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THE EFFECT OF FDI ON DEVELOPING COUNTRIES

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## The Effect of FDI on Developing Countries

### Doğrudan Yabancı Yatırımların Gelişmekte Olan Ülkelere Etkisi

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## **ABSTRACT**

With the development of the globalization process, capital transfer between countries has become very important. In this context, it is seen that developing countries mostly focus on foreign direct investments in terms of their economic income. The liberalization trend in the 1980s, caused capital mobility has grown rapidly and widely. In this process, foreign direct investments started to flow to developing countries, firstly to benefit from the natural resources of these countries and to benefit from cheap labor, and then to be partner of market shares of these countries. After these developments, the real impact of foreign direct investments on the economic growth of host countries has been discussed continuously. Although there is no concurrence on the relationship between foreign direct investment and economic growth in the economics literature, the increasing view in recent years shows that foreign direct investments contribute to economic growth. This thesis investigates the effect of foreign direct investments on the economic growth of 29 developing countries during the period of 1991-2017 by using the panel data analysis method.

Keywords: Foreign Direct Investments, Economic Growth, Developing Counties, Effect on Growth

## **ÖZET**

Küreselleşme sürecinin gelişmesiyle birlikte ülkeler arası sermaye transferi çok önemli hale gelmiştir. Bu bağlamda gelişmekte olan ülkelerin ekonomik gelirleri açısından daha çok doğrudan yabancı yatırımlara ağırlık verdikleri görülmektedir. 1980'lerdeki liberalleşme eğilimi, sermaye hareketliliğinin hızla ve yaygın olarak büyümesine neden olmuştur. Bu süreçte, önce bu ülkelerin doğal kaynaklarından yararlanmak ve ucuz işgücünden yararlanmak, ardından bu ülkelerin pazar paylarına ortak olmak için doğrudan yabancı yatırımlar geliştirmekte olan ülkelere akmaya başlamıştır. Bu gelişmelerden sonra, doğrudan yabancı yatırımların ev sahibi ülkelerin ekonomik büyümeleri üzerindeki gerçek etkisi sürekli tartışılmaktadır. Ekonomi literatüründe doğrudan yabancı yatırımlar ile ekonomik büyüme arasındaki ilişki konusunda bir fikir birliği olmamasına rağmen, son yıllarda artan görüş doğrudan yabancı yatırımların ekonomik büyümeye katkı sağladığını göstermektedir. Bu tez, doğrudan yabancı yatırımların geliştirmekte olan 29 ülkenin 1991-2017 dönemi için yapılan uygulamalı analiz sonuçlarına göre ekonomik büyümesi üzerindeki etkisini panel veri analizi yöntemini kullanarak incelemektedir.

Anahtar Kelimeler: Doğrudan Yabancı Yatırımlar, Ekonomik Büyüme, Gelişmekte Olan Ülkeler, Büyümeye Etkisi

## **INTRODUCTION**

With the globalization process, commercial, economic and technological boundaries became unclear and therefore capital transfers began to occur between different countries. Capital transfers through short-term portfolio investment and foreign direct investment (FDI) are particularly important for countries with insufficient national savings. Developing countries mostly prefer to take foreign direct investments. Because the short-term portfolio investments can cause an overvaluation of the host country's national currency, negatively affecting foreign exchange rates and disrupting the current account balance.

People who control the money can quickly withdraw the money when they decide to do this the host country's current account balance is not be stable. This situation may cause the crisis there to deepen (DPT, 1995). For this reason, developing countries generally campaign to take foreign direct investment. According to the International Monetary Fund's Balance of Payments Handbook, foreign direct investment is “an investment made to obtain a permanent benefit, an enterprise operating in an economy different from the investor's, the investor's goal is to have an effective say in the management of the enterprise.” (IMF, 1993)

The main reason for FDI is profit differences between regions. In other words, it is due to the overseas profit margin being greater than domestic earnings. The big part of these investments are made by multinational companies. These enterprises are managed by a single center and produce in other countries. FDI has many different significant roles in a country's development process. In developing countries, sufficient and necessary investment cannot be made as domestic savings rates are low and foreign savings rates are very low. Here, FDI helps to reduce domestic and international savings gaps. FDI provides technology transfer and employment growth to a country because the reason for investment is to produce goods and services. FDI helps to increase tax revenues as it increases the

value added. Moreover, FDI contributes to making production more qualitative and the workforce more efficient.

While FDI has some positive effects on the homeland economy, it also has some negative effects on it. Some of these negative impacts are external control over key sectors of the host country; disorganized economic integrity; lifting protective foreign trade restrictions; providing unfair competitive advantage; damaging the balance of payments through profit transfers and creating technological dependence for the host country (Seyidoğlu, 2003).

