods can broadcast those goods to other international markets at little or without any cost. In my opinion, there are several factors that might put this trade at risk, first companies should analyze the investing market in order to see the demand of

customers and consider the cultural and religious factors in order to not lose money in an investing foreign market. Thus, it will increase the price of products that are distributed abroad due to additional expenses. Therefore, unknown products which have identical competitors in the market should be advertised to customers through marketing, and it also will cost additional money for investing company.

#### 2.2.4.2 Vertical foreign direct investment

Caves noted that the vertical form of FDI comes out when the company splits production of the goods in different places (countries) through the different stages of production but at the same industry. According to Caves, the various parts of manufacturing demand different input requirements; that is, the production costs of particular items vary across countries (Caves, 1971b). Caves noted that the vertical form of FDI aims to sidestep the oligopolistic uncertainty and the raising of barriers to prevent the entrance of new rival companies. In the case of lack of technological complementarity, this kind of investment would not be expected in a competitive raw materials industry unless due to specific diversity between the raw material manufacturers and the following processors in time horizons. When there is a shortage of sellers and buyers of raw materials, where benefits of investments by sellers and buyers hinge on the long-term prices, and these investments are enormous. Additionally, the alternatives and substitutes of the raw materials cannot be found; then, the uncertainty may be eradicated via generic ownership of the two vertically associated stages (Caves, 1971b).

Caves argued that vertical FDI occurs when few sellers in the handling industry besides risk avoidance. Furthermore, the existing companies may enhance barriers in order to prevent the entrance of new rival companies. Thus, if the resource is not omnipresent and known supply

sources are connected via vertical integration, a new entrant of investing company to the handling industry should stand the additional expenses and uncertainties of detecting and evolving its peculiar source of raw materials (Caves, 1971b).

Overall, the high seller concentration will directly provoke uncertainty in the market of raw materials. Therefore, it is needful for companies to admit acts to enhance entry barriers to the industry. Furthermore, for the company to launch a foreign investment, it should be prominent. Caves mentions the minimum scale and durability of the resource investment and alternative uses as other factors that can bear to enhance market uncertainty (Caves, 1971b). Nowadays it is also a widely used method to produce different parts of the product in different countries due to cheap labor force, raw materials, low taxes, weak environmental restrictions, accessible management and etc. Lots of MNEs in developed countries do these actions in order to save money. Moreover, this kind of action sometimes leads to discrimination in the case of saving own countries nature and pollution the others nature, or saving their own resources and exploiting another country`s resources and etc.

### 2.2.5 New Trade Theory

New trade theory proposes that a crucial factor in defining global trade patterns is the essential economies of scale and network effects in entire industries. The pioneering input NTT has been rendered by (Helpman 1981; Helpman & Krugman, 1985; P. Krugman, 1979, 1980; P. R. Krugman, 1981; Lancaster, 1980). The industrial-organization approach to NTT and the research on “geography and exchange” has improved our perception of the causes and effects of exchange by introducing aspects of the returns to scale, uneven competitiveness, and commodity differentiation to the more

conventional competitive advantage models of global trade (Markusen & Venables, 1998b). Much stylized evidence, including the discovery of significant exchange levels between fairly identical economies and two-way trading in related goods, appear to adhere to the industrial-organizational approach to trade.

“Old trade theory” is a compilation of classical and neoclassical ideas focused on the comparative advantage concept. Due to this theory, although there are variations in their relative cost of manufacturing the same set of products, all states (or zones) will make profits by trading together. The variations in relative costs are extracted from specified discrepancies in technologies in the classic model of the David Ricardo (Ricardo, 1817). Differences in manufacturing factors such as capital, land and labor, solid and moderate competent workers occur in the neo-classical model of the Heckscher-Ohlin (Heckscher & Ohlin, 1991). Comparative cost advantages define the distribution of expertise in cross-sector commerce. The concept of old trade is focused on hypotheses that it is returning to scale and rivalry continuously. The NTT, in comparison, does not center its interpretations of trading trends and benefits on comparative advantages (Ehnts & Trautwein, 2012). It aims at the intra-industrial trade, i.e., concurrent export and imports of identical products, and aims at clarifying measurable specializations and trade trends among countries that do not vary in technology and endowment a priori.

By the 1970s, it became evident that intersectoral trade became growing quicker between countries with identical patterns than intersectoral trade between countries. It cannot be justified by comparative advantage, so intersectoral trading concepts should focus on diminishing returns on the scale (Ehnts & Trautwein, 2012).

Krugman (P. Krugman, 1979) stated in his first NTT paper that “the function of economies in massive manufacturing is a significant sub-theme of



Ohlin's (B. G. Ohlin, 1933) research. Ohlin is also renowned for integrating the global trade principle of Heckscher, centered on the comparatively limited output factors, with the general equilibrium of Cassel in order to establish the rule of factor proportions and pricing equalization. Ohlin noted consistently that economies of scale result in manufacturing consolidation in a fewer number of companies and places. Overall, his theory suggests that there could be two causes for a swap: the comparative shortage of factors of production and increasing returns, which are linked to the bounded separability of manufacturing components. The trade then helps balance the relative lack of manufacturing factors and allows the indivisible manufacturing factors to be used more entirely (Lundahl & Ohlin, 2002).

Furthermore, Krugman notes that inner economies of scale mean monopolistic rivalry. In the days of Ohlin and, Krugman disputes: "There were no generalized equilibria modeling of unequal rivalry widely available — yet trade concept, maybe more than any other practical economic subject, is built on a general equilibrium framework (Ehnts & Trautwein, 2012). This has been modified with the advent of the imperfect competition model by Dixit-Stiglitz (Dixit & Stiglitz, 1977), in which "appealing, rational, and manageable formalization of the Chamberlinian concept" was introduced. For the customer, the Dixit-Stiglitz framework has a taste of choice, or "respect for variety," which can be viewed as variations of the same thing, reflected in preferences for distinguished commodities. The Dixit-Stiglitz framework implies on the supplier side a monopoly market, in which each of the products is manufactured by a sole company. In two symmetrical systems, Krugman utilized the Dixit-Stiglitz method. Krugman demonstrated that because the utilization of scale economies continues with the rise in the number of available varieties, buyers and suppliers would benefit from foreign trade. The NTT describes trade trends in its heart due to productive specialization in a cost system separate from countries' characteristics

(technology, endowments) presumed to be mentioned in old trade theory. In contrary with the old comparative classical theory, the NTT theory says that the company becomes more efficient due to economies of scale because its expenditures decrease with the increase of production. Furthermore, it leads to monopolistic competition because small firms can not produce more than big firms and automatically they can not compete with big firms and those strong huge firms start to seek a big market and they export their products to abroad in order to sell the extra products and earn additional money. In my opinion, this theory looks more realistic than the old classical comparative advantage theory.

#### 2.2.6 New New Trade Theory

A “New New Trade Theory” (NNTT), primarily stemming from Marc Melitz (Melitz, 2003), has been established in the last decades. The NNTT carries the 1980 model of Krugman to the company level and defines trade as an intra-sectoral mechanism of choice amongst heterogeneous companies. It begins with the idea that industries in the same sector respond differently to the difficulties of globalization: some manufactures exist for the local market, and some manufactures for local and export markets (Ehnts & Trautwein, 2012). Melitz employs a particular model of Krugman’s 1980 framework to demonstrate that commerce generates development. Krugman’s NTT frameworks are fundamentally distinguished by asymmetrical CES expectations, similar technology, and the same considerations that make a classical or neoclassical reason for commerce insignificant. The harmony principles suggest that companies are similar concerning technology and manufacturing expenses (Ehnts & Trautwein, 2012). Therefore, no selection effects or aggregate impact can be obtained as economies shift from isolationism to foreign trading. There is no escape from the marketplace or

raise the aggregate production of companies; trading tends to increase commodity distinction, usefulness, and social welfare. The Melitz framework also utilizes the principle of symmetric CES expectations, the same technologies, and the same endowments. Hence, more efficient companies demand lower costs, manufacturing and selling more. The fixed costs are split into fixed manufacturing expenses and fixed business entry costs, which relate both to national and international markets (Ehnts & Trautwein, 2012). This kind of cost enables a choice of foreign and domestic competitors and escapes from “productivity losses” because the expense (and mark-ups) of local and export markets are absorbed only by the most competitive companies. As Melitz concludes, home-market impacts are also significant, even though “the gap in scale in different countries generates disparities in wage balance”. These wage gaps create additional company selection effects and aggregate variations in productivity among countries. According to pretty general assumptions, Melitz and others show that the favorable effect of foreign trade on progress exceeds the negative of exit competition. However, it is a topic of discussion in the NNTT literature that trade typically encourages production, economic development, and welfare (Ehnts & Trautwein, 2012). I do agree with the assumption of NNTT that, not all companies are able to export goods and services abroad, only highly productive companies are able to gain profits in the local market and cover the high export expenses in order to export products and services abroad. It was mentioned in previous paragraphs by me that there are several costs (transportation, marketing costs and etc.) that company should cover and be able to compete with rival local companies and sell their own products abroad.

### 2.2.7 The New Economic Geography (NEG)

Paul Krugman has summarized the relationship between location theory and trade theory in his New Economic Geography (NEG) theory. The implementation of limited factor mobility in the production sector was a key move from NTT to NEG. This means that demand is no longer set for employees to shift from one area to another (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004). The movement of jobs starts from asymmetrical interregional allocation of industry, shifting demand, and establishing the supposed center, appearing centric position for the economy. Industries that centrally place their manufacturing save on shipping expenses but often encounter a more extensive range of rivals. Thus, the lower the prices rate and the greater the actual income, the greater the companies in the area. More and more products must be manufactured as the employees migrate abroad. The actual salary decreases as a rising proportion of procurement capacity have expended on shipping expenses (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004).

Krugman states that the core of the NGE model indicates the importance of market structure for the following incentive: Monopolistic rivalry is needed to preserve viable intra-sectoral commerce across areas. It stops all demand from flowing into one product, leaving little space for other variety and allowing all the industries to agglomerate in one area. Internal economy means that only one organization generates each variety (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004). Extraneous economies of scale in the context of forwarding and inverse connections continue to draw other companies to the area through growing numbers of local companies. Hence, Krugman notes that in the case, if the next circular trigger contributes to complete agglomeration, it maintains the geographical aspect by retaining an economic presence in the periphery in a competitive agricultural sector (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004).

Krugman notes that the introduction of room in the main periphery framework produces gaps, which can only be resolved by allocating transportation expenses. These antagonize the increasing returns to scale at the company stage. The position is meaningless at null transport expenses since all markets are supplied efficiently at a single place, and few markets beyond the domestic market may be supported at exorbitant transportation expenses (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004). Amongst these points, the geographical allocation of the business is defined by transport expenses. According to economies of scale, as Krugman notes, manufacturers must focus output in a few locations for each product or service. Considering the expenses of long-distance trade, the chosen places are those with high demand or an especially desirable supply of products, which usually reflect the places of preference of other manufacturers (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004).

Thus, the New Economic Geography (NEG) main periphery framework has only three steady balances, asymmetrical combinations, and a whole production agglomeration in either area. When the transportation price is hefty, each area generates an identical range of goods and agricultural products. Trade takes place only in production, and as in the concepts of the New Trade Theory (NTT), it is intra-sectoral (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004). When transportation expenses are reduced, the symmetrical equilibrium is volatile, as every entrance into the market of another business brings diversity to the specific market and contributes to immigration. The ongoing agglomeration cycle ultimately contributes to a central, peripheral system where farmers reside in the latter area. It trades farm goods in opposition manufacturers from the center, and due to that, we are back in an environment of comparative advantage (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004).

Overall, the New Economic Geography theory is a single model, which includes increasing return with capital and labor movement and transportation costs. Therefore, he states that there are multiple equilibria, which means to minimize the transportation expenses, companies want to resettle near the consumer, and on the other hand, customers want to resettle near the workplace (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004). As we know the most of the companies settled down because natural endowments as cheap and plenty of raw materials or cheap transportation cost due to existence of river or sea near the city or town. We also know other scenarios where companies settled down not considering natural endowments. Krugman answered this question that why companies start to settle down in those territories with poor natural endowments. It starts with increasing return to scale (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004). When transportation costs are high then companies start to settle down close to suppliers and markets in order to sell extra produced products and earn money. Afterward, the workers as well start to settle down near the workplace. Hence the demand for consumption of goods is raising and another company as well start to interest to locate at those places. This kind of action lead to the creation of new agglomerations in those concentrated regions. Nowadays we can easily observe this kind of action in surrounding regions, in my opinion, it is fair enough to accept Krugman`s assumption (Ehnts & Trautwein, 2012; Fujita & Krugman, 2004) (See Table 1).

**Table 1: Summary of the theoretical literature review**

<b>Author</b>	<b>Theory</b>	<b>Research period</b>	<b>Results</b>
Vernon.R	Product Life Cycle theory	1966	Based on results of Raymond Vernon`s study, every item has a life cycle that starts with its creation and concludes with its demise.
Cave.R	Horizontal and Vertical FDI	1971	He differentiated the FDI into horizontal and vertical FDI due to particular market

			structures in host and home countries.
Hymer.S	Industrial Organization Theory	1976	Hymer assumed that portfolio investment was not enough to explain capital movements, and after his research FDI appeared to be the best explanation for the capital movements from one country to another
Dunning.H	Paradigm-Electric theory	1977	This theory posits that organizations would shun open trading activities if the cost of performing the identical operations domestically is cheaper.
Helpman.E Krugman.P Lancaster.K	New Trade Theory	1980-1981	This theory states that a crucial factor in defining global trade patterns is the increasing returns to scale and network effects in entire industries.
Krugman.P	The New Economic Geography	1991	The results of his research shows that there are multiple equilibria, which means to minimize the transportation expenses, companies want to resettle near the consumer, and on the other hand, customers want to resettle near the workplace.
Melitz.M	New New Trade Theory	2003	The idea of the theory is that industries in the same sector respond differently to the difficulties of globalization: some of them exist, for the local market, and some manufactures for local and export markets

Source: Author's own invention

## 2.3 Effects of FDI on Economy of host countries, based on Theoretical Framework

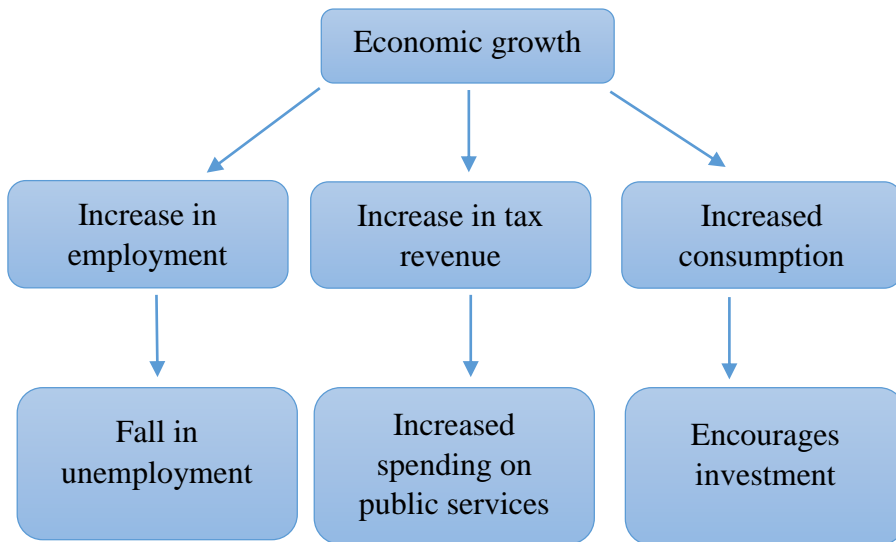
### 2.3.1 Effects of FDI on Economic growth

Economic growth leads to an increase in real GDP; it implies an increase in national incomes, domestic output, and total spending<sup>3</sup>. Economic growth must allow living standards to ascend and consume more commodities and services (See Graph 2).

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<sup>3</sup> Economics help

<https://econ.economicshelp.org/2009/11/importance-of-economic-growth.html>



**Graph 2: Results of Economic Growth**

Source: Economics help<sup>4</sup>

As (Djapou Fouthe, 2017) states, few limited theories address the concept of numerous economic performance and growth aspects. Thus, two main theories can be discerned: the neoclassical model, formalized by (Ramsey, 1928; Solow, 1956), which emphasized the importance of the creation of capital and, more recently, endogenous growth theory, promoted by (Lucas, 1998; Romer, 1986, 1990), attracted attention towards human capital and potential for innovation. Therefore, the New Economic Geography, which pays due regard to the spatial characteristics of development, has also established valuable perspectives into economic growth concerns.

The neoclassic growth models made three fundamental assumptions, presuming exogenous technological alterations, constant scale returns, replaceability of capital and labor, and a decrease in the marginal productivity of capital (Djapou Fouthe, 2017).

First, the rise of the capital-to-labor rate is a crucial reason for economic development. Second, economies must ultimately achieve a

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<sup>4</sup> Economics help  
<https://www.economicshelp.org/>



situation where no additional capital investment can deliver (static) economic development unless technical progress enables production with less resource. Lastly, the less developed countries would proliferate, unlike the more developed countries, for the identical quantity of capital accessible till stable status is accomplished and economic integration is attained (Djapou Fouthe, 2017).

Contrary to the neoclassical paradigm, the endogenous growth theory suggests that the emergence of new development drivers, including knowledge and innovation, would contribute to auto-sustainable economic growth and disparate growth trends. The critical characteristic of these frameworks is that the endogenous nature of production technology contributes to stable or increasing returns on capital (Djapou Fouthe, 2017). Three fundamental sources of growth have been outlined in this context: new knowledge (Grossman & Helpman, 1991; Romer, 1990), innovation (Aghion & Howitt, 1990), and public infrastructure (Barro, 1990).

From a differing viewpoint, another latest field of economic analysis, known as New Economic Geography (NEG), claims that economic growth is typically an imbalance mechanism that favors the initially beneficial economies (Fujita et al., 1999; P. Krugman, 1991). These investigations have developed a formalized structure of elaboration, explicitly focusing on the combined effects of increasing scale returns, imperfect rivalry, and cost of non-zero transport, which argues that economic growth appears to accumulate in particular (urban), highly local demand regions (Djapou Fouthe, 2017). This process is considered self-improving due to the increasing (positive) externalities, backward and forward connections among companies, and dimensions. Even though negative externalities, transport expenses, and increased rivalry can have a central fluctuation and dispersal, it is doubtful that these powers will stimulate a structured growth trend (Djapou Fouthe, 2017). Moreover, in order to reduce disparities, economic policy

must enter the picture. It is fair to presume that the NEG emphasizes economic operation, agglomeration, and geographic differentiation instead of economic development. However, perhaps the simulations will predict growth effects (Djapou Fouthe, 2017).

The crucial engine of economic development is an investment, defined both in neoclassical and endogenous concepts. Nevertheless, investment in the neoclassical model affects the transition phase, whereas endogenous growth theories look more enduring. The significance of investment resulted in an increased number of studies examining the relationship between investment and economic growth. Therefore, the results were mostly positive. FDI aims to improve practical usage of technological exchanges, employment, the balance of payments, the development of the industry, and the corporate behavior in host countries. On the other side, they endorse the country by combining circumstances that are not or are not accessible in the destination countries, such as financial capital, technology transfer, R&D capacity, management and marketing techniques, abilities, institutionalization, and innovation. FDI encourages new organizations to be established, and business investment can improve production and reorganized economic development. Therefore, it lays the groundwork (crowding-in effect) for local businesses to make potential investments. Numerous versions of endogenous growth theories emphasize this vital function.

### 2.3.2 Effects of FDI on the Unemployment rate

The direct relationship between investments and employment has been noted by (Keynes 1936) in his General Theory of Employment. Nevertheless, economists' opinions concerning the impact of foreign direct investment on

employment tend to vary drastically (Dunning, 1985). Based on those debates, (Baldwin 1995) distinguished three main issues:

- The extent to which direct investment abroad substitutes for investment at home;
- The extent to which foreign direct investment stimulates increases of exports of intermediate goods as well as capital goods;
- The last issue is whether the direct investment involves constructing new plants or simply acquiring existing facilities.

Altogether, the effects of FDI on employment can be compile as follows (Moosa, 2002):

- FDI can expand employment explicitly or implicitly by building new facilities or by enhancing the distribution of employment
- FDI will retain employment by purchasing and transforming businesses
- FDI may reduce employment through divesting and closing manufacturing plants.

### 2.3.3 Effects of FDI on Trade

The impact of FDI on trade transactions has become a subject of interest since 1970th. In order to discuss the relationship between FDI and trade, we should start with the so-called OLI approach (theory), which was established by (Dunning 1974, 1977, 1985, 1988). Afterward, with the additional works of following scientists (Ethier, 1986; Ethier & Markusen, 1996; Grossman & Helpman, 2002; Helpman, 1984, 1985; Horstmann & Markusen, 1992; Markusen, 1984, 1997, 2002; Markusen & Venables, 1998a, 2000), the Dunning's OLI approach have been formalized and improved (National Board of Trade, 2008). Even though it seems that MNEs

are commercially active companies, they are more representative of their actions than of the behaviors they participate in (Moosa, 2002). (Solomon & Ingham, 1977) claims that Multinational enterprises export fewer goods than local companies and that (Panic & Joyce, 1980) assume that the exports of MNEs have remained stagnant since the 1970s. In recent years, (Goldberg & Klein, 1997) demonstrated that FDI in developing economies influences their trade movements, even after controlling the consequences of the exchange rate. It is also proof that branches appear to import components and machinery from the parent MNE placed in the home country (Moosa, 2002).

Either they are complements or substitutes is the critical concern about the FDI-Trade relationship. Another explanation why we think FDI is a substitute for trade is because there are two alternate access modes. However, there are also grounds to conclude that FDI is not substituting exports, instead of enhancing them. One possible explanation is that FDI allows enterprises to maintain a more excellent allocation core, thereby broadening the international market product section beyond what might be accomplished through exports (Moosa, 2002). International manufacturing also includes the supply from the original country of intermediate goods, and the claim even covers imports from the region of origin. If an international parent company can manufacture products at less cost overseas and export them to the country of origin, FDI drives up imports.

Therefore, it is now agreed that the FDI and trade are complements or substitutes based on either the FDI is vertical, as in Helpman's (1984) or horizontal, such as in Markusen's (1984) notes. The horizontal or vertical structure of FDI varies for specific country factors. For instance, when countries have considerably varying factors of endowments, vertical FDI will prevail. In contradiction with vertical FDI, horizontal FDI occurs when nations are identical in size and comparative endowments and trade expenses are lesser to high (Moosa, 2002).

### 3.3 Foreign Direct Investment in Turkey in retrospect

#### **Historical background of FDI in Turkey**

It would be more smooth and accurate to analyze the history of FDI in Turkey in terms of 4 distinct periods:

- 1830-1923 (Ottoman period)
- 1923-1950 (Early Republican period)
- 1950-1980 (Post World War II period)
- 1980-present time

#### 3.3.1 1830-1923 (Ottoman period)

During the Ottoman era, capitulations had an impact on the country's foreign accession. Therefore, international firms were excluded from many of the taxations due to capitulations. Hence, these kinds of privileges made them dominators in a part of the service sector, railway management ((Bozdaglioglu & Evlimoglu, 2014; Degen & Buzdagli, 2020)

Furthermore, besides capitulations, with the Treaty of Balta Port (Anglo-Ottoman Treaty) signed in 1838 with England, the Ottoman Empire eased the restrictions and abolished monopolies towards English and other foreign merchants. During those times, international firms functioned mainly in public services, natural resource operation, sea and land transport, electricity, telephone, and water services (Degen & Buzdagli, 2020; Guven, 2007).

The first foreign capital inflow in the Ottoman period was recorded with the British pound borrowed in 1854 to solve the finance issues after the Crimean War. Till 1915, France, with a share of 50.10%, was the leading

investor in foreign investment, followed by Germany, with 27.80%, while the UK, with 15.20% (Degen & Buzdagli, 2020; Ozel, 2018).

### 3.3.2 1923-1950 (Early Republican period)

Due to previous capitulations, most government opinions excluded the FDI and nationalized the companies to eliminate the national economy's dependence on foreign countries during 1923-1950 (Degen & Buzdagli, 2020; Dumludag, 2003). Afterward, with a worldwide crisis that appeared in 1929, as in other countries, Turkey also has been faced with the following problems as high inflation, shortage of currency, unemployment, etc., which caused severe problems in the economy (Degen & Buzdagli, 2020).

In order to solve those existed problems state started to defend the national currency by applying foreign exchange control and protection of the value of Turkish currency Law. Hence, this kind of protection (closed economy) decreased the amount of FDI (Cetin & Seker, 2013; Degen & Buzdagli, 2020). Turkish state kept applying analogic legislations against foreign investors until World War II. However, the scenario was changed after World War II, with the Law applied in 1947. The Law said by itself that FDI should be consecrated in sectors like agriculture, industry, and service .

### 3.3.3 1950-1980 (Post World War II period)

Turkey faced the post-war recession period in need of a new economic policy. Analyzing the time between 1950 and 1980 in Turkey is achievable through observing both Turkey's particular historical, political, and economic situations, as well as the significant global developments that occurred after World War II. During this time, Turkey witnessed major political and economic transformations. In the post-1950 period, the insufficiency of

capital accumulation prompted authorities to restrict investments in urban regions as much as possible, not only in Turkey but also in other impoverished nations throughout the world (Ozaydın et al., 2010). External factors, in particular, had a crucial role in determining Turkey's new economic strategies during this era. As ties with the Soviet Union deteriorated gradually in the post war era, Turkey became closer to the United States, which succeeded the British Empire and became the world's most powerful nation (Sener & Kılıc, 2008). This assertiveness became apparent with Turkey's membership in the IMF and World Bank, both of which were formed under the leadership of the United States, and with the commencement of receiving Marshall Aid. Turkey has resorted to legal reforms that promote foreign capital investment in the nation as a result of receiving help from the United States and embracing the capitalist regime in the postwar bipolar system (Sener & Kılıc, 2008).

The first law issued in Turkey to encourage foreign capital was Law No. 5583 on March 1, 1950, on "Treasury Guarantee of Private Enterprises and Making Foreign Exchange Commitment." With this statute, several benefits were granted to foreign capital, and hurdles were attempted to be eliminated (Sener & Kılıc, 2008). The second crucial decree was the "Foreign Capital Investments Incentive Law," applied in 1951. According to this Law, new rights and facilities were provided for foreign investors in the following sectors: industry, trade, energy, infrastructure, and tourism (Degen & Buzdaglı, 2020; Sener & Kılıc, 2008). In addition, as support for previous laws, a new decree, "Foreign Capital Incentive Law," was announced in 1954. This Law was similar to the previous one but was more detailed and comprehensive (Degen & Buzdaglı, 2020; Sener & Kılıc, 2008)

Therefore, to avoid the national economy's dependency on foreign companies, the planned economy government adopted an import substitution policy in 1960. Moreover, the Turkish state was not satisfied with the amount

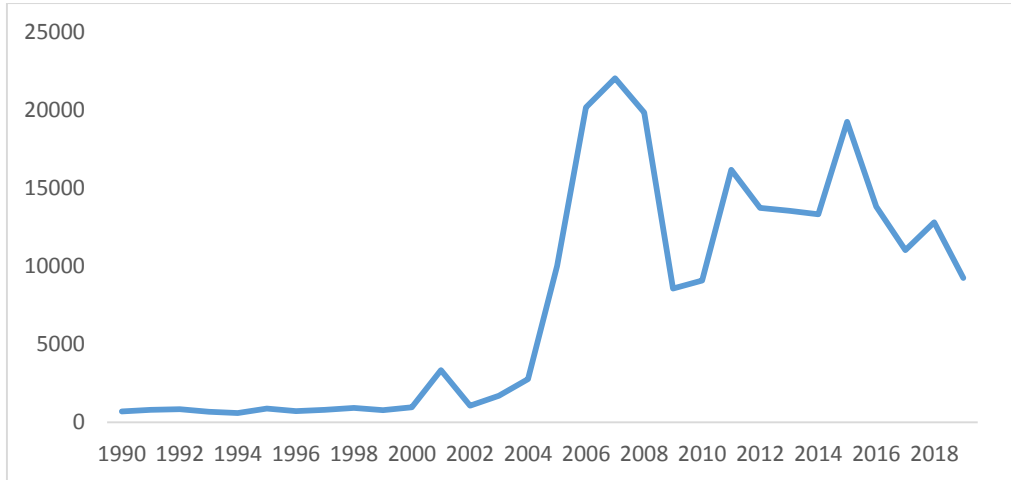
of FDI, and due to that, they launched the „ Five Year Development Plan” from 1963 till 1980. Due to those regulations, there was noticeable growth of FDI inflow into the Turkish economy (Bozdaglioglu & Evlimoglu, 2014; Degen & Buzdagli, 2020; Sener & Kılıc, 2008)

#### 3.3.4 1980-Present time

Since 1980<sup>th</sup>, the Turkish state decided to avoid import substitution policy, and instead of it, they adopted an export-oriented industrialization policy. Turkey took significant measures to lift limitations on international commerce and capital flows as a result of the liberal policies enshrined in the 24 January 1980 Stabilization Decisions (Kar & Kara, 2003; Sener & Kılıc, 2008).

On January 25, 1980, Turkey issued "Foreign Capital Framework Decree No. 8/16," which formed the Foreign Investment Office, which was first associated with the Prime Ministry but was subsequently connected to the State Planning Organization (Sener & Kılıc, 2008). Furthermore, as a consequence of the formation of the Undersecretariat of Treasury and Foreign Trade by Law No. 4059 on December 9, 1994, the General Directorate of Foreign Capital maintained its functions within the Undersecretariat of Treasury (Sener & Kılıc, 2008). Eventually, under Decree No. 32 "On Protecting the Value of Turkish Currency," the amount limitations on foreign capital were eliminated, and foreigners were permitted to acquire assets in Turkey. It is permissible to utilize or transmit revenue from real estate and real rights obtained by foreigners in the nation for local utilize or transfer overseas without converting foreign currency (Ormanoğlu, 2004; Sener & Kılıc, 2008). The noticeable increase of the FDI inflow into the Turkish economy can be seen in the illustrated graph below (See Graph 3).





**Graph 3: FDI net inflows (current mln USD)**

Source: World Bank database<sup>5</sup>

According to Graph 3, there was a significant but unstable increase in FDI inflow into the Turkish economy from 1995 to 2001. Economic liberalizations and shifting to free market in 1989 was the crucial reason of this achievement. Therefore, we cannot deny the positive effects of “Five Year Development Plans” on increasing FDI inflows into the Turkish economy during 1990-1994. Moreover, from Graph 3, we can see a decrease in FDI inflows in 1994 due to the crisis which appeared at that time. Therefore, there was a boom in FDI inflows with the “Custom Agreement” signing until the economic crisis appeared in Russia and Asia during 1998-1999 (Degen & Buzdagli, 2020).

The strong impact on FDI inflows was a candidate status declared for Turkey by European Union (EU) on 12 December 1999 at the Helsinki summit of the European Council. Due to the economic crisis which has been appeared in Turkey in 2001, the FDI inflows decreased from 3.352 million USD (2001) to 1.082 million USD (2002) (See Graph 3). On the other hand,

<sup>5</sup> World Bank database  
<https://data.worldbank.org/>, retrieved in 01.02.2021

from 2002, there was a noticeable increase in FDI inflows into the Turkish economy due to changes in the country's political structure from coalition form to a single party ruling. Therefore, after the economic crisis which has been occurred in 2001, the Turkish state started to implement some crucial regulations to encourage foreign investors to put capital into the Turkish economy. For instance, reducing the budget deficit, deletion of six zeros from national currency (Turkish lira), and additional fiscal policies which have been implemented with the support of the International Monetary Fund (IMF), made a positive impact on FDI inflows (Degen & Buzdagli, 2020). There was nearly a foreign capital boom at the stage achieved in the European Union (EU) transition in 2003, with the "New Foreign Direct Investment Law" numbered 4875, which came into force in order to remove the obstacles in front of foreign capital (Sener & Kılıc, 2008).

Due to negotiations for full membership with the EU, the Turkish state applied plenty of reforms to achieve the target in 2005. Hence, after implementing these regulations, foreign investors were encouraged to invest in the Turkish economy from 2005. The amount of FDI increased and got a significant amount from 2005 till 2009 (See Graph 3). Due to the worldwide financial crisis in 2008, FDI inflows significantly decreased from 2008 till 2011 (stagnation period). Additionally, due to the euro debt crisis of the European Union, there was instability in the financial market of the member states and automatically in Turkey, which have led to a rise of risk in investment in those countries from 2011 till 2015 (Degen & Buzdagli, 2020).

Therefore, the economic stagnation in member countries of the European Union and the Syrian crisis (neighbor country) influenced the economy of Turkey as well. Hence, the FDI inflows recorded 19.263 million USD in 2015, decreased to 13.929 million USD in 2016. The ongoing geopolitical uncertainties led to the fall of FDI inflows in 2017 (See Graph 3). Hence, an increase in the exchange rate, unemployment rate, and

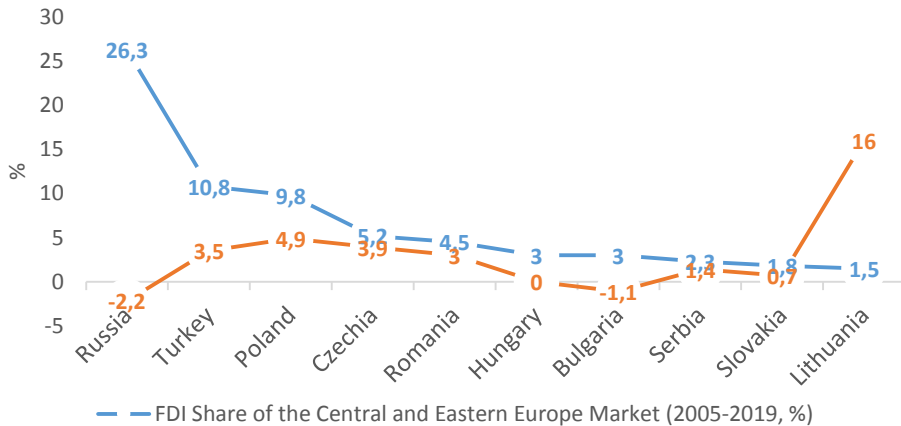
inflation, and budget deficit led to discouraging foreign investors from putting capital into the Turkish economy until the present time. The issues mentioned above resulted in a decrease of FDI inflows from 13.023 million USD in 2018 to 8.430 million USD in 2019 (Degen & Buzdagli, 2020) .

### 3.4 FDI in Turkey

FDI has been identified as a distinct strategy statement under the Turkish FDI Strategy as one of the significant supporting aspects of industrial, commercial, and fiscal policies (2021-2023). In the current transition and instability in the international economy, the struggle for FDI attraction between nations has grown (TFDİS, 2021). Turkey would significantly contribute to achieving Turkish 2023 goals through a target-oriented FDI policy for delivering value-added, knowledge-intensive investing, creating high-quality jobs required for Turkey during this timeframe. Turkey's FDI strategy (2021-2023) is related to Turkey's 11th Development Plan (2019-2023), Turkey's New Economic Program (2020-2022), 2023 Industry and Technology Strategy, and 2023 Turkey's Export Strategy for its structure aims, and methods created to accomplish these objectives (TFDİS, 2021).

Now, let us take a look at the statistics of United Nations Conference on Trade and Development (UNCTAD); we can see that Turkey is in second place with a reception of FDI after Russia in Central and Eastern Europe (See Graph 4). If we compare Russia with Turkey, we can see that the performance of Russia is based on the availability of vast natural resources and a large market of nearly 145 million people. Turkey is indeed an excellent business location in productivity search, while Russia is an

appealing investing target for FDI searching for the marketplace and looking for natural assets (TFDİS, 2021).

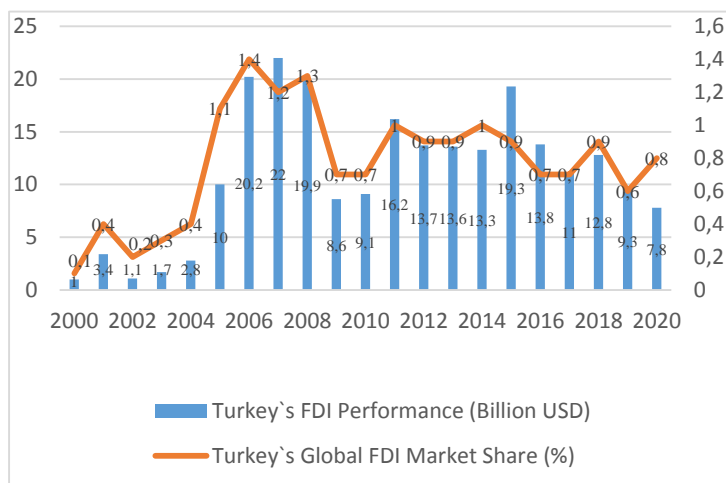


(0) The FDI directed to Hungary in 2015 and 2016 is indicated as unfavorable in FDI UNCTAD records

**Graph 4: Top 10 countries with the FDI performance among the Central and Eastern Europe**

Source: Turkey FDI strategy report 2021-2023 (based on UNCTAD, WIR Annex Tables database)

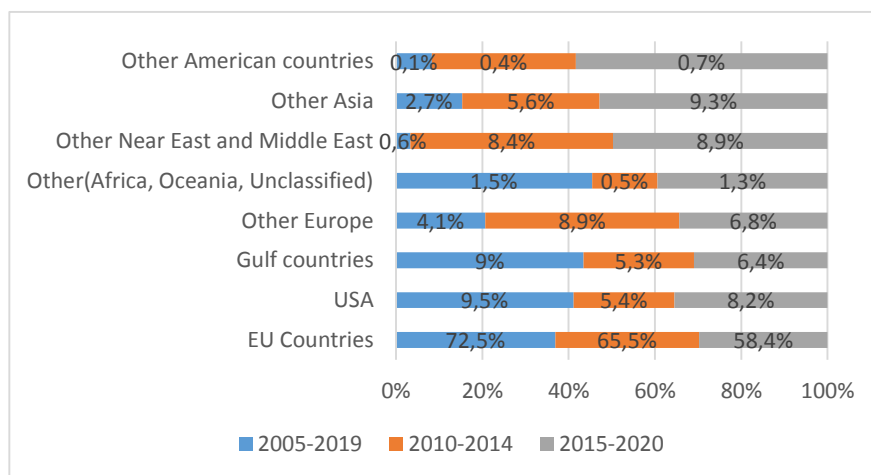
Turkey began a vigorous restructuring effort after 2000, aimed at improving the country’s economic environment. The concept of equality adopted in 2003 by Law No 4875 on Foreign Direct Investment boosted the trust of foreign investors in Turkey and encouraged investment in Turkey. Turkey obtained an average proportion of the international FDI market in the years that preceded the FDI law, 0.9%, making Turkey one of the most attractive countries in the area. As a result of the worldwide 2007-2008 financial crisis, Turkey’s participation in the global FDI market comparable to Central and Eastern Europe declined partially. On the other side, Turkish participation is seen to be relatively horizontal (TFDİS, 2021) (See Graph 5).



**Graph 5: Turkey's Share in the Global FDI Market (2000-2020, Billion USD, %)**

Source: Turkey FDI strategy report 2021-2023 (UNCTAD, CBRT database)

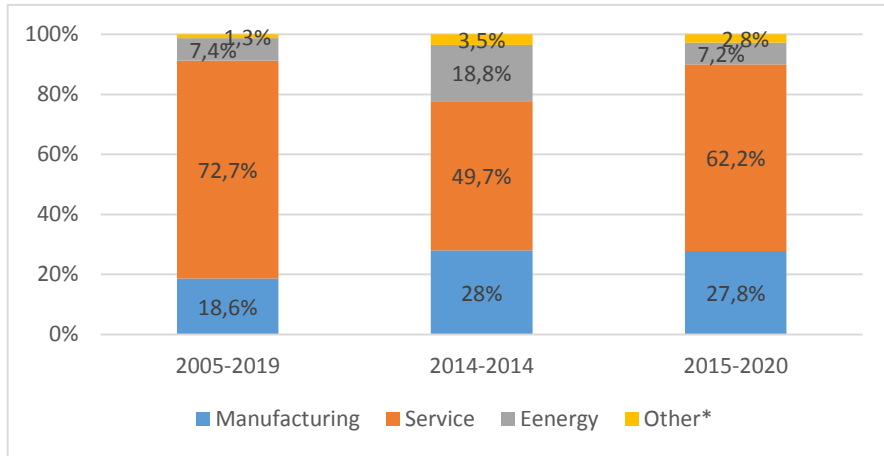
The content of Turkey's FDI in the period 2005-2020 has been differentiated concerning the sources and investment industries. While EU investment has fallen from 72.5% in 2005–2009 to 65.5% for 2010–2014 and 58.4% for 2015–2020, the proportion in Asia (the Gulf, other nations in the Middle East, and other Asian countries) rose from 12.3% for 2005–2009 to 22.1% for the period 2015–2020 (TFDİS, 2021) (See Graph 6).



**Graph 6: Geographical Distribution of FDI sources (2005-2020, %)**

Source: Turkey FDI strategy report 2021-2023 (CBRT database)

A sector-specific FDI assessment shows that the percentage of investments in the services industry fell from 72.7% in 2005-2009, up to 49.7% in 2010-2014, and 49.7% and 62.2% in the current decade. In the 2010-2014 era, the investment level in the manufacturing industry has increased significantly, up about 28 percent over the successive timeframe relative to the preceding term (TFDİS, 2021) (See Graph 7).



(\*) Agriculture and mining investments were followed under the other category

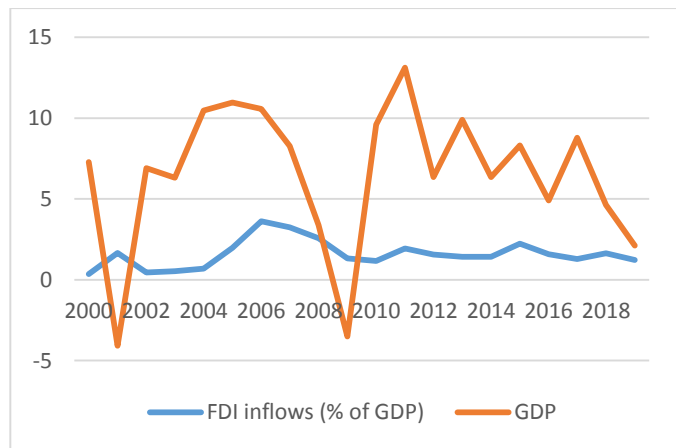
**Graph 7: Distribution of FDI by Sector (2005-2020, %)**

Source: CBRT, Turkey FDI strategy report 2021-2023

### 3.4.1 Effects of FDI on Economic growth in Turkey

According to the theories of several scientists (Lucas, 1998; Ramsey, 1928; Romer, 1986, 1990; Solow, 1956), and real-life examples, FDI is considered as a booster for the economic growth of the host country. The GDP growth rate and FDI (% of GDP) are graphically represented to analyze the correlation among FDI and economic development (See Graph 8). When we take a glance at Graph 8, we will see that increase in FDI inflow from 2000 to 2002 due to the declaration of Turkey as a candidate country for the EU in 1999 did not affect the GDP growth, on the contrary, in 2001, there

was a sharp decline of GDP growth. On the other hand, we can assume that from 2001 until 2012, there were almost the same trends between GDP growth and FDI. On the other hand, it is understood from this graph that FDI movements and GDP growth rates are not related from 2012 to 2019. Based on this graphical illustration, we can conclude that there is no correlation between GDP and FDI. For that reason, in the next paragraph, the statistical tests will be run to find out the relationship between FDI and GDP.



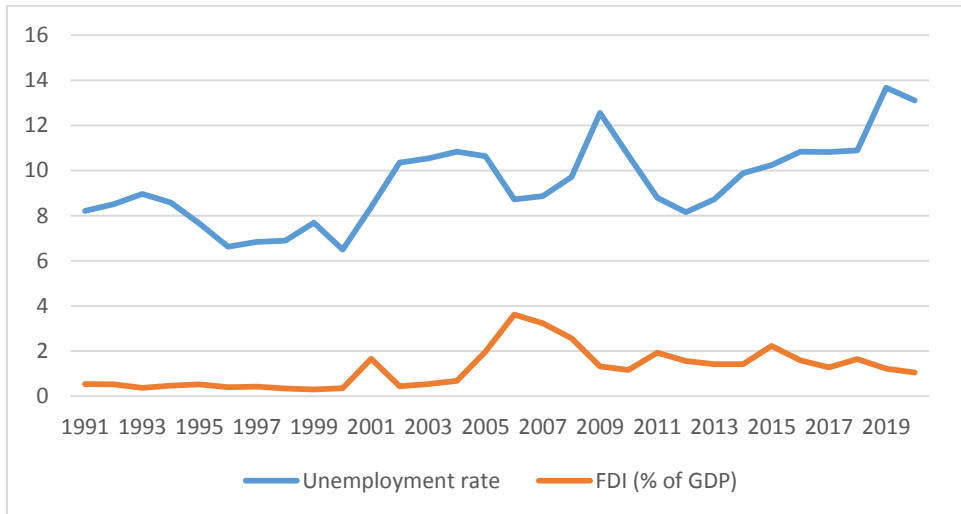
**Graph 8: Graphical representation of GDP (%) and FDI (% of GDP) in Turkey from 2000 to 2019**

Source: Author's invention based on WorldBank database

### 3.4.2 Effects of Foreign Direct Investment on unemployment rate regarding Turkey

Taking a consideration the theories of economists, we can assume that Foreign Direct Investment has a significant influence on unemployment (Baldwin, 1995; Dunning, 1985; Keynes, 1936; Moosa, 2002). In theory increase in FDI inflows is supposed to decrease the unemployment rate, but in reality, we can see different results. From 1991 to 2000, we can see a continuous horizontal line of FDI inflows, and on the other side, we can see the fluctuating unemployment rate. When we look for some time 2000-2006,

we can see an increase in FDI inflow and the unemployment rate. From 2006 until 2019, we can see the fluctuations in FDI inflows and the Unemployment rate timeline (See Graph 9). Based on this graphical representation, we can conclude that FDI inflow trends and unemployment rate are unrelated. Hence in order to get even results we need further empirical calculations of these series.



**Graph 9: Graphical representation of Unemployment rate (%) and FDI (% of GDP) in Turkey from 1991 to 2019**

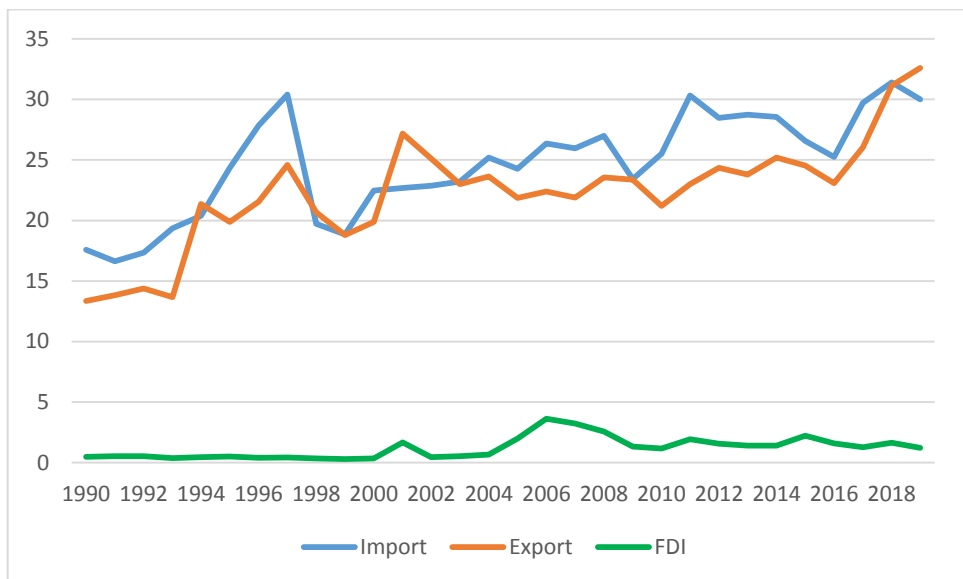
Source: Author's invention based on WorldBank database

### 3.4.3 Effects of FDI on Trade in Turkey

Based on the theories which have been introduced by (Dunning, 1974, 1977, 1985, 1988), (Ethier, 1986; Ethier & Markusen, 1996; Grossman & Helpman, 2002; Helpman, 1984, 1985; Horstmann & Markusen, 1992; Markusen, 1984, 1997, 2002; Markusen & Venables, 1998a, 2000), (Moosa, 2002), (Solomon & Ingham, 1977), (Panic & Joyce, 1980) we can assume that there is a positive impact of FDI on Trade (Import and Export).



However, contrary to those theories, we can see that FDI trends, exports, and imports are not related to each other (See Graph 10).



**Graph 10: Graphical representation of import of goods and services, export of goods and services (%GDP), and FDI (% of GDP) in Turkey from 1990 to 2019**

Source: Author`s invention based on WorldBank database

### 3.5 Empirical literature review

This chapter of the thesis is addressed to reviewing the present empirical literature concerning FDI. The below-mentioned topics are listed in this chapter:

- ❖ Nexus between FDI and Economic growth
- ❖ Nexus between FDI and Trade
- ❖ Nexus between FDI and Unemployment rate

### 3.5.1 Nexus between FDI and Economic growth

#### **H1:** Foreign Direct Investment has a positive impact on Gross Domestic Product

Foreign Direct Investments contribute significantly to the economic growth of developing countries. On the other side, FDI is similarly vital for developed countries. Nevertheless, their objectives are not similar both sides have mutual interests in boosting FDI flows. A vast of studies addressed the correlation among FDI and Economic growth during the last decades. According to the utilized dataset, chosen geographical region, statistical model, and so on, researchers got positive and negative relationships between FDI and economic growth. Nistor (2014) studied the effects of FDI on economic growth from 1990 to 2012 in Romania. The regression analysis method has been applied for the empirical part of his study. In order to determine the impact using econometric models in his model, he included the dependent variable Gross Domestic Product (GDP), and the independent variables, foreign direct investment inflows (FDI), government expenditure (GE), and gross fixed capital formation (GFCF). According to the results gained from the statistical model, there was a positive correlation between FDI and economic growth regarding Romania. The research results concluded that FDI could be considered an active factor in developing and adapting to the market economy and competitiveness. In another exciting research Chakraborty & Nunnenkamp (2008) analyzed the impact of FDI on economic growth in India for the time period from 1987 to 2000. The Unit Root, Panel co-integration, and Granger causality tests have been utilized in their models. According to gain results from the statistical part of the paper, they observed that the growth effects of FDI alter extensively beyond sectors. The results showed that FDI stocks and output are mutually reinforcing in the manufacturing sector, whereas there is no causal link in the tertiary industry.

They found just transitory impacts of FDI on output in the services industry. Nevertheless, FDI in the services industry seems to have promoted growth in the manufacturing sector through cross-sector spillovers. Other research was done by Falki (2009) regarding Pakistan for the period from 1980 to 2006. The main focus of his study was to analyze the impact of FDI on economic growth. The production function based on the endogenous growth theory was utilized in his studies. The following variables as trade, domestic capital and, labor are also utilized in his model. The results of his study indicate a negative and statistically insignificant relationship between the GDP and FDI Inflows in Pakistan. The following research Karimov & Belkania (2018) examined the relationship between Turkey's economic growth and Foreign Direct Investment for 1980-2017. The ADF unit root test, Johansen co-integration test, and Granger causality tests have been utilized in their researchers. According to the empirical part of the paper, there was a presence of co-integration between the analyzed series (FDI and GDP). Therefore, results gained from the Granger causality test showed a unidirectional causality from FDI to GDP. Hence, the findings of these researchers have shown that there is a significant impact of FDI on economic growth in Turkey. Baiashvili & Gattini (2020), investigated the impact of FDI inflows on growth and their effect mediated by income levels and the quality of the institutional environment. Especially researchers concentrated on the interaction among country income levels – including low, middle, and high-income countries and Foreign Direct Investment. Their study is based on 111 countries, including developed, developing, and emerging economies starting in 1980. Their estimations make use of panel GMM techniques robust to sample size, instrument proliferation, and endogeneity concerns. Moreover, they deployed dynamic panel methods using Generalized Method of Moments (GMM) estimators. They detected that FDI benefits do not grow mechanically and evenly across countries. They found an inverted-U-shaped

relationship between countries' income levels and the size of FDI impact on growth. Hence, with the moving from low to middle-income countries, the impact gets greater. On the other hand, the shift to high-income economies is decreasing again. Finally, yet importantly, they found that absorptive capacity matters in channeling FDI effects. Institutional factors positively mediate FDI within-country income groups, whereby countries with better-developed institutions relative to their income group peers positively impacted FDI on economic growth. Dar et al. (2016) analyzed the Foreign Direct Investment (FDI) effects on economic growth in Pakistan for the 2 period of time 1997-2001, 2002-2013. Vector Error Correction Model (VECM), panel co-integration test and Principle Component Analysis (PCA) have been utilized in the methodological part of their paper. Pakistani economy has been separated into primary, secondary, and tertiary scope for the scheme of research. According to results from the panel approach, there was a long-run and short-run relationship between GDP and FDI, although interactions between sectors are dreadful. Just primary sector FDI has shown short-term relationships with economic growth. Furthermore, the results indicated no cross-sector spillover presence between Pakistan's primary, secondary, and tertiary sectors. (Kisswani et al., 2015), studied the connection among FDI and real GDP for the covered time from 1994:Q1 to 2013:Q2 in Estonia. The real GDP was retrieved from Eurostat, while the FDI data was collected from the Bank of Estonia. The ADF unit root test, Johansen co-integration test, Granger causality tests, and Vector Error Correction Model have been employed for the statistical part of their studies. The results gained from the Johansen co-integration test showed a long-run co-integration between FDI and real GDP. According to the results of Granger causality, FDI granger causes real GDP. (Silajdzic & Mehic, 2015), investigated the impact of FDI and the related externalities on economic growth in transition economies. In their analysis, the principal variables of

interest were the FDI variable (FDI share) and the two R&D variables, namely RDgov and RDbus. The OLS approach has been utilized in the empirical section of the study. Based on the gained results, they deduced that FDI contributes to economic growth predominantly through knowledge spillovers. Due to government and industry R & D costs, a more significant technical degree of progress is related to more robust growth performance across transition economies due to government and industry R&D costs. Hence the findings of this research allowed them to determine that the positive influence of FDI on economic growth is associated with more knowledge-capability and efficiency-seeking FDI. Summary of the empirical literature review for FDI and GDP relationship is demonstrated in Table 2.

**Table 2: Summary of the empirical literature review (FDI and GDP relationship)**

<b>Author</b>	<b>Research area and period</b>	<b>Research methods</b>	<b>Variables</b>	<b>Results</b>
Nistor.P(2014)	Romania 1990-2012,	Regression analysis (time series data)	GDP, FDI, government expenditure (GE), and gross fixed capital formation (GFCF)	The results indicated a positive correlation between FDI and economic growth
Chakraborty, C., & Nunnenkamp, P. (2008)	India 1987-2000,	The Unit Root, Panel co-integration, and Granger causality (panel data)	GDP, FDI stocks	FDI stocks and output are mutually reinforcing in the manufacturing sector, whereas there is no causal link in the tertiary industry. They found just transitory impacts of FDI on output in the services industry.
Karimov & Belkania, (2018)	Turkey 1980-2017,	ADF unit root test, Johansen co-integration test, and Granger causality tests (time series data)	FDI and GDP	According to the empirical part of the paper, there was a presence of co-integration between the analyzed series (FDI and GDP). Therefore, results gained from the Granger causality test showed a unidirectional causality from FDI to GDP.
Dar, A. A., Bhatti, H. M. A., & Muhammad, T. (2016)	Pakistan 1997-2001 2002-2013,	Vector Error Correction Model (VECM), panel co-integration test and Principle Component Analysis (PCA)	GDP and FDI Gross Fixed Capital Formation Infrastructure Human Capital Institutions	According to results from the panel approach, there was a long-run and short-run relationship between GDP and FDI, although interactions between sectors are dreadful. Just primary sector FDI has shown short-term relationships with economic growth. Furthermore, the results indicated no cross-sector spillover presence between Pakistan's primary, secondary, and tertiary sectors.
Kisswani, K. M., Kein, A., & Shetty, S. T. (2015)	Estonia 1994:Q1 to 2013:Q2,	The ADF unit root test, Johansen co-integration test, Granger causality tests, and VECM	FDI and GDP	The results gained from the Johansen co-integration test showed a long-run co-integration between FDI and real GDP. According to the results of Granger causality, FDI granger causes real GDP.

Source: Author`s own invention

### 3.5.2 Nexus between FDI and Unemployment rate

**H2:** Foreign Direct Investment negatively correlated with unemployment rate

In recent years, a high-performing study has been concerned about the correlation among FDI and unemployment. The empirical research produced various outcomes depending on the country, series lengths, and empirical models evaluated. Some studies have therefore shown that FDI has a beneficial influence on the reduction of the unemployment rate. For instance, (Karimov et al., 2020) investigated the effect of FDI inflows in Turkey on the unemployment rate for the period 1980 - 2017. The Unit Root test, Johansen cointegration test, and the Granger causality test were employed to fulfill the statistical parts of the study. According to this research, at most 1, the cointegration between the examined variables was found. Therefore, the unidirectional causality running from FDI to UEMP was observed through the Granger causality test. Hence, this study may prove that FDI has an essential influence on reducing the unemployment rate in Turkey. (Brincikova & Darmo, 2014) used panel data between 1993 - 2012 to investigate the influence of Foreign direct investment on employment in the V4 nations using the panel regression approach. Based on the research results, it was shown that FDI positively influences employment in the V4 countries. (Djambaska & Lozanoska, 2015) studied the correlation among unemployment and Foreign Direct Investment in the Republic of Macedonia from 1999 to 2013. The multiple linear regression approach has been utilized in the empirical part of the study. Based on the statistical findings, it is deduced that FDI did not significantly influence decreasing unemployment. Inflation harms joblessness, meaning that rising inflation reduces the country's unemployment rate. In addition, decreasing bribery will help reduce unemployment, given the considerable consequences of corruption on joblessness. (Zdravković et al., 2017) investigated the correlation among FDI

inflows per capita and unemployment rates in 17 transitioning nations from 2000 to 2014. The panel co-integration method has been employed in the statistical part of the research. The seven-panel co-integration analyses produce combined findings, but FDI and unemployment certainly are not co-integrated in the Fully Modified and Dynamic OLS panel estimates. (Palát, 2014) examined the effect of FDI inflows on the Japanese economy and unemployment progress from 1983 to 2009. The FDI and unemployment rate were analyzed through regression and correlation tests. The relationship among FDI and the unemployment rate has indeed been confirmed. (Irpan et al., 2016), Reviewed FDI's effect on Malaysia's unemployment rate between 1980 and 2012. Long-term research determined using the autoregressive distributed lag (ARDL) approach found that the unemployment rate in Malaysia was greatly influenced by FDI, the quantity of international labor, and Gross Domestic Product. (Zeb et al., 2014), studied the influence of FDI on unemployment in Pakistan from 1995 to 2011. The MRA analyses are used to analyze the impact on employment in Pakistan; of chosen explanatory series findings show that FDI has an essential influence in increasing employment in Pakistan. (Johnny et al., 2018), studied the influence of Foreign Direct Investment on the unemployment rate in Nigeria for the period 1980 – 2015. The cointegration, unit root, and standard most minor square tests have been utilized in the statistical part of the research. The research demonstrates that FDI inflows are negatively and insignificantly linked to the Nigerian unemployment rate. Grahovac & Softić (2017), studied the correlation among Foreign Direct Investment inflows and unemployment rate in Western Balkan nations from 2000 to 2014. For the quantitative section of the article, the multiple linear regression model was employed. The data show that the unemployment rate in nations of the Western Balkans has not had a beneficial influence on the Foreign Direct Investment inflows. Stamatidou & Dritsakis (2014), used yearly time-series datasets



spanning 1970 till 2012 to examine the correlation among Greece's unemployment rate, FDI inflows, and economic development. The bounds testing ARDL method and the ECM-ARDL method are two of the statistical approaches utilized in this study. The findings support the existence of a long-term connection between the series under consideration. P. Simionescu & Simionescu (2017), studied the connection among FDI inflows and the unemployment rate in the United States during 2000 till 2016. A VECM method was developed to examine the long-term and short-term connection among foreign direct investment and the absolute variance in unemployment rate in the present term against the preceding one. The results of statistical analysis revealed that solely variations in the American unemployment rate had a long-term impact on FDI. There was no short-run correlation among foreign direct investment and unemployment rate fluctuation. Summary of the empirical literature review for FDI and Unemployment rate relationship is demonstrated in Table 3.

**Table 3: Summary of the empirical literature review (FDI and Unemployment rate relationship)**

<b>Author</b>	<b>Research area and period</b>	<b>Research methods</b>	<b>Variables</b>	<b>Results</b>
Karimov, M., Paradi-Dolgos, A., & Koroseczne Pavlin, R. (2020)	Turkey (1980-2017)	The Unit Root test, Johansen cointegration test, and the Granger causality	Unemployment rate (dependent variable) and Foreign Direct Investment inflows (independent variable)	According to this research, at most 1, the cointegration between the examined variables was found. Therefore, the unidirectional causality running from FDI to UEMP was observed through the Granger causality test.
Brincikova, Z., & Darmo, L. (2014)	V4 countries (1993-2012)	The panel regression approach	FDI (independent variable) and Unemployment rate (dependent variable)	Based on the research results, it was shown that FDI positively influences employment in the V4 countries.
Zdravković, A., \DJukić, M., & Bradić-Martinović, A. (2017)	17 transitioning nations (2000-2014)	The panel co-integration method	FDI (independent variable) and Unemployment rate (dependent variable)	The seven-panel co-integration analyses produce combined findings, but FDI and unemployment certainly are not co-integrated in the Fully Modified and Dynamic OLS panel estimates.
Johnny, N., Timipere, E. T., Krokeme, O., & Markjackson, D. (2018)	Nigeria (1980-2015)	The cointegration, unit root, and standard most minor square tests	FDI (independent variable) and Unemployment rate (dependent variable)	The research demonstrates that FDI inflows are negatively and insignificantly linked to the Nigerian unemployment rate.
Irpan, H. M., Saad, R. M., Nor, A. H. S. M., & Ibrahim, N. (2016)	Malaysia (1980-2012)	autoregressive distributed lag (ARDL) approach	Unemployment rate (dependent variable) FDI, number of foreign workers, gross domestic product (GDP) and exchange rate (EXCR) (independent variables)	The unemployment rate in Malaysia was greatly influenced by FDI, the quantity of international labor, and Gross Domestic Product.

Source: Author`s own invention

### 3.5.3 Nexus between FDI and Trade

**H3:** Fostering Foreign Direct Investment positively affects Trade (Export and Import)

The connection among FDI and trade has lately been a widespread issue for considerable investigation in the previous studies. Karimov (2019), examined the influence of FDI inflows on the export and import of goods and services in Turkey spanning 1974 until 2017. The several analysis as the Unit Root test, the Granger Causality test, and the Johansen co-integration test have been utilized in the statistical part of the study. According to the findings, the co-integration between trade and Foreign Direct Investment has been discovered. Therefore, outcomes of the Granger causality test indicated unidirectional causality running from Import and Export to FDI. Hence, considering his research findings, we can conclude that there is a positive impact of FDI on trade regarding Turkey. Bhasin & Kapoor (2020), investigated the impact of outward foreign direct investment from these countries on home nation exports by utilizing panel data for BRICS for time span 1993–2015. The panel unit root tests, panel cointegration, VECM and causality tests were employed for the empirical part of paper. The findings show that OFDI has a negative and significant effect on host country exports, implying that outward FDI serves as a substitute for exports in these economies. It also shows long-run causality from exports to OFDI. There is no long-run causality between OFDI and exports. (Savićević & Kostić, 2020), examined the impact of FDI inflows on export trends in the Western Balkan countries, as well as in some Central and Eastern European countries for the time period from 2010 to 2016. The Panel regression analysis was employed for statistical part of study. The result has been demonstrated that there is a statistically significant positive impact of FDI on the export of the Western Balkan countries. Mukhtarov et al. (2019), analysed the the impact

of FDI on exports regarding Jordan for the period from 1980 to 2018. The Autoregressive Distributed Lag Bounds Testing (ARDL BT) co-integration approach was utilized in the empirical part of research. The result demonstrated a long-term linkage between the series. The researchers obtained a positive and significant influence of FDI on export. Therefore, estimation findings show that one percent of rising in foreign direct investment growing export by 0.13 percent. M. Simionescu (2014), studied the correlation among foreign direct investment and trade for G7 nations from 2002 to 2013. The Granger causality test for panel data was utilized in the empirical phase of the study. Based on the Granger causality test findings, there was a short-run causality between the analyzed series (Import, Export, and FDI). Additionally, the results of Granger causality test indicated the unidirectional long-run causality running from FDI to trade. As a result, short-run causality in both meanings was observed for Foreign Direct Investment and trade in G7 nations on the relevant timeframe. Hence, considering the results of this paper, we can conclude that there was a positive relationship between trade and FDI in G7 countries. Cetin & Seker (2013), studied the causal relationships between FDI and exports in eight developing countries from 1980 to 2009. The augmented Granger causality test has been utilized for the statistical phase of the research. The Toda-Yamamoto test findings showed a causal relationship between series running from FDI to exports for Poland and Mexico, while the direction of causality is from exports to FDI for Pakistan and Turkey. Dolado-Lütkepohl test's results demonstrated that there was a uni-directional causality running from FDI to exports for Poland, while the direction of causality is from exports to FDI for Pakistan and Thailand. Hence, it was confirmed that there was no bi-directional causality between series in both tests. According to their paper's empirical results, the authors suggested that developing nations must continue developing and executing export-based policy and FDI. Therefore,

the developing nations' forward-looking development policies must thus cover both the export assistance policy and the FDI assistance policy. Metulini et al. (2017), analyzed the effects of FDI on trade from a network perspective. The unique data set of international corporate control is utilized to measure stock FDI to construct a corporate control network (CCN) where the nodes are the countries, and the edges are the corporate control relationships. The empirical results showed that corporate control has a positive effect on trade both directly and indirectly. The result is robust with different specifications and estimation strategies. Hence, this study's results indicated a strong indirect effect of FDI on trade. Cho (2013), analyzed the causal relationship between bilateral trade and FDI in India and East Asian countries utilizing macroeconomic data and derive policy implications for regional integration. Since the late 2000s, he has observed that Korea, Japan, and Singapore's trade and FDI with India have been rapidly rallying up, but the causal relationship between trade and FDI could not be estimated, contrary to expectations. The relationship between trade and FDI in the US, the UK, and Germany with India showed one-way or two-way causality, respectively. The analysis implies that a long-term economic exchange instead of a short-term increase might establish the causal link underlying trade and FDI. Summary of the empirical literature review for FDI and Trade (import and export) relationship is demonstrated in Table 4.

**Table 4: Summary of the empirical literature review (FDI and Trade (Export and Import) relationship)**

Author	Research area and period	Research methods	Variables	Results
Karimov, M (2019)	Turkey (1974-2017)	The Unit Root test, Johansen cointegration test, and the Granger causality	Trade (export and import) (dependent variable) and Foreign Direct Investment inflows (independent variable)	According to the findings, the co-integration between trade and FDI has been discovered. Therefore, outcomes of the Granger causality test indicated unidirectional causality running from Import and Export to FDI.
Simionescu, M. (2014)	G7 countries (2002-2013)	The Granger causality test for panel data	Trade (% of GDP) (dependent variable), GDP, Import of goods and services, export of goods and services and Foreign Direct Investment inflows (independent variable)	Based on the Granger causality test findings, there was a short-run causality between the analyzed series (Import, Export, and FDI). Additionally, the results of Granger causality test indicated the unidirectional long-run causality running from FDI to trade.
Bhasin, N., & Kapoor, K. (2020)	BRICS (1993–2015)	The panel unit root tests, panel cointegration, VECM and causality tests	OFDI and Export	The findings show that OFDI has a negative and significant effect on host country exports, implying that outward FDI serves as a substitute for exports in these economies. It also shows long-run causality from exports to OFDI. There is no long-run causality between OFDI and exports.
Savićević, M., & Kostić, M. (2020)	Western Balkan countries Central and Eastern European countries (2010- 2016)	The Panel regression analysis	FDI and export	The result has been demonstrated that there is a statistically significant positive impact of FDI on the export of the Western Balkan countries.
Mukhtarov, S., Alalawneh, M. M., Ibadov, E., & Huseynli, A. (2019)	Jordan (1980-2018)	Autoregressive Distributed Lag Bounds Testing (ARDL BT) cointegration approach	FDI and export	The result demonstrated a long-term linkage between the series. The researchers obtained a positive and significant influence of FDI on export.

Source: Author`s own invention

## 4. Recap of the research

The accompanying sequence tackles the research questions and hypotheses:

**The objective of research 1:** To establish the effect of FDI inflows on the GDP of Turkey

**RQ1:** Is FDI a significant contributor to economic growth?

**H1:** Foreign Direct Investment has a positive impact on Gross Domestic Product

**Research methods:** Augmented Dickey-Fuller Unit Root Test, Phillips–Perron Unit Root Test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run), Granger Causality Test

**The objective of research 2:** To establish the effect of FDI inflows on the unemployment rate of Turkey

**RQ2:** Does the inflow of foreign direct investments reduces the unemployment rate?

**H2:** Foreign Direct Investment negatively correlated with the unemployment rate

**Research methods:** Augmented Dickey-Fuller Unit Root Test, Phillips–Perron Unit Root Test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run), Granger Causality Test

**The objective of research 3:** To establish the effect of FDI inflows on the trade of Turkey

**RQ3:** Do FDI inflows positively affect the trade of Turkey?

**H3:** Fostering Foreign Direct Investments positively affects Trade (Export and Import)

**Research methods:** Augmented Dickey-Fuller Unit Root Test, Phillips–Perron Unit Root Test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run), Granger Causality Test

## 5. Materials and Methods

### 5.1 Methods

#### 5.1.1 Augmented Dickey-Fuller Unit Root Test

The Augmented Dickey-Fuller test (ADF test), which D.David and F.Wayne (Dickey & Fuller, 1979) advanced, is a typical quantitative technique employed to determine whether or not a particular time series is stationary. When assessing the stationary of a sequence, it is one of the most often employed empirical tests. As the title implies, the ADF test is an 'augmented' variant of the Dickey-Fuller test. The ADF analysis extends the Dickey-Fuller test formula to incorporate in the framework high order regressive processes<sup>6</sup>. The Augmented Dickey-Fuller test equation is given below (1):

$$y_t = c + \beta t + \alpha y_{t-1} + \phi_1 \Delta Y_{t-1} + \phi_2 \Delta Y_{t-2} \dots + \phi_p \Delta Y_{t-p} + \varepsilon_t \dots \dots \dots (1)$$

Where is,  $y_t$  is dependent variable,  $y_{t-1}$  is independent variable,  $c$  is constant and  $\varepsilon_t$  is a white noise<sup>7</sup>.

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6 Machine learning plus

<https://www.machinelearningplus.com/time-series/augmented-dickey-fuller-test/>

7 People.stern.nyu.edu



An important thing to note here is that because the null hypothesis presupposes the existence of the unit root, that is,  $\alpha=1$ , the p-value obtained should be smaller than the significance level (0.05) to reject the null hypothesis. As a result, we may conclude that the series is stationary<sup>8</sup>.

### 5.1.2 Phillips–Perron Unit Root Test

The Phillips–Perron is another type of unit root test which was developed by Peter C. B. Phillips and Pierre Perron (Phillips & Perron, 1988), is a common statistical approach used to detect whether or not a time series is stationary. The H0 the PP testing is that the variable includes a unit root, and the alternative hypothesis is that the variable was formed by a stationary process. To adjust the serial correlation, the PP unit root test employs Newey–West (1987) standard errors. PP unit test equation is as following (2 and 3):

$$Y_t = \mu + \alpha Y_{t-1} + \varepsilon_t \dots\dots\dots(2)$$

$$Y_t = \mu + \beta \left( t - \frac{T}{2} \right) + \alpha Y_{t-1} + \varepsilon_t \dots\dots\dots(3)$$

Where is, t is number of observations,  $y_t$  is dependent variable,  $y_{t-1}$  is independent variable and  $\varepsilon_t$  is error terms. The expected value of the error term is equal to zero (Chinar & Ozturk, 2018). The PP unit root test is performed in the same way as the ADF unit root test.

### 5.1.3 Zivot Andrews Unit Root Test

In the presence of a structural break in the macroeconomic series, standard unit root tests like ADF and PP provide deceptive findings. Thus, in

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<http://people.stern.nyu.edu/churvich/Forecasting/Handouts/UnitRoot.pdf>  
 8 Machine learning plus  
<https://www.machinelearningplus.com/time-series/augmented-dickey-fuller-test/>

evaluating economic time series, structural shifts are critical. Economic crises, institutional changes, political upheavals, and even regime transitions can all result in structural alterations in time series (Iranmanesh & Jalae, 2021). When a structural break is not taken into account in the time series trend, the estimation findings may be skewed toward non-rejection of the unit root test. In order to solve this problem Eric Zivot and Donald Andrews have developed the unit root test with a single structural break in 1992 (Zivot & Andrews, 1992). The test's key characteristic is that there is no necessity to define the structural breakpoint. This analysis locates the point of structural failure and then executes the unit root test (Iranmanesh & Jalae, 2021). The acceptance of the null hypothesis indicates that the variables is non-stationary, while denial of the null hypothesis and accept of the alternative hypothesis indicates that the time series is stationary (Iranmanesh & Jalae, 2021). The ZA test equations are mentioned below (Harvie et al., n.d.) (4,5,6,7):

$$H_0 \quad y_t = \mu + y_{t-1} + \varepsilon_t \dots \dots \dots (4)$$

Where is,  $y_t$  is dependent variable,  $y_{t-1}$  is independent variable and  $\varepsilon_t$  is error terms.

$H_1$

Model (A) (Intercept)

$$\Delta y_t = \mu + \beta t + \theta DU1_t + \alpha y_{t-1} + \sum_{j=1}^k c_j \Delta y_{t-j} + \varepsilon_t \dots \dots \dots (5)$$

Model (B) (Trend)

$$\Delta y_t = \mu + \beta t + \gamma DT1_t + \alpha y_{t-1} + \sum_{j=1}^k c_j \Delta y_{t-j} + \varepsilon_t \dots \dots \dots (6)$$

Model (C) (Intercept and Trend)

$$\Delta y_t = \mu + \beta t + \theta DU_{1t} + \gamma DT_{1t} + \alpha y_{t-1} + \sum_{j=1}^k c_j \Delta y_{t-j} + \varepsilon_t \dots \dots (7)$$

Where is  $DU_t$  is a sustained dummy variable capturing a shift in the intercept, and  $DT_t$  is another dummy variable representing a shift in the trend occurring at time  $TB$ , and  $TB$  is the break date (Harvie et al., n.d.). The acceptance of the null hypothesis indicates that the variables is non-stationary, while denial of the null hypothesis and acceptance of the alternative hypothesis indicates that the time series is stationary (Iranmanesh & Jalae, 2021).

#### 5.1.4 ARDL bounds testing approach

There are several widely applied cointegration tests that are utilized to investigate the relationship between analyzed series. For instance, the Engle-Granger and Johansen cointegration tests are one of the most widely utilized cointegration tests in practice. However, there is one serious disadvantage of these tests. The disadvantage of these tests is that all series should be stationary at level, in other words, series must be integrated of order one ( $I(1)$ ). In order to solve this problem (Pesaran & Shin, 1995), (Pesaran & Smith, 1998), and (Pesaran et al., 2001) have developed the Autoregressive Distributed Lag (ARDL) bounds test approach. In the case of the ARDL bounds test approach the utilized series might be integrated of order one  $I(1)$ , order zero  $I(0)$ , or might be mix ( $I(1)$  and  $I(0)$ ). Another advantage of the ARDL bounds test approach is that this method is not sensitive to the size of utilized variables, it can be applied for small samples. The equation of the general ARDL model is as following (8):

$$\phi(L) y_t = \delta + \Theta(L) x_t + \varepsilon_t \dots \dots (8)$$

where  $\phi(L)$  is an order- $p$  polynomial that, for stability, has roots lying outside the unit circle and  $\theta(L)$  is an order- $q$  polynomial<sup>9</sup>.

The steps of the ARDL analysis is as following: first if there is a presence of the cointegration between analysed series then long-run and short run analysis is going to be performed. In the ARDL bounds testing approach the existence of the cointegration between analysed series is checked via these hypotheses (9):

$$H_0: a_1=a_2=a_3=a_4=a_5$$

$$H_1: a_1 \neq a_2 \neq a_3 \neq a_4 \neq a_5 \dots\dots (9)$$

$H_0$  indicates that there is no cointegration between analysed series and  $H_a$  indicates that there is a cointegration between analysed series. In order to reject the null hypothesis and accept the alternative hypothesis that, there is a cointegration between analysed series the F-statistics value should be not less than critical values of the lower bound and upper bound.

### 5.1.5 Granger Causality Test

The Granger causality investigates the causality among two series in a time series to see if one time series will be beneficial in forecasting another series. The approach is a probabilistic theory of causality that finds trends of correlation in observable data sources. One advantage of time series VAR is that it allows us to evaluate 'causality' in various ways. Clive Granger was the first who suggested such analysis among statisticians. Accordingly, the test was named the Granger causality to honor Clive Granger. It is founded on the concept that if X causes Y, then forecasting Y based on prior values of

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<sup>9</sup> Reed college

[https://www.reed.edu/economics/parker/312/tschapters/S13\\_Ch\\_3.pdf](https://www.reed.edu/economics/parker/312/tschapters/S13_Ch_3.pdf)

Y and prior values of X must lead to a better forecast of Y than forecasting Y based on prior values of Y alone<sup>10</sup>.

To examine the null hypothesis that x does not Granger cause y, one must first choose the appropriate lagged y values to incorporate in a univariate autoregression of y (4):

$$y_t = a_0 + a_1y_{t-1} + a_2y_{t-2} \dots + a_my_{t-m} + \varepsilon_t \dots \dots (4)$$

next, the autoregression is augmented by including lagged values of x (5):

$$y_t = a_0 + a_1y_{t-1} + a_2y_{t-2} \dots + a_my_{t-m} + \varepsilon_t + b_px_{t-p} + \dots + b_qx_{t-q} + \varepsilon_t \dots \dots \dots (5)$$

If no lagged x values are kept in the analysis, the null hypothesis that x does not Granger cause y is supported<sup>11</sup>.

## 5.2 Material

### 5.2.1 The first model

#### Data description

This study focuses on the quarterly time-series data acquired from the Federal Reserve Bank of St. Louis (FRED) and Central Bank of Turkey (CBT) for the period span from 2006 Q2 to 2019 Q4. Before converting to percentage change, all series have been adjusted to the USD in constant 2015 (CPI 2015). The Eviews-11 statistical software was employed for the

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<sup>10</sup> Medium  
<https://medium.com/swlh/using-granger-causality-test-to-know-if-one-time-series-is-impacting-in-predicting-another-6285b9fd2d1c>

<sup>11</sup> RPubS  
[https://rpubs.com/euler-tech/granger\\_causality\\_test](https://rpubs.com/euler-tech/granger_causality_test)

empirical phase of the study. The below mentioned four series were applied in the model:

**Dependent variable:**

**GDP-** Gross Domestic Product by Expenditure in Constant Prices: Total Gross Domestic Product for Turkey (Percentage change, seasonally adjusted) (FRED)

**Independent variable:**

**FDI-** Foreign Direct Investment inflow (Percentage change, seasonally adjusted via E-views 11 software) (CBT)

**Explanatory variables:**

**EXP** – Export of goods and services (Percentage change, seasonally adjusted) (FRED)

**GFCF** - Gross Fixed Capital Formation in Turkey (Percentage change, seasonally adjusted) (FRED)

**Model specification**

Explanatory variables have been chosen as determinants of Economic Growth (to make the model better). Based on those series below mentioned model has been built:

$$GDP_t = f(FDI_t, EXP_t, GFCF_t)$$

5.2.2 The second model

**Data description**

This study focuses on the quarterly time-series data acquired from the Federal Reserve Bank of St. Louis (FRED) and Central Bank of Turkey

(CBT) for the period span from 2006 Q2 to 2019 Q4. Before converting to percentage change, all series have been adjusted to the USD in constant 2015 (CPI 2015). The Eviews-11 was employed for the statistical part of the study. The below mentioned four series were applied in the model:

**Dependent variable:**

**UEMP-** Unemployment Rate: Aged 15-64: All Persons for Turkey  
(Percentage, seasonally adjusted) (FRED)

**Independent variable**

**FDI-** Foreign Direct Investment inflow (Percentage change, seasonally adjusted via E-views 11 software) (CBT)

**Explanatory variable**

**CPI -** Consumer Price Index: All Items for Turkey (Percentage change, have been seasonally adjusted via Eviews 11 software) (FRED)

**Model specification**

Explanatory variables have been chosen as a determinant of Unemployment. Based on those series below mentioned model has been built:

$$UEMP_t = f(FDI_t, CPI_t)$$

5.2.3 The third model (first part)

**Data description**

This study focuses on the quarterly time-series data acquired from the Federal Reserve Bank of St. Louis (FRED) and Central Bank of Turkey (CBT) for the period span from 2006 Q2 to 2019 Q4. Before converting to percentage change, all series have been adjusted to the USD in constant 2015

(CPI 2015). The Eviews-11 was employed for the statistical phase of the study. The below mentioned four series were applied in the model:

### **Dependent variable**

**EXP** – Export of goods and services (Percentage change, seasonally adjusted) (FRED)

### **Independent variable**

**FDI**- Foreign Direct Investment inflow (Percentage change, seasonally adjusted via Eviews 11 software) (CBT)

### **Explanatory variables**

**GDP**- Gross Domestic Product by Expenditure in Constant Prices: Total Gross Domestic Product for Turkey (Percentage change, seasonally adjusted) (FRED)

### **Model specification**

Explanatory variables have been chosen as determinants of Trade. Based on those series below mentioned model has been built:

$$EXP_t = f(FDI_t, GDP_t)$$

## 5.2.4 The third model (second part)

### **Data description**

This study focuses on the quarterly time-series data acquired from the Federal Reserve Bank of St. Louis (FRED) and Central Bank of Turkey (CBT) for the period span from 2006 Q2 to 2019 Q4. Before converting to percentage change, all series have been adjusted to the USD in constant 2015



(CPI 2015). The Eviews-11 was employed for the statistical phase of the study. The below mentioned four series were applied in the model:

### **Dependent variable**

**IMP** – Import of goods and services (Percentage change, seasonally adjusted) (FRED)

### **Independent variable**

**FDI** - Foreign Direct Investment inflow (Percentage change, seasonally adjusted via Eviews 11 software) (CBT)

### **Explanatory variables**

**EXP** – Export of goods and services (Percentage change, seasonally adjusted) (FRED)

### **Model specification**

Explanatory variables have been chosen as a determinant of Trade. Based on those series below mentioned model has been built:

$$\text{IMP}_t = f(\text{FDI}_t, \text{EXP}_t)$$

## **6. Results**

### **6.1 The impact of FDI on GDP (economic growth)**

#### **Results of the First model**

**The objective of research 1:** To establish the effect of FDI inflows on the GDP of Turkey

**RQ1:** Is FDI a significant contributor to economic growth?

**H1:** Foreign Direct Investment has a positive impact on Gross Domestic Product

**Research methods:** Augmented Dickey-Fuller unit root test, Phillips–Perron unit root test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run), Granger Causality Test

The statistical findings are presented and discussed in this section. The descriptive statistics and correlation values of the utilized series has been described in the Table 5. The correlation matrix findings indicates a strong and positive relationship between FDI, EXP, GFCF and GDP. The preliminary information about the relationships between series which have been gained through the descriptive statistics and correlation matrix is not enough to determine the relationship between analysed variables. In order to get more reliable outcomes about the relationship among analysed series the statistical methods will be utilized in the dissertation.

**Table 5: Descriptive statistics and correlation of the variables**

	GDP	FDI	EXP	GCF
Mean	0.872256	2.415403	1.620071	0.903004
Median	2.373952	2.585822	1.775871	2.062274
Maximum	13.10307	41.58270	18.14356	15.67890
Minimum	-22.24286	-23.88768	-19.51142	-24.08571
Std. Dev.	6.535354	12.67748	6.046521	8.359276
Skewness	-1.254966	0.544393	-0.153574	-1.200002
Kurtosis	5.231847	3.797520	5.491040	4.825781
Jarque-Bera	25.85205	4.174258	14.43663	20.83925
Correlation				
GDP	1.000000			
FDI	0.514992	1.000000		
EXP	0.550121	0.055158	1.000000	
GFCF	0.896192	0.398363	0.428384	1.000000

Source: Author`s own calculations

### The ADF and PP Unit Root Test

The specified time series might be stationary either at level or at the first difference, which is known as an advantage of the ARDL bounds testing

approach. As a result, each series has been subjected to the Augmented Dickey – Fuller and Phillips–Perron unit root tests. Based on the ADF and PP test results, the null hypothesis assuming that variables have a unit root at levels must be rejected since t-statistics are greater than critical values at a five percent significance level, and series` p-values are lesser than 0.05. The null hypothesis that the series has a unit root at level must be discarded referring to the statistics. As a consequence of the ADF and PP tests findings, the investigated variables were integrated of order zero (I (0)) which means all the series are stationary at level. (See Table 6).

**Table 6: The outcomes of the ADF and PP test**

Variables	ADF (Intercept and trend)		PP (Intercept and trend)	
	Level	Decision	Level	Decision
GDP	[-5.061275]** (0.0007)	I(0)	[-5.897364]** (0.0000)	I(0)
FDI	[-7.175774]** (0.0000)	I(0)	[-7.175774]** (0.0000)	I(0)
EXP	[-6.350738]** (0.0000)	I(0)	[-6.283596]** (0.0000)	I(0)
GFCF	[-6.096379]** (0.0000)	I(0)	[-6.110011]** (0.0000)	I(0)

Note: In the ADF and PP unit root tests, the parentheses indicate p-values, brackets indicate t-statistics, and asterisk (\*\*) denotes statistical significance at a 5% level.

Source: Author`s own calculations

### **The Zivot-Andrews unit root test (structural break)**

The Zivot-Andrews unit root test was employed in order to check stationarity of the series considering one structural break. The ZA unit root test has examined the structural breaks in the analyzed series via three different models (A - intercept, B - trend, C - intercept and trend). The null hypothesis ( $H_0$ ) of this test states that, the series has a unit root and the series are non-stationary. The alternative hypothesis ( $H_1$ ) of this analysis states that the series does not have unit root and the series are stationary.

**Table 7: The outcomes of the Zivot-Andrews test**

Variables	ZA unit root test					
	Model A (Intercept)		Model B (Trend)		Model C (Intercept and trend)	
	t-statistic	Break year	t-statistic	Break year	t-statistic	Break year
GDP	-5.174486**	2010 q2	-6.089854***	2009 q1	-6.003069***	2009 q3
FDI	-7.295840***	2010 q4	-5.099453**	2015 q2	-8.385223***	2009 q2
EXPR	-5.693655***	2008 q4	-6.578393***	2009 q1	-5.693655***	2008 q4
GCF	-5.619979***	2010 q3	-4.590047*	2011 q3	-6.645603***	2010 q2

Note: The critical values for Model A and B at 1%, 5%, and 10% significance level are -5.34, -4.93, and -4.58 respectively. The critical values for Model C at 1%, 5%, and 10% significance level are -5.57, -5.08, and -4.82 respectively. The asterisks (\*\*\*, \*\*, \*) denote statistical significance at a 1%, 5%, and 10% level respectively.

Source: Author`s own calculations

The results of the ZA unit root test shows that the t-statistics of the model is more than critical values of 1%, 5%, and 10% significance level which means that the null hypothesis that the series has a unit root and the series are non-stationary should be rejected and the alternative hypothesis that the series does not have unit root and the series are stationary should be accepted. Thus, according to the findings of the ZA test the series are stationary with a one structural break (See Table 7).

### **ARDL bounds testing approach**

In comparison with other cointegration analyses, the advantage of the ARDL approach is that the series might be integrated of order zero I(0) or one I(1). In our case, all the series are integrated of order zero I(0). Thus, the next step would be to run the ARDL model. The ARDL bounds test output shows that the F value is not below the lower bounds and above the upper bounds at 1% significance level. The null hypothesis that there is no cointegration between the analyzed series should be rejected and the alternative hypothesis that there is cointegration between the analyzed series must be accepted. Thus, based on the results of the ARDL bounds test there

is a presence of cointegration between FDI, EXP, GFCF, and GDP in Turkey from 2006 to 2019. Therefore, R-squared is 0.92 which means the dependent variable is explained by 92 percent. Moreover, the probability of (F-statistic) is 0.00000, which means F-statistic is significant. Additionally, the Durbin-Watson statistic is 1.946103 (close to two is desirable). Based on the information mentioned above, it can be stated that the data fitted the model well (See Table 8).

**Table 8: The results of the ARDL cointegration test**

Estimated equation			GDP <sub>t</sub> = f(FDI <sub>t</sub> , EXP <sub>t</sub> , GFCF <sub>t</sub> )	
Autoselected lag structure			(2,2,2)	
Cointegration	F value	Significance	Critical values	
			lower bounds I(0)	upper bounds I(1)
Yes	5.888004	10%	2.37	3.2
		5%	2.79	3.67
		1%	3.65	4.66
R-squared			0.929446	
Adjusted R-squared			0.910517	
F-statistic			49.10136	
Prob(F-statistic)			0.00000	
Durbin-Watson stat			1.946103	

Source: Author`s own calculations

After confirming the cointegration between the analyzed series via the ARDL cointegration test, the next step will be the estimation of the long-term and short-term coefficients. The findings which are listed in Table 8 indicate the long-term and short-term effects of economic growth (GDP), foreign direct investment (FDI), export of goods and services (EXP), and gross fixed capital formation (GFCF) in Turkey. According to the long-run analysis findings, a 1% increase in FDI, EXP and GFCF will lead to an increase in economic growth (GDP) by 17%, 55%, and 36% (coefficients: 0.170007, 0.553107, 0.363388), respectively, because all variables are statistically significant ( $p < 0.05$ ) and coefficients are positive in sign. Based on the

outputs of the short-term analysis, a 1% increase in FDI, EXP and GFCF will lead to an increase in economic growth (GDP) by 12%, 30%, and 54% (coefficients: 0.118619, 0.296857, 0.540925), respectively, because all variables are statistically significant ( $p < 0.05$ ) and coefficients are positive in sign. Therefore, the coefficient of the error correction model  $\text{CointEq}(-)$  is negative in sign (-0.741965) (should be not greater than 1) and statistically significant ( $p$ -value is 0.00, less than 0.05) which demonstrates that the economic growth (GDP) adjusts towards its long-term equilibrium at the rate of 74%. Based on the results of both the long-run and short-run analysis there is a significant and positive cointegration between the analysed series. (See Table 9).

**Table 9: The long-run and short-run analysis**

Long-run analysis			Short-run analysis		
Variable	Coefficient	T-statistic and Prob.	Variable	Coefficient	T-statistic and Prob.
FDI	0.170007	[2.653211]** (0.01)	D(FDI)	0.118619	[6.164995]** (0.00)
EXPR	0.553107	[3.160526]** (0.00)	D(EXPR)	0.296857	[6.830952]** (0.00)
GCF	0.363388	[3.077543]** (0.00)	D(GCF)	0.540925	[15.92783]** (0.00)
Constant	-0.703264	[-1.561070] (0.12)	$\text{CointEq}(-1)^*$	-0.741965	[-5.684384]** (0.00)

Note: In the table, the parentheses indicate p-values, brackets indicate t-statistics, and asterisk (\*\*) denotes statistical significance at a 1% level.

Source: Author's own calculations

### Diagnostic tests

#### Serial correlation LM test

$H_0$ : There is no serial correlation in the residual

**Table 10: Breusch-Godfrey Serial Correlation LM Test**

Statistic ( $\chi^2$ )	Prob.
0.445696	0.8002

Source: Author`s own calculations

We should accept the Null Hypothesis that there is no serial correlation in the residual, based on the p-value of the observed R-squared value (p-values >0.05; 0.80) (See Table 10).

### **Heteroscedasticity test**

H<sub>0</sub>: There is no heteroskedasticity in the residual

**Table 11: Breusch-Pagan-Godfrey`s heteroskedasticity test**

Statistic ( $\chi^2$ )	Prob.
5.571988	0.90

Source: Author`s own calculations

We should accept the Null Hypothesis that there is no heteroskedasticity in the residual, based on the p-value of observed r-squared value (p values >0.05; 0.90) (See Table 11).

### **Normality test**

H<sub>0</sub>: Residual is normally distributed

**Table 12: Jarque-Bera Normality Test**

Statistic ( $\chi^2$ )	Prob.
0.293626	0.86

Source: Author`s own calculations

We should accept the Null Hypothesis that residual is normally distributed, based on the p-value of Jarque-Bera value (p-value >0.05; 0.86) (See Table 12).

### **Ramsey RESET test**

H<sub>0</sub>: Model is stable (correctly specified)

**Table 13: Ramsey RESET test**

Statistic ( $\chi^2$ )	Prob.
2.328352	0.13

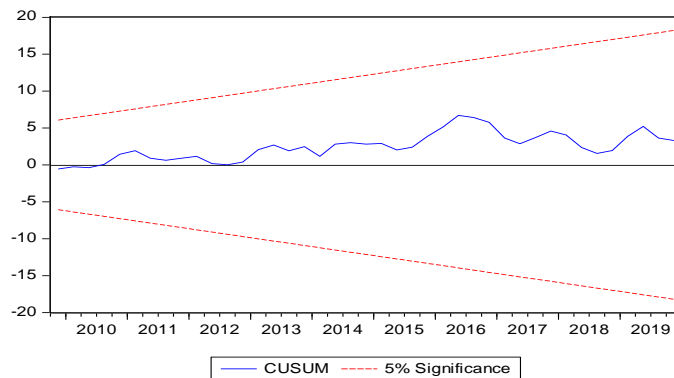
Source: Author`s own calculations

We should accept the Null Hypothesis that the model is correctly specified, based on the p-value of the F-statistic (p values > 0.05; 0.13) (See Table 13).

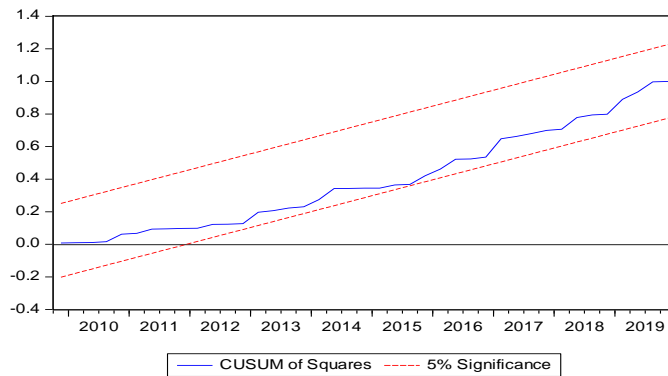
### **CUSUM stability test**

In order to check the stability in the examined long-term model, the CUSUM and CUSUMSQ stability tests will be employed in the model. According to the output of the CUSUM and CUSUMSQ tests, the estimated model is steady during the relevant period (See Figure 1).

**Figure 1: The CUSUM and CUSUMSQ stability tests**







Source: Author`s own calculations

### The Granger Causality test

As earlier stated, the Granger Causality analysis will also investigate the relation between GDP and FDI. The test's null hypothesis is stated below:

$H_0$ : FDI does not Granger Cause GDP, and

$H_0$ : GDP does not Granger Cause FDI

When the probability value is lesser than 0.05 percent, the null hypothesis is discarded.

**Table 14: Granger Causality test for GDP and FDI**

Pairwise Granger causality test, Lags 3, Sample 2006 Q2 - 2019 Q4, Observations 53		
Null Hypothesis	F-statistic	Prob.
FDI does not Granger Cause GDP	6.42973	0.0010
GDP does not Granger Cause FDI	3.91179	0.0145

Source: Author`s own calculations

Based on the Granger causality analysis findings, the null hypothesis of no causality running from FDI to GDP must be declined predicated on a P-value=0.001 (less than 0.05%). As a result, the second null hypothesis of no causality running from GDP to FDI must be discarded predicated on a P-value = 0.01 (less than 0.05 %). Hence, the Granger causality test findings revealed a bidirectional causality between FDI and GDP. (See Table 14).

Overall, the findings match the literature and the premises of the study. The overview is described in-depth as obeys:

**RQ1:** Is FDI a significant contributor to economic growth?

**H1:** Foreign Direct Investment has a positive impact on Gross Domestic Product

In response to the first question of the study, the H1 was investigated via different empirical tests. Gross Domestic Product (GDP) as a dependent variable was explained with Foreign Direct Investment (FDI), Export of goods and services (EXP), and Gross Fixed Capital Formation (GFCF).

In the first part of the empirical analysis, all variables were tested against stationarity and order of integration. In the second part, variables were tested through the ARDL bounds testing approach to see if there was any co-integration between the examined series or not. In the third part of the empirical analysis long-run and short-run analysis was performed to see if there was a long-run or short-run co-integration between examined series. In the fourth part of empirical analysis, Gross Domestic Product (GDP) and Foreign Direct Investment (FDI) were tested through the Granger causality test to see the causal relationship between the analyzed series.

According to empirical findings, it was supported that there was a co-integration between the analyzed variables, the long-run and short-run analysis shows a significant and positive relationship between independent and dependent variables in long-term and short-term, and finally Granger causality test indicates bidirectional causality among analyzed variables. Overall, considering all obtained empirical findings, it was supported that FDI is a significant contributor to economic growth in Turkey.

## 6.2 The impact of FDI on the Unemployment rate

## **Results of the second model**

**The objective of research 2:** To establish the effect of FDI inflows on the Unemployment rate of Turkey

**RQ2:** Does the inflow of foreign direct investments reduces the unemployment rate?

**H2:** Foreign Direct Investment negatively correlated with the unemployment rate

**Research methods:** Augmented Dickey-Fuller unit root test, Phillips–Perron unit root test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run), Granger Causality test

The second phase of the statistical findings is presented and discussed in this section. The descriptive statistics and correlation values of the utilized series have been described in Table 15. The correlation matrix findings indicate a not so strong but positive relationship between FDI, CPI and UEMP. The preliminary information about the relationships between series which have been gained through the descriptive statistics and correlation matrix is not enough to determine the relationship between analyzed variables. In order to get more reliable outcomes about the relationship among analyzed series, the statistical methods will be utilized in the dissertation.

**Table 15: Descriptive statistics and correlation of the variables**

	UEMP	FDI	CPI
Mean	2.331378	2.415403	9.577273
Median	2.337991	2.585822	9.070000
Maximum	2.673286	41.58270	22.70000
Minimum	2.091009	-23.88768	4.270000
Std. Dev.	0.153703	12.67748	3.512023
Skewness	0.470300	0.544393	1.897695
Kurtosis	2.318687	3.797520	7.070619
Jarque-Bera	3.091266	4.174258	9.577273
Correlation			

UEMP	1		
FDI	0.117473	1	
CPI	0.145505	-0.257516	1

Source: Author's own calculations

### **The ADF and PP Unit Root Test**

The specified time series might be stationary either at level or at the first difference, and might be the mix, which is known as an advantage of the ARDL bounds testing approach. As a result, each series has been subjected to the Augmented Dickey-Fuller and Phillips-Perron unit root tests.

Based on the ADF and PP test results, the null hypothesis assuming that UEMP has a unit root at levels must be supported since T-statistics are minor than critical values at a one percent significance level, and UEMP's p-values are greater than 0.05. After taking the 1<sup>st</sup> difference, the sequences remained stationary based on the following results: T-statistics greater than critical values at the five percent significance level and p-values lesser than 0.05. The null hypothesis that the UEMP has a unit root at 1<sup>st</sup> difference must be discarded referring to the statistics. As a consequence of the Augmented dickey – fuller and PP unit root test findings, the UEMP was integrated into order one (I (1)), which means the investigated variable is stationary at first difference.

Based on the ADF and PP test results, the null hypothesis assuming that FDI and CPI has a unit root at levels must be rejected since t-statistics are greater than critical values at a one percent significance level, and series' p-values are lesser than 0.05. The null hypothesis that the series have a unit root at level must be accepted referring to the statistics. As a consequence of the ADF and PP tests findings, the FDI and CPI were integrated of order zero (I (0)) which means FDI and CPI is stationary at level. (See Table 16).

**Table 16: The outcomes of the ADF and PP test**

ADF (Intercept and trend)			
Variables	Level	1 <sup>st</sup> difference	Decision
UEMP	[-2.719485] (0.2333)	[-3.994241]** (0.0148)	I(1)
FDI	[-7.175774]*** (0.0000)		I(0)
CPI	[-5.135005]*** (0.0006)		I(0)
PP (Intercept and trend)			
Variables	Level	1 <sup>st</sup> difference	Decision
UEMP	[-1.877836] (0.6522)	[-4.099097]** (0.0112)	I(1)
FDI	[-7.175774]*** (0.0000)		I(0)
CPI	[-7.448318]*** (0.0000)		I(0)

Note: In the ADF and PP unit root tests, the parentheses indicate p-values, brackets indicate t-statistics, and asterisks (\*\*\*, \*\*) denotes statistical significance at a 1%, and 5% level respectively. The critical values for this test at 1%, and 5% significance level are -4.14, and -3.49 respectively.

Source: Author`s own calculations

### The Zivot-Andrews unit root test (structural break)

The Zivot-Andrews unit root test was employed in order to check stationarity of the series considering one structural break. The ZA unit root test has examined the structural breaks in the analyzed series via three different models (A - intercept, B - trend, C - intercept and trend). The null hypothesis ( $H_0$ ) of this test states that, the series has a unit root and the series are non-stationary. The alternative hypothesis ( $H_1$ ) of this analysis states that the series does not have unit root and the series are stationary.

**Table 17: The outcomes of the Zivot-Andrews test**

Variables	ZA unit root test					
	Model A (Intercept)		Model B (Trend)		Model C (Intercept and trend)	
	t-statistic	Break year	t-statistic	Break year	t-statistic	Break year
UEMP	-4.678673*	2011Q3	-4.599983*	2014Q1	-5.335280**	2014Q2
FDI	-7.295840***	2010 Q4	-5.099453**	2015 Q2	-8.385223***	2009 Q2

CPI	-6.156256***	2010Q2	-6.612687***	2010Q4	-6.987592***	2011Q3
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Note: The critical values for Model A and B at 1%, 5%, and 10% significance level are -5.34, -4.93, and -4.58 respectively. The critical values for Model C at 1%, 5%, and 10% significance level are -5.57, -5.08, and -4.82 respectively. The asterisks (\*\*\*, \*\*, \*) denote statistical significance at a 1%, 5%, and 10% level respectively.

Source: Author's own calculations

The results of the ZA unit root test shows that the t-statistics of the model is more than critical values of 1%, 5%, and 10% significance level which means that the null hypothesis that the series has a unit root and the series are non-stationary should be rejected and the alternative hypothesis that the series does not have unit root and the series are stationary should be accepted. Thus, according to the findings of the ZA test the series are stationary with a one structural break (See Table 17).

### **ARDL bounds testing approach**

In comparison with other cointegration analyses, the advantage of the ARDL approach is that the series might be integrated of order zero  $I(0)$ , one  $I(1)$  or might be mixed. In our case, the series is mixed, integrated of order zero  $I(0)$  and one  $I(1)$ . Thus, the next step would be to run the ARDL model. The ARDL bounds test output shows that the F value is not below the lower bounds and above the upper bounds at 1% significance level. The null hypothesis that there is no cointegration between the analyzed series should be rejected and the alternative hypothesis that there is cointegration between the analyzed series must be accepted. Thus, based on the results of the ARDL bounds test there is a presence of cointegration between FDI, CPI, and UEMP in Turkey from 2006 to 2019. Therefore, R-squared is 0.98 which means the dependent variable is explained by 98 percent. Moreover, the probability of (F-statistic) is 0.00000, which means F-statistic is significant. Additionally, the Durbin-Watson statistic is 2.209649 (close to two and slightly more is desirable). Based on the information mentioned above, it can be stated that the data fitted the model well (See Table 18).

**Table 18: The results of the ARDL cointegration test**

Estimated equation			UEMP <sub>t</sub> = f(FDI <sub>t</sub> , CPI <sub>t</sub> )	
Autoselected lag structure			(9,6,10)	
Cointegration	F value	Significance	Critical values	
			lower bounds I(0)	upper bounds I(1)
Yes	5.612699	10%	2.63	3.35
		5%	3.1	3.87
		1%	4.13	5
R-squared			0.985366	
Adjusted R-squared			0.962124	
F-statistic			42.39597	
Prob(F-statistic)			0.00000	
Durbin-Watson stat			2.209649	

Source: Author`s own calculations

After confirming the cointegration between the analyzed series via the ARDL cointegration test, the next step will be the estimation of the long-term and short-term coefficients. The findings which are listed in Table 16 indicate the long-term and short-term effects of the unemployment rate (UEMP), foreign direct investment (FDI), consumer price index (CPI) in Turkey. According to the long-run analysis findings, a 1% increase in FDI will lead to a decrease in the unemployment rate (UEMP) by 38% (coefficient: -0.3879280), because FDI is statistically significant ( $p < 0.05$ ) and the coefficient is negative in sign. In another hand, a 1% increase in CPI will lead to an increase in the unemployment rate (UEMP) by 79 % (coefficient: 0.797234), because CPI is statistically significant ( $p < 0.05$ ) and the coefficient is positive in sign. Based on the outputs of the short-term analysis, a 1% increase in FDI will lead to a decrease in the unemployment rate (UEMP) by 21% (coefficient: -0.216158), because FDI is statistically significant ( $p < 0.05$ ) and the coefficient is negative in sign. In another hand, a 1% increase in CPI will lead to a decrease in the unemployment rate (UEMP) by 3 % (coefficient: -0.032093), because CPI is statistically

significant ( $p < 0.05$ ) and the coefficient is negative in sign. Therefore, the coefficient of the error correction model  $\text{CointEq}(-)$  is negative in sign and not greater than 1 (coefficient:  $-0.376215$ ), and statistically significant ( $p$ -value is  $0.00$ , less than  $0.05$ ) which demonstrates that the unemployment rate (UEMP) adjusts towards its long-term equilibrium at the rate of  $37\%$ . Based on the results of the long-run analysis there is a significant and negative cointegration between the FDI and UEMP, and a significant and positive cointegration between the CPI and UEMP. According to the results of the short-run analysis, there is a significant and negative cointegration between the FDI and UEMP, and a significant and negative cointegration between the CPI and UEMP. (See Table 19).

**Table 19: The long-run and short-run analysis**

Long-run analysis			Short-run analysis		
Variable	Coefficient	T-statistic and Prob.	Variable	Coefficient	T-statistic and Prob.
FDI	-0.387928	[-5.790475] *** (0.00)	D(FDI)	-0.216158	[-3.980015] *** (0.00)
CPI	0.797234	[7.849856] *** (0.00)	D(CPI)	-0.032093	[-2.606560] *** (0.01)
Constant	4.855760	[2.817937] *** (0.01)	CointEq(-1)	-0.376215	[-5.139329] *** (0.00)

Note: In the table, the parentheses indicate  $p$ -values, brackets indicate  $t$ -statistics, and asterisk (\*\*\*) denotes statistical significance at a 1% level.

## Diagnostic tests

### Serial correlation LM test

$H_0$ : There is no serial correlation in the residual

**Table 20: Breusch-Godfrey Serial Correlation LM Test**

Statistic ( $\chi^2$ )	Prob.
1.395399	0.2375

Source: Author's own calculations



We should accept the Null Hypothesis that there is no serial correlation in the residual, based on the p-value of the observed R-squared value (p-values >0.05; 0.23) (See Table 20).

### Heteroscedasticity test

H<sub>0</sub>: There is no heteroskedasticity in the residual

**Table 21: Breusch-Pagan-Godfrey`s heteroskedasticity test**

Statistic ( $\chi^2$ )	Prob.
26.64171	0.4832

Source: Author`s own calculations

We should accept the Null Hypothesis that there is no heteroskedasticity in the residual, based on the p-value of observed r-squared value (p values >0.05; 0.48) (See Table 21).

### Normality test

H<sub>0</sub>: Residual is normally distributed

**Table 22: Jarque-Bera Normality Test**

Statistic ( $\chi^2$ )	Prob.
0.828115	0.6609

Source: Author`s own calculations

We should accept the Null Hypothesis that residual is normally distributed, based on the p-value of Jarque-Bera value (p-value >0.05; 0.66) (See Table 22).

### Ramsey RESET test

H<sub>0</sub>: Model is stable (correctly specified)

**Table 23: Ramsey RESET test**

Statistic ( $\chi^2$ )	Prob.
1.525995	0.2345

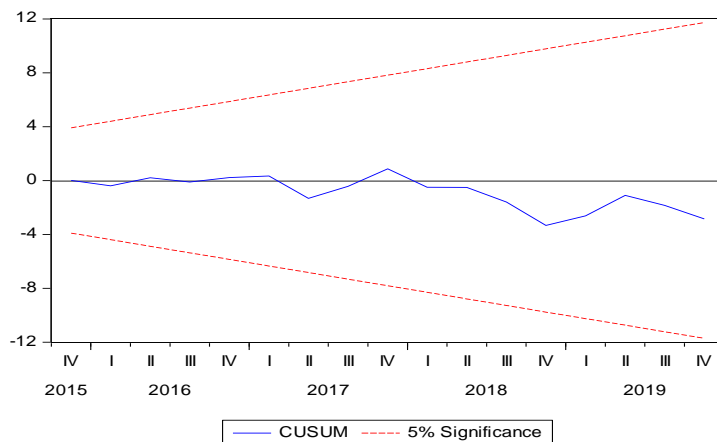
Source: Author`s own calculations

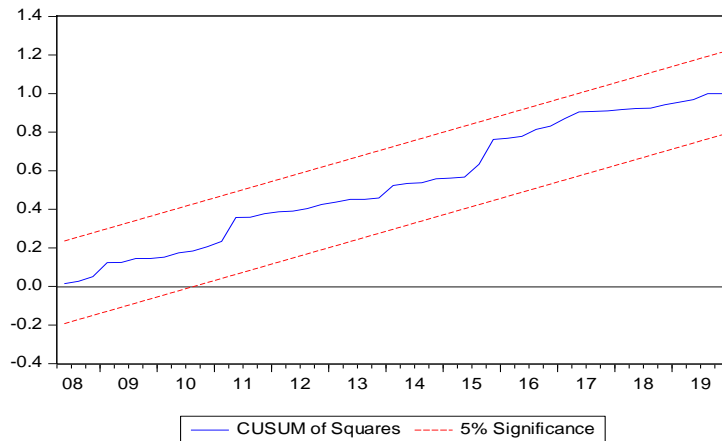
We should accept the Null Hypothesis that the model is correctly specified, based on the p-value of the F-statistic (p values > 0.05; 0.23) (See Table 23).

### CUSUM stability test

In order to check the stability in the examined long-term model, the CUSUM and CUSUMSQ stability tests will be employed in the model. According to the output of the CUSUM and CUSUMSQ tests, the estimated model is steady during the relevant period (See Figure 2).

**Figure 2: The CUSUM and CUSUMSQ stability tests**





Source: Author`s own calculations

### Granger Causality test

As earlier stated, the Granger Causality analysis will also investigate the relation between UEMP and FDI. The test's null hypothesis is stated below:

H<sub>0</sub>: FDI does not Granger Cause UEMP, and

H<sub>0</sub>: UEMP does not Granger Cause FDI

When the probability value is lesser than 0.05 percent, the null hypothesis is discarded.

**Table 24: Granger Causality test for FDI and UEMP**

Pairwise Granger causality test, Lags 1, Sample 2006 Q2-2019 Q4, Observations 54		
Null Hypothesis	F-statistic	Prob.
FDI does not Granger Cause UEMP	5.45718	0.0235
UEMP does not Granger Cause FDI	1.07210	0.3054

Source: Author`s own calculations

Based on the Granger causality analysis findings, the null hypothesis of no causality from FDI to UEMP must be declined predicated on a P-value=0.02 (less than 0.05). As a result, the second null hypothesis of no causal relationship from UEMP to FDI must be confirmed predicated on a P-value = 0.30 (more than 0.05). Hence, the Granger causality test findings

revealed a unidirectional causality running from FDI to UEMP. (see Table 24).

Overall, the findings match the literature and the premises of the study. The overview is described in-depth as obeys:

**RQ2:** Does the inflow of foreign direct investments reduces the unemployment rate?

**H2:** Foreign Direct Investment negatively correlated with the unemployment rate

In response to the second question of the study, the H2 was investigated via different empirical tests. The unemployment rate (UEMP) as a dependent variable was explained with Foreign Direct Investment (FDI), and Consumer Price Index (CPI).

In the first part of the empirical analysis, again, all variables were tested against stationarity and order of integration. In the second part, variables were tested through the ARDL bounds testing approach to see if there was any co-integration between the examined series or not. In the third part of the empirical analysis long-run and short-run analysis was performed to see if there was a long-run or short-run co-integration between examined series. In the fourth part of empirical analysis, unemployment rate (UEMP) and Foreign Direct Investment (FDI) were tested through the Granger causality test to see the causal relationship between the analyzed series.

According to empirical findings, it was supported that there was a co-integration between the analyzed variables, the long-run analysis indicates a significant and negative cointegration between the FDI and UEMP, and a significant and positive cointegration between the CPI and UEMP, the short-run analysis shows a significant and negative cointegration between the FDI and UEMP, and a significant and negative cointegration between the CPI and UEMP, and finally, the Granger causality test indicates bidirectional causality among analyzed variables. According to the obtained findings, it

was supported that FDI inflows negatively correlated with the unemployment rate in Turkey.

### 6.3 The impact of FDI on Trade (Export)

#### **Results of the third model (first part)**

**The objective of research 3:** To establish the effect of FDI inflows on the Trade of Turkey

**RQ3:** Do FDI inflows positively affect the Trade of Turkey?

**H3:** Fostering Foreign Direct Investment positively affects Trade (Export and Import)

**Research methods:** Augmented Dickey-Fuller unit root test, Phillips–Perron unit root test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run), Granger Causality test

The third phase of the statistical findings is presented and discussed in this section. The descriptive statistics and correlation values of the utilized series have been described in Table 25. The correlation matrix findings indicate a not so strong but positive relationship between FDI and EXP, and a strong and positive relationship between GDP and EXP. The preliminary information about the relationships between series which have been gained through the descriptive statistics and correlation matrix is not enough to determine the relationship between analyzed variables. In order to get more reliable outcomes about the relationship among analyzed series, the statistical methods will be utilized in the dissertation.

**Table 25: Descriptive statistics and correlation of the variables**

	EXP	FDI	GDP
Mean	1.620071	2.415403	0.872256
Median	1.775871	2.585822	2.373952

Maximum	18.14356	41.58270	13.10307
Minimum	-19.51142	-23.88768	-22.24286
Std. Dev.	6.046521	12.67748	6.535354
Skewness	-0.153574	0.544393	-1.254966
Kurtosis	5.491040	3.797520	5.231847
Jarque-Bera	14.43663	4.174258	25.85205
Correlation			
EXP	1		
FDI	0.055158	1	
GDP	0.550121	0.514992	1

Source: Author`s own calculations

### The ADF and PP Unit Root Test

The specified time series might be stationary either at level or at the first difference, which is known as an advantage of the ARDL bounds testing approach. As a result, each series has been subjected to the Augmented Dickey – Fuller and Phillips–Perron unit root tests. Based on the ADF and PP test results, the null hypothesis assuming that variables have a unit root at levels must be rejected since t-statistics are greater than critical values at a five percent significance level, and series` p-values are lesser than 0.05. The null hypothesis that the series has a unit root at level must be discarded referring to the statistics. As a consequence of the ADF and PP tests findings, the investigated variables were integrated of order zero (I (0)) which means all the series are stationary at level. (See Table 26).

**Table 26: The outcomes of the ADF and PP test**

Variables	ADF (Intercept and trend)		PP (Intercept and trend)	
	Level	Decision	Level	Decision
EXP	-[6.350738]*** (0.0000)	I(0)	-[6.283596]*** (0.0000)	I(0)
FDI	[-7.175774]*** (0.0000)	I(0)	[-7.175774]*** (0.0000)	I(0)
GDP	[-5.061275]*** (0.0007)	I(0)	[-5.897364]*** (0.0000)	I(0)

Note: In the ADF and PP unit root tests, the parentheses indicate p-values, brackets indicate t-statistics, and asterisks (\*\*\*, \*\*) denotes statistical significance at a 1%, and 5% level

respectively. The critical values for this test at 1%, and 5% significance level are -4.14, and -3.49 respectively.

Source: Author`s own calculations

### The Zivot-Andrews unit root test (structural break)

The Zivot-Andrews unit root test was employed in order to check stationarity of the series considering one structural break. The ZA unit root test has examined the structural breaks in the analyzed series via three different models (A - intercept, B - trend, C - intercept and trend). The null hypothesis ( $H_0$ ) of this test states that, the series has a unit root and the series are non-stationary. The alternative hypothesis ( $H_1$ ) of this analysis states that the series does not have unit root and the series are stationary.

**Table 27: The outcomes of the Zivot-Andrews test**

Variables	ZA unit root test					
	Model A (Intercept)		Model B (Trend)		Model C (Intercept and trend)	
	t-statistic	Break year	t-statistic	Break year	t-statistic	Break year
EXP	-5.693655***	2008 q4	-6.578393***	2009 q1	-5.693655***	2008 q4
FDI	-7.295840***	2010 Q4	-5.099453**	2015 Q2	-8.385223***	2009 Q2
GDP	-5.174486**	2010 q2	-6.089854***	2009 q1	-6.003069***	2009 q3

Note: The critical values for Model A and B at 1%, 5%, and 10% significance level are -5.34, -4.93, and -4.58 respectively. The critical values for Model C at 1%, 5%, and 10% significance level are -5.57, -5.08, and -4.82 respectively. The asterisks (\*\*\*, \*\*, \*) denote statistical significance at a 1%, 5%, and 10% level respectively.

Source: Author`s own calculations

The results of the ZA unit root test shows that the t-statistics of the model is more than critical values of 1%, 5%, and 10% significance level which means that the null hypothesis that the series has a unit root and the series are non-stationary should be rejected and the alternative hypothesis that the series does not have unit root and the series are stationary should be accepted. Thus, according to the findings of the ZA test the series are stationary with a one structural break (See Table 27).

## ARDL bounds testing approach

In comparison with other cointegration analyses, the advantage of the ARDL approach is that the series might be integrated of order zero  $I(0)$  or one  $I(1)$ . In our case, all the series are integrated of order zero  $I(0)$ . Thus, the next step would be to run the ARDL model. The ARDL bounds test output shows that the F value is not below the lower bounds and above the upper bounds at 5% significance level. The null hypothesis that there is no cointegration between the analyzed series should be rejected and the alternative hypothesis that there is cointegration between the analyzed series must be accepted. Thus, based on the results of the ARDL bounds test there is a presence of cointegration between FDI, GDP, and EXP in Turkey from 2006 to 2019. Therefore, R-squared is 0.93 which means the dependent variable is explained by 93 percent. Moreover, the probability of (F-statistic) is 0.000000, which means F-statistic is significant. Additionally, the Durbin-Watson statistic is 1.898327 (close to two or slightly more is desirable). Based on the information mentioned above, it can be stated that the data fitted the model well (See Table 28).

**Table 28: The results of the ARDL cointegration test**

Estimated equation			EXPR <sub>t</sub> = f(FDI <sub>t</sub> , GDP <sub>t</sub> )	
Autoselected lag structure			(1,2,2)	
Cointegration	F value	Significance	Critical values	
			lower bounds I(0)	upper bounds I(1)
Yes	4.130823	10%	2.63	3.35
		5%	3.1	3.87
		1%	4.13	5
R-squared			0.931597	
Adjusted R-squared			0.920957	
F-statistic			87.55240	
Prob(F-statistic)			0.000000	
Durbin-Watson stat			1.898327	

Source: Author's own calculations



After confirming the cointegration between the analyzed series via the ARDL cointegration test, the next step will be the estimation of the long-term and short-term coefficients. The findings which are listed in Table 25 indicate the long-term and short-term effects of export of goods and services (EXP), foreign direct investment (FDI), and gross domestic product (GDP) in Turkey. According to the long-run analysis findings, a 1% increase in FDI, and GDP will lead to the increase in EXP by 67%, and 4% (coefficients: 0.678685, 0.040696), respectively, because all variables are statistically significant ( $p < 0.05$ ) and coefficients are positive in sign. Based on the outputs of the short-term analysis, there is no short run cointegration between FDI and EXP ( $p$ -value is greater than 0.05, 0.20). In another hand, there is a presence of a short run cointegration between GDP and EXP, 1% increase of the GDP will lead to an increase in EXP by 0.4% (coefficient: 0.004026), because GDP is significant ( $p < 0.05$ ) and coefficients are positive in sign. Therefore, the coefficient of the error correction model CointEq(-1) is negative in sign (-0.151666) (should be not greater than 1) and statistically significant ( $p$ -value is 0.00, less than 0.05) which demonstrates that the export of goods an services (EXP) adjusts towards its long-term equilibrium at the rate of 15%. Based on the results of the long-run analysis there is a significant and positive cointegration between the analysed series. In contradiction to long-run analysis results the findings of the short-run analysis shows negative results (See Table 29). Thus, there is no short-run cointegration between FDI and EXP (statistically insignificant ( $p > 0.05$ ), 0.20).

**Table 29: The long-run and short-run analysis**

Long-run analysis			Short-run analysis		
Variable	Coefficient	T statistic and Prob.	Variable	Coefficient	T statistic and Prob.

FDI	0.678685	[4.418081]** (0.00)	D(FDI)	0.087987	[1.278815] (0.20)
GDP	0.040696	[2.451984]** (0.01)	D(GDP)	0.004026	[3.869274]** (0.00)
Constant	7.879202	[1.795952] (0.07)	CointEq(-1)	-0.151666	[-4.198195]** (0.00)

Note: In the table, the parentheses indicate p-values, brackets indicate t-statistics, and asterisk (\*\*) denotes statistical significance at a 5% level.

Source: Author`s own calculations

## Diagnostic tests

### Serial correlation LM test

H<sub>0</sub>: There is no serial correlation in the residual

**Table 30: Breusch-Godfrey Serial Correlation LM Test**

Statistic ( $\chi^2$ )	Prob.
0.749633	0.6874

Source: Author`s own calculations

We should accept the Null Hypothesis that there is no serial correlation in the residual, based on the p-value of the observed R-squared value (p-values >0.05; 0.68) (See Table 30).

### Heteroscedasticity test

H<sub>0</sub>: There is no heteroskedasticity in the residual

**Table 31: Breusch-Pagan-Godfrey`s heteroskedasticity test**

Statistic ( $\chi^2$ )	Prob.
13.79850	0.0549

Source: Author`s own calculations

We should accept the Null Hypothesis that there is no heteroskedasticity in the residual, based on the p-value of observed r-squared value (p values >0.05; 0.054) (See Table 31).

### Normality test

H<sub>0</sub>: Residual is normally distributed

**Table 32: Jarque-Bera Normality Test**

Statistic ( $\chi^2$ )	Prob.
0.004428	0.9977

Source: Author`s own calculations

We should accept the Null Hypothesis that residual is normally distributed, based on the p-value of Jarque-Bera value (p-value >0.05; 0.99) (See Table 32).

### Ramsey RESET test

H<sub>0</sub>: Model is stable (correctly specified)

**Table 33: Ramsey RESET test**

Statistic ( $\chi^2$ )	Prob.
0.684356	0.4126

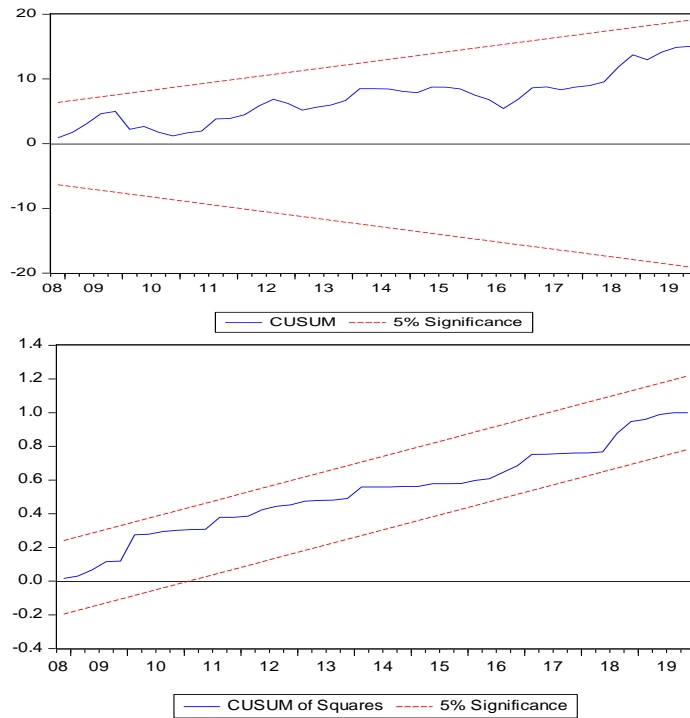
Source: Author`s own calculations

We should accept the Null Hypothesis that the model is correctly specified, based on the p-value of the F-statistic (p values > 0.05; 0.41) (See Table 33).

### CUSUM stability test

In order to check the stability in the examined long-term model, the CUSUM and CUSUMSQ stability tests will be employed in the model. According to the output of the CUSUM and CUSUMSQ tests, the estimated model is steady during the relevant period (See Figure 3).

**Figure 3: The CUSUM and CUSUMSQ stability tests**



Source: Author`s own calculations

### Granger Causality test

As earlier stated, the Granger Causality analysis will also investigate the relation between EXP and FDI. The test's null hypothesis is stated below:

$H_0$ : FDI does not Granger Cause EXP, and

$H_0$ : EXP does not Granger Cause FDI

When the probability value is lesser than 0.05 percent, the null hypothesis is discarded.

**Table 34: Granger Causality test for FDI and EXP**

Pairwise Granger causality test, Lags 2, Sample 2006 Q3-2019 Q4, Observations 52		
Null Hypothesis	F-statistic	Prob.
FDI does not Granger Cause EXP	6.36278	0.0036
EXP does not Granger Cause FDI	1.63266	0.2063

Source: Author`s own calculations

Based on the Granger causality analysis findings, the null hypothesis of no causality between FDI and EXP must be declined predicated on a P-value=0.003 (less than 0.05). As a result, the second null hypothesis of no causal relationship from EXP to FDI must be confirmed predicated on a P-value = 0.20 (more than 0.05). Hence, the Granger causality test findings revealed a unidirectional causality running from FDI to EXP. (See Table 30).

Overall, the findings match the literature and the premises of the study. The overview is described in-depth as obeys:

**RQ3:** Do FDI inflows positively affect the trade of Turkey?

**H3:** Fostering Foreign Direct Investment positively affects Trade (Export and Import)

In response to the second question of the study, the H3 was investigated via different empirical tests. The Export of goods and services (EXP) as a dependent variable was explained with Foreign Direct Investment (FDI), and Gross Domestic Product (GDP).

In the first part of the empirical analysis, again, all variables were tested against stationarity and order of integration. In the second part, variables were tested through the ARDL bounds testing approach to see if there was any co-integration between the examined series or not. In the third part of the empirical analysis long-run and short-run analysis was performed to see if there was a long-run or short-run co-integration between examined series. In the fourth part of empirical analysis, export of goods and services (EXP) and Foreign Direct Investment (FDI) were tested through the Granger causality test to see the causal relationship between the analyzed series.

According to empirical findings, it was supported that there was a co-integration between the analyzed variables, the long-run analysis indicates a significant and positive cointegration between the FDI, GDP and EXP, the short-run analysis shows a insignificant and negative cointegration between

the FDI and EXP, and a significant and positive cointegration between the GDP and EXP, and finally, the Granger causality test indicates bidirectional causality among analyzed variables. According to the obtained findings, it was supported that FDI inflows positively affects the export in Turkey.

#### 6.4 The impact of FDI on Trade (Import)

##### **Results of the third model (second part)**

**The objective of research 3:** To establish the effect of FDI inflows on the trade of Turkey

**RQ3:** Do FDI inflows positively affect the Trade of Turkey?

**H3:** Fostering Foreign Direct Investment positively affects Trade (Export and Import)

**Research methods:** Augmented Dickey-Fuller unit root test, Phillips–Perron unit root test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run), Granger Causality test

The third phase (second part) of the statistical findings is presented and discussed in this section. The descriptive statistics and correlation values of the utilized series have been described in Table 35. The correlation matrix findings indicate a strong and positive relationship between FDI, EXP, and IMP. The preliminary information about the relationships between series which have been gained through the descriptive statistics and correlation matrix is not enough to determine the relationship between analyzed variables. In order to get more reliable outcomes about the relationship among analyzed series, the statistical methods will be utilized in the dissertation.

**Table 35: Descriptive statistics and correlation of the variables**

	IMP	FDI	EXP
Mean	1.279461	2.415403	1.620071
Median	1.242840	2.585822	1.775871
Maximum	17.58139	41.58270	18.14356
Minimum	-31.01304	-23.88768	-19.51142
Std. Dev.	7.899029	12.67748	6.046521
Skewness	-1.312106	0.544393	-0.153574
Kurtosis	7.100668	3.797520	5.491040
Jarque-Bera	54.31702	4.174258	14.43663
Correlation			
IMP	1		
FDI	0.332918	1	
EXP	0.743101	0.055158	1

Source: Author`s own calculations

### The ADF and PP Unit Root Test

The specified time series might be stationary either at level or at the first difference, which is known as an advantage of the ARDL bounds testing approach. As a result, each series has been subjected to the Augmented Dickey – Fuller and Phillips–Perron unit root tests. Based on the ADF and PP test results, the null hypothesis assuming that variables have a unit root at levels must be rejected since t-statistics are greater than critical values at a five percent significance level, and series` p-values are lesser than 0.05. The null hypothesis that the series has a unit root at level must be discarded referring to the statistics. As a consequence of the ADF and PP tests findings, the investigated variables were integrated of order zero (I (0)) which means all the series are stationary at level. (See Table 36).

**Table 36: The outcomes of the ADF and PP test**

ADF (Intercept and trend)			PP (Intercept and trend)	
Variables	Level	Decision	Level	Decision
IMP	[-4.748627]*** (0.0018)	I(0)	-4.507555*** (0.0000)	I(0)
FDI	[-7.175774]*** (0.0000)	I(0)	-7.175774*** (0.0000)	I(0)
EXP	[-6.350738]*** (0.0000)	I(0)	-6.283596*** (0.0000)	I(0)

Note: In the ADF and PP unit root tests, the parentheses indicate p-values, brackets indicate t-statistics, and asterisk (\*\*\*) denotes statistical significance at a 1% level.

Source: Author`s own calculations

### The Zivot-Andrews unit root test (structural break)

The Zivot-Andrews unit root test was employed in order to check stationarity of the series considering one structural break. The ZA unit root test has examined the structural breaks in the analyzed series via three different models (A - intercept, B - trend, C - intercept and trend). The null hypothesis ( $H_0$ ) of this test states that, the series has a unit root and the series are non-stationary. The alternative hypothesis ( $H_1$ ) of this analysis states that the series does not have unit root and the series are stationary.

**Table 37: The outcomes of the Zivot-Andrews test**

Variables	ZA unit root test					
	Model A (Intercept)		Model B (Trend)		Model C (Intercept and trend)	
	t-statistic	Break year	t-statistic	Break year	t-statistic	Break year
IMP	-5.192504**	2009 Q2	-4.929630*	2009 Q1	-5.863969***	2009Q2
FDI	-7.295840***	2010 Q4	-5.099453**	2015 Q2	-8.385223***	2009Q2
EXP	-5.693655***	2008 Q4	-6.578393***	2009 Q1	-5.693655***	2008Q4

Note: The critical values for Model A and B at 1%, 5%, and 10% significance level are -5.34, -4.93, and -4.58 respectively. The critical values for Model C at 1%, 5%, and 10% significance level are -5.57, -5.08, and -4.82 respectively. The asterisks (\*\*\*, \*\*, \*) denote statistical significance at a 1%, 5%, and 10% level respectively.

Source: Author`s own calculations

The results of the ZA unit root test shows that the t-statistics of the model is more than critical values of 1%, 5%, and 10% significance level which means that the null hypothesis that the series has a unit root and the series are non-stationary should be rejected and the alternative hypothesis that the series does not have unit root and the series are stationary should be accepted. Thus, according to the findings of the ZA test the series are stationary with a one structural break (See Table 37).

### ARDL bounds testing approach

In comparison with other cointegration analyses, the advantage of the ARDL approach is that the series might be integrated of order zero  $I(0)$  or one  $I(1)$ . In our case, all the series are integrated of order zero  $I(0)$ . Thus, the



next step would be to run the ARDL model. The ARDL bounds test output shows that the F value is not below the lower bounds and above the upper bounds at 1% significance level. The null hypothesis that there is no cointegration between the analyzed series should be rejected and the alternative hypothesis that there is cointegration between the analyzed series must be accepted. Thus, based on the results of the ARDL bounds test there is a presence of cointegration between FDI, EXP, and IMP in Turkey from 2006 to 2019. Therefore, R-squared is 0.72 which means the dependent variable is explained by 93 percent. Moreover, the probability of (F-statistic) is 0.000000, which means F-statistic is significant. Additionally, the Durbin-Watson statistic is 1.894519 (close to two or slightly more is desirable). Based on the information mentioned above, it can be stated that the data fitted the model well (See Table 38).

**Table 38: The results of the ARDL cointegration test**

Estimated equation			IMP <sub>t</sub> = f(FDI <sub>t</sub> , EXP <sub>t</sub> )	
Autoselected lag structure			(2,1,1)	
Cointegration	F value	Significance	Critical values	
			lower bounds I(0)	upper bounds I(1)
Yes	12.64489	10%	2.63	3.35
		5%	3.1	3.87
		1%	4.13	5
R-squared			0.724642	
Adjusted R-squared			0.688725	
F-statistic			20.17584	
Prob(F-statistic)			0.000000	
Durbin-Watson stat			1.894519	

Source: Author`s own calculations

After confirming the cointegration between the analyzed series via the ARDL cointegration test, the next step will be the estimation of the long-term and short-term coefficients. The findings which are listed in Table 34 indicate the long-term and short-term effects of import of goods and services (IMP),

foreign direct investment (FDI), and export of goods and services (EXP) in Turkey. According to the long-run analysis findings, a 1% increase in FDI, and EXP will lead to the increase in IMP by 43%, and 100% (coefficients: 0.438787, 1.001297), respectively, because all variables are statistically significant ( $p < 0.05$ ) and coefficients are positive in sign. Based on the outputs of the short-term analysis, a 1% increase in FDI and EXP will lead to an increase in the import of goods and services (IMP) by 21% and 76% (coefficient: 0.211804, 0.762126) respectively, because FDI and EXP is statistically significant ( $p < 0.05$ ) and the coefficient is positive in sign. Therefore, the coefficient of the error correction model CointEq(-1) is negative in sign (-0.788683) (should be not greater than 1) and statistically significant (p-value is 0.00, less than 0.05) which demonstrates that the import of goods and services (IMP) adjusts towards its long-term equilibrium at the rate of 78%. Based on the results of both the long-run and short-run analysis there is a significant and positive cointegration between the analysed series. (See Table 39).

**Table 39: The long-run and short-run analysis**

Long-run analysis			Short-run analysis		
Variable	Coefficient	T-statistic and Prob.	Variable	Coefficient	T-statistic and Prob.
FDI	0.438787	[3.521454] *** (0.0010)	D(FDI)	0.211804	[5.718158]*** (0.0000)
EXP	1.001297	[5.114472] *** (0.0000)	D(EXP)	0.762126	[9.890898]*** (0.0000)
Constant	-1.471863	[-1.649214] (0.1059)	CointEq(-1)*	-0.788683	[-7.340180]*** (0.0000)

Note: In the table, the parentheses indicate p-values, brackets indicate t-statistics, and asterisk (\*\*\*) denotes statistical significance at a 1% level.

Source: Author`s own calculations

## Diagnostic tests

### Serial correlation LM test

H<sub>0</sub>: There is no serial correlation in the residual

**Table 40: Breusch-Godfrey Serial Correlation LM Test**

Statistic ( $\chi^2$ )	Prob.
0.240633	0.8866

Source: Author's own calculations

We should accept the Null Hypothesis that there is no serial correlation in the residual, based on the p-value of the observed R-squared value (p-values >0.05; 0.88) (See Table 40).

### Heteroscedasticity test

H<sub>0</sub>: There is no heteroskedasticity in the residual

**Table 41: Breusch-Pagan-Godfrey's heteroskedasticity test**

Statistic ( $\chi^2$ )	Prob.
8.099471	0.2309

Source: Author's own calculations

We should accept the Null Hypothesis that there is no heteroskedasticity in the residual, based on the p-value of observed r-squared value (p values >0.05; 0.23) (See Table 41).

### Normality test

H<sub>0</sub>: Residual is normally distributed

**Table 42: Jarque-Bera Normality Test**

Statistic ( $\chi^2$ )	Prob.
2.181490	0.3359

Source: Author's own calculations

We should accept the Null Hypothesis that residual is normally distributed, based on the p-value of Jarque-Bera value (p-value >0.05; 0.33) (See Table 42).

### **Ramsey RESET test**

H<sub>0</sub>: Model is stable (correctly specified)

**Table 43: Ramsey RESET test**

Statistic ( $\chi^2$ )	Prob.
2.022873	0.0766

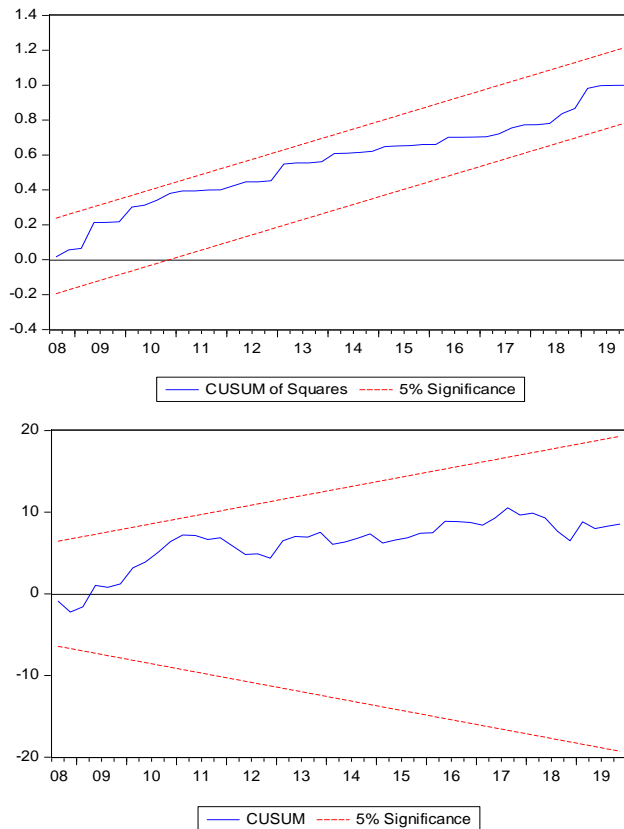
Source: Author's own calculations

We should accept the Null Hypothesis that the model is correctly specified, based on the p-value of the F-statistic (p values > 0.05; 0.07) (See Table 43).

### **CUSUM stability test**

In order to check the stability in the examined long-term model, the CUSUM and CUSUMSQ stability tests will be employed in the model. According to the output of the CUSUM and CUSUMSQ tests, the estimated model is steady during the relevant period (See Figure 4).

**Figure 4: The CUSUM and CUSUMSQ stability tests**



Source: Author`s own calculations

### Granger Causality test

As earlier stated, the Granger Causality analysis will also investigate the relation between IMP and FDI. The test's null hypothesis is stated below:

$H_0$ : FDI does not Granger Cause IMP, and

$H_0$ : IMP does not Granger Cause FDI

When the probability value is lesser than 0.05 percent, the null hypothesis is discarded.

**Table 44: Granger Causality test for FDI and IMP**

<b>Pairwise Granger causality test, Lags 2, Sample 2006 Q2-2019 Q4, Observations 53</b>		
<b>Null Hypothesis</b>	<b>F-statistic</b>	<b>Prob.</b>
FDI does not Granger Cause IMP	6.36278	0.0036
IMP does not Granger Cause FDI	1.63266	0.2063

Source: Author`s own calculations

Based on the Granger causality analysis findings, the null hypothesis of no causality running from FDI to IMP must be rejected predicated on a P-value = 0.0036 (less than 0.05). As a result, the second null hypothesis of no causal relationship between IMP and FDI must be accepted predicated on a P-value = 0.20 (more than 0.05). Hence, the Granger causality test findings revealed a unidirectional causality running from FDI to IMP (See Table 44).

Overall, the findings match the literature and the premises of the study. The overview is described in-depth as obeys:

**RQ3:** Do FDI inflows positively affect the Trade of Turkey?

**H3:** Fostering Foreign Direct Investment positively affects Trade (Export and Import)

In response to the third question of the study, the H3 was investigated via different empirical tests. The import of goods and services (IMP) as a dependent variable was explained with Foreign Direct Investment (FDI), and export of goods and services (EXP).

In the first part of the empirical analysis, again, all variables were tested against stationarity and order of integration. In the second part, variables were tested through ARDL bounds test approach to see if there was any co-integration between the analyzed series or not. In the third part of the empirical analysis long-run and short-run analyses was run to see if there was a long-run or short-run causality between the analyzed series. In the fourth part of the empirical analysis, import of goods and services (IMP) and Foreign Direct Investment (FDI) were tested through the Granger causality test to see the causal relationship between the analyzed series.

According to empirical findings, it was supported that there was a co-integration among the examined variables, long-run and short-run relationship between analyzed series, and a unidirectional causal relationship from FDI to IMP. According to the obtained findings, it was supported that FDI inflows positively affects imports in Turkey.

Overall, the summary table of the status of the hypothesized is mentioned below (See Table 45).

**Table 45: The summary table of justified hypothesis**

<b>№</b>	<b>Hypothesis</b>	<b>Status</b>
<b>1</b>	Foreign Direct Investment has a positive impact on Gross Domestic Product	Approved
<b>2</b>	Foreign Direct Investment negatively correlated with unemployment rate	Approved
<b>3</b>	Fostering Direct Investment has a positive effect on Trade (Export and Import)	Approved

Source: Author`s own invention

## 7. Conclusion and Policy Recommendations

### 7.1 Conclusion

With the growth in capital movements in the international market, foreign capital begins to produce in any country where investments will be more appropriate.

Countries consider FDI inflows as a means of financing for current account imbalances to support development and growth and thus prioritize measures to enhance FDI inflows. Foreign direct investment, which offers the buildup of the nation's wealth where it is directed, initiates competitiveness with technical progress and knowledge management, generates jobs, and improves export prospects. It also makes a substantial contribution to resolving nations' balance of payments imbalances, economic progress, and prosperity. Therefore, foreign direct investment is one essential factor that must be assessed, particularly for developing nations.

They also have specific detrimental ramifications on the economy of the hosting nation in contrast to their economic benefits. In general, major

international firms make foreign direct investments, and the competitive dominance of big firms generates an economic monopoly, and it might be a challenge to transmit their earnings. Foreign direct investment may lead to concerns such as more significant foreign influence over the nation's economy and the failure of indigenous enterprises to cope with foreign corporations. Nevertheless, in its beneficial impact on the economy, it would be more logical for the priority industries to provide investment inputs instead of prohibiting foreign investment under some circumstances.

The intention of the investments of the holder of foreign direct investment is to advantage from various inducements such as connectivity to raw material in foreign nations, profit from inexpensive labor, seek for alternative marketplaces, use of low price variables, avoidance of tariff barriers and quotas, waivers of taxes, shipping expenses.

The country is regarded as a long-term foreign investment in other forms, such as the purchase of a firm, the provision of the initial stock of a recently created business, or the increase of the current stock of the corporation. Foreign investors are sensitive to the choice of the nation in which they will engage. It considers aspects like macroeconomic stability, capacity for labor, geographic placement, taxation, rewards, and degree of growth for the country to be engaged. The growth stages are essential. Since it is tough to engage in a country that has not finished its infrastructural operations, that is why the capital revenue proportion is large. Since the investment needed to be collected for a production item is expensive, nations that have not finished their infrastructural development are not favored. A growth phase spanning from cognitive processing to fissile substance and service industry investment has been carried out in international investment that commenced with natural and agricultural endowments. Tourism, data preparation, car industry, telecommunications, and nuclear materials have emerged industries that draw international investments, particularly after



1985. The services industry, particularly the trade and finance industries, has been the most considerable foreign direct investment activity in recent decades.

Since the 1950s, studies in Turkey have begun to produce progressive laws that modify the perspective of foreign resources and choose a means to profit from international investment for economic development. Particularly after the 2008 financial crisis, the trend of FDI inflow to developing economies has dramatically altered the worldwide FDI inflows ratio. When glancing at countries' rankings regarding FDI from 2005, Turkey's achievement in Eastern and Central Europe stands out, and Turkey was one of the top ten economies in those areas for attracting foreign direct investment<sup>12</sup>. These accomplishments were made possible by maximizing existing capability and emphasizing regulations that support FDI as a source of prudent finance for long-term development.

Investors consider various aspects, for instance, the quality of the countries' legislation in which they invest, the barriers to market access, the level of basic economic principles, the country's level of international competition, and the business climate when selecting a destination for the FDI. The comparatively superior standing of the nations in such fields means that they receive more significant FDI than other countries.

The main objective of this study was to examine the impact of FDI on economic growth, unemployment rate, and trade (import and export) in Turkey. The research consists of three parts. The first part is the effect of FDI on economic growth, and the second part is the effect of FDI on the

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<sup>12</sup> Presidency of the Republic of Turkey, Investment office  
<https://www.invest.gov.tr/en/pages/turkey-fdi-strategy.aspx>

unemployment rate, and the third part is the effect of FDI on Trade (Export and Import).

Considering the theoretical literature review about FDI and the economic growth relationship, we can confirm a positive impact on the economic growth of both investing and host countries. Contrary to theories, considering empirical literature review, we can see different results based on the picked period, region, and utilized empirical methods. The results of the analysis of the ARDL bounds test approach have indicated a co-integration among FDI and GDP. Additionally, the outputs of the long-term test have shown a long-run cointegration between FDI and GDP, the results of Error Correction Model have shown a short-run cointegration between analyzed series and the results of the last analysis, the Granger causality test has shown a bidirectional causality from FDI to GDP and vice versa. All together, we can interpret the empirical results as follows, with liberalization processes which have been started after 1980<sup>th</sup> to the present time and other factors, the Turkish state was able to attract FDI inflows and to boost economic growth with the help of FDI in the long term, and short term. Hence, we can conclude the theory that FDI inflows positively impact economic growth in Turkey.

We can observe different scenarios considering theoretical and empirical literature review about FDI and the unemployment rate relationship. Analyzing the theory and practice, we can conclude that the effects of FDI on the unemployment rate depend on the forms of investments in host countries. The results of the analysis of the ARDL bounds test approach have indicated a cointegration between FDI and UEMP. Additionally, the outputs of the long-term test have shown a long-run cointegration between FDI and UEMP, the results of Error Correction Model have shown the absence of a short-run cointegration between analyzed series, and the results of the last analysis, the Granger causality test, has shown a

unidirectional causality running from FDI to UEMP. Generally summarizing the study's empirical results, we can observe a positive influence of Foreign Direct Investment on the unemployment rate in Turkey. According to the Central Bank of the Republic of Turkey statistics, the number of firms with international capital increased from 5.600 in 2002 to 73.675 in 2020<sup>13</sup>. Matching the statistics mentioned above with gained empirical results, we can confirm that FDI has a beneficial influence on the unemployment rate in Turkey. Because in those circumstances, foreign investors will need to hire new workers for their new businesses, which will decrease the unemployment rate in the host country.

On the other hand, FDI positively affects the unemployment rate based on the sectors where investors are focused. Service and manufacturing (using labor-intensive technology) sectors are labor-intensive sectors which means that the role of human resources in those sectors is excellent. Based on statistics of the Central Bank of the Republic of Turkey, service and manufacturing sectors from 2005 to 2020 are the most foreign investment oriented sectors regarding Turkey<sup>14</sup>.

Considering theories about FDI and Trade relationships, we can say that they are positively related. Additionally, most empirical literature as well showed a positive relationship between FDI and trade. In order to prove our assumptions, we needed further estimations via empirical calculations. Thus, now let us glance at the results of the third part of the statistical analysis of this study. The findings of the analysis of the ARDL bounds test approach have indicated a cointegration between FDI and Trade (EXP and IMP). Additionally, the outputs of the long-run analysis have shown a long-run relationship between FDI and Trade (EXP and IMP). The results of the Error

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<sup>13</sup> The Investment Office of the Presidency of the Republic of Turkey  
<https://www.invest.gov.tr/en/whyturkey/pages/fdi-in-turkey.aspx>

<sup>14</sup> The Investment Office of the Presidency of the Republic of Turkey  
<https://www.invest.gov.tr/en/pages/turkey-fdi-strategy.aspx>

Correction Model have shown a short-run relationship just between FDI and IMP. There was no short-run relationship between FDI and IMP. Furthermore, the results of the last analysis, the Granger causality test has shown a unidirectional causality running from FDI to EXP and a bidirectional causality running from FDI to IMP and vice versa. Due to the cheap skilled labor force, transportation costs, etc., the international parent company will produce its products in Turkey and then export them to the origin country. Hence, considering the information above, we can conclude that FDI inflows boost export in Turkey. Therefore, to manufacture products, foreign parent companies need to import raw materials or some unique parts to Turkey to accomplish the assembling. Thus, considering the information mentioned earlier, we can conclude that FDI inflows boost imports in Turkey. Overall, the FDI inflows into the Turkish economy have a positive impact on Trade (Export and Import).

## 7.2 Policy recommendations

Turkey has no outflow foreign direct investment, excellent market prospects, skilled workers, and highly liberal legislation. Moreover, relative to the rival countries, they have no significant drawbacks. Nevertheless, in respect of inbound and outbound foreign direct investment and several developing economies, it is evident that it remains below developing economies. Particular goals must be maintained to increase Turkey's relative competitiveness and implement the essential laws and legislation. Countries' comparative advantage depends on modern techniques in emerging economies, shifting from labor-based production to technology-based production in the manufacturing sector. The danger of thieving or duplicating the advanced technologies to be given to the nation does impede the investment of other countries and decrease the country's worldwide appeal.

One of the major problems that adversely affect Turkish foreign market competitiveness and exports emerges concerning ownership rights. Nevertheless, the difficulty here has mainly to do with execution and can lead to investing in low-tech and import-dependent industries.

Foreign direct investment is being invested in areas that create more extraordinary value addition and improve manufacturing capability by enhancing resource efficiency for local companies. The preservation of intellectual property rights must thus be accorded significant attention. Considering prosperous nation precedents and people who work in the labor market, it would be more exact to target foreign investment to high-value-added industries. Since these investments are mainly aimed at producer industries and the manufacturing sector's export capability, investments are also extensive. Regarding human capital training and growth in the sphere of software and information services in Turkey, the industry is considered a field with growth prospects. However, as regards measures to encourage the growth of these industries, the desired outcome has not yet been reached. It is recommended that proper surroundings and climate be formed to allow the advancement of established frameworks in a manner that enhances one another in order to assign more assets to R&D investigations in the regions which generate high added value than industries, to strengthen the company's R&D and innovation capacity and to promote R&D incentives.

Foreign investment must thus choose initiatives in areas that would improve the country's competitiveness as a target market rather than how it is created. In order to develop long-term laws and policies that will not divert local entrepreneurs from the nation's investment, political and economic stability must also be guaranteed when recruiting similar investments. We need to overcome the judicial framework's shortcomings and remove the issues emerging from its execution.

## 8. The novelty of the research

Investigation of the relationship between the FDI and macroeconomic variables (GDP, Trade, and Unemployment rate) was a favorite topic for researchers for decades. However, considering the literature, there are still no responses to questions concerning some distinct countries for a specific period. On the contrary, with that past literature which has contained old methods, models, datasets, and respectively results which were actually for those periods, this research will be a good example that will fill those gaps with new unique methods, models, datasets, and correspondingly results which will give us a clear view about current circumstances. New scientific results of this study are the followings:

1. By utilizing the time series quarterly datasets and well-known statistical methods as ADF unit root test, PP unit root test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run) and Granger causality tests I have observed the positive effect of foreign direct investment on economic growth regarding Turkey.
2. Employing the time series quarterly datasets and popular statistical methods of current period as ADF unit root test, PP unit root test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run), and Granger causality tests I have observed the positive effect of foreign direct investment on unemployment rate regarding Turkey.
3. Applying the time series quarterly datasets and new notorious statistical methods as ADF unit root test, PP unit root test, Zivot Andrews Unit Root Test, ARDL bounds testing approach (long-run), Error Correction Model (short-run), and Granger causality

tests I have demonstrated the positive effect of foreign direct investment on trade (import, export) regarding Turkey.

Thus, considering all the information mentioned above, this research will upgrade the currently limited literature with the most recent and well-known empirical analysis.

## 9. Limitations of the research

Considering the research limitations, it can be said that it was complicated to find out the needed macroeconomic variables due to the scarce datasets. By observing this limited data, it can be seen that this topic still needs additional literature. Therefore, not all variables were found to increase the number of variables in the built model and run additional statistical tests. Another aspect was to utilize the political variables into the built statistical model due to the tremendous impact of political issues in the economy of the host countries but it was not possible due to the shortage of the available data.

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## 11. Article Publication

### 11.1 The published articles relating to the topic of the dissertation

1. Karimov, M., & Belkania, D. (2018). A Case Study of Foreign Direct Investment and Economic Growth Relationship in Turkey. *European Journal of Marketing and Economics*, 1(3), 97-101.

2. Karimov, M. (2019). The Impact of Foreign Direct Investment on Trade (Export and Import) in Turkey. *European Journal of Interdisciplinary Studies*, 5(1), 6-17.
3. Karimov, M., Paradi-Dolgos, A., & Pavlin, R. K. (2020). An Empirical Analysis of the Relationship between Foreign Direct Investment and Unemployment Rate: Evidence from Turkey. *European Research Studies*, 23(1), 453-464.

## 11.2 The published articles not relating to the topic of the dissertation

1. Belkania, D., & Karimov, M. (2018). An Empirical Examination of the Export-Led Growth Theory Regarding Georgia. *European Journal of Marketing and Economics*, 1(3), 88-96.
2. Karimov, M. (2020). An Empirical Analysis of the Relationship among Foreign Direct Investment, Gross Domestic Product, CO2 Emissions, Renewable Energy Contribution in the context of the Environmental Kuznets Curve and Pollution Haven Hypothesis Regarding Turkey. *European Journal of Engineering and Formal Sciences*, 4(1), 110-123.

## 12. Curriculum Vitae (Cv)

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Obtained his bachelor`s degree in Accounting and Audit from Azerbaijan State Agricultural University, Ganja, Azerbaijan in 2010-2014. He obtained his master`s degree in Regional and Environmental Economics, from Kaposvar University, Kaposvar, Hungary in 2016-2018.