Multinational companies used to operate in industrialized countries where they mostly traded. According to this, it can be said that, from the beginning, foreign investments were mostly economic activities that took place between the developed countries themselves. Increasing mass production has also increased the raw material requirement of industrial enterprises. Accordingly, raw material sources were searched for needed new raw materials. At this point, developed countries started to trade with countries that were not as developed as themselves. Since the colonial approach prevailed in the early stages of the Industrial Revolution, industrialized states began to acquire these raw material needs much cheaper than the undeveloped states they colonized. Initially, they preferred the transportation of raw materials, but later they chose to produce in the states they colonized in order to reduce transportation costs. Thus, the first foreign direct investments (FDI) started in underdeveloped countries. The most important motivation of FDI by multinational companies has been the desire to be close to and / or to have raw material resources extending until today. Another factor that determines the FDIs from developed countries to countries that are not as developed as themselves is the low labor costs in these countries. Especially in countries that adopt the social state view, the social rights given to the laborers as well as the security and rights gained by the developing unions in developed countries caused the labor costs to be high in these countries. This has caused multinational companies to shift their production to underdeveloped countries

where capital accumulation is relatively low and social rights are not fully developed. Another factor that accelerates the realization of FDI towards developing countries is the potential market share in these countries. These three elements are the basic elements that are taken as basis for the entry of foreign direct investments to developing countries. Over time, many different elements have been expressed in different studies on the determinants of FDI in the economics literature, but it is a general acceptance that these three factors are the main reason for the orientation of FDI to developing countries at the beginning.

As can be seen, the birth of FDI and their orientation to developing countries took place in line with the development of capitalism and the needs of the capital class. For this reason, the initial orientation of FDI to developing countries is considered as a situation in favor of the country or company from which more capital comes from the host country. As a reflection of this view, economic ideas against foreign capital have been put forward. After the First World War, when nationalist ideas gained strength, statist policies were generally accepted and the view of establishing national capital in a way to exclude foreign capital was adopted. Accordingly, statist economic policies were developed and capital accumulation was tried to be achieved through the state channel. Following the Second World War, the European countries pursuing holistic political and economic policies instead of nationalist approaches slowed down the development of the idea of national capital. In addition to this, the economic policies and foreign aid pursued by the USA for the removal of the countries close to the Eastern Block from the USSR also opened the way for many developing countries to integrate into the free market economy by breaking the nationalist economic policies. With the liberalism movement that gained momentum towards the end of the 1970s, international trade also gained momentum. Finally, with the dissolution of the USSR in 1990, the end of the cold war, commercial moves aimed at gaining the large market share of the Eastern Bloc countries increased the activities of FDI. Of course, the characteristics, goals and effects of FDI on

economies have also changed in this long period. For this reason, the validity of the criticisms made against the FDIs at the beginning did not continue.

This situation is easily seen in the economics literature. Since the 1960s, views on the effects of FDI on developing economies have shifted in a positive direction. Especially the economic approaches of the 1980 period, when the liberalist movement accelerated and the post-1990 period, when the cold war ended, are mostly related to the positive effects of FDI on the developing economies. The main argument is that the technology and management knowledge brought together by FDI ensures the development of human capital in developing countries. Although there are negative opinions about the effect in economics literature, the majority of them adopt the view that there is a positive effect. The starting point of this study will be the view that FDIs have a positive effect on the economic growth of developing countries. And the purpose of the study is to show, with an econometric application, that FDI movements after 2000 positively affected the economic growth of developing countries.

In the first part of the study, the definition and characteristics of the concepts of EM and FDI, which are the subject of our study, will be included. After mentioning the different approaches for the definition of FDI, the concept of economic growth will be defined and its types will be revealed. After briefly mentioning the effects of economic growth, the economic growth models developed so far will be mentioned.

In the second part, the positive and negative economic effects of FDI on host country economies will be discussed and then the positive effect on economic growth will be briefly examined theoretically as a basis for practice. Finally, post-1990 applied studies on economic growth will be included and briefly evaluated.

The third part consists of an application for testing the opinion that FDIs have positive effects on economic growth in developing countries. Panel data

analysis method will be used in this study for the period of 2007-2017 for 40 developing countries, including Turkey. For this reason, after making a description of the panel data analysis, its features will be mentioned and information about this application will be included. After the summaries of the econometric analysis made using the E-Views 11 package program are reported, interpretations will be made for the findings.

## **1.CONCEPTS AND DEFINITIONS**

In this section, the concepts of developing country, foreign direct investment (FDI) and economic growth, which are the subject of the study and will be repeated frequently throughout the study, will be mentioned. First of all, definitions of the concepts will be given, then their diversification will be mentioned, and finally, theoretical approaches related to the concepts will be explained. In this way, everyone who examines the study will have knowledge about all the concepts that constitute the subject of the study.

### **1.1 DEVELOPING CONCEPT AND GENERAL CHARACTERISTICS**

The meaning of the word to develop can be expressed as growing, advancing, maturing and getting better. The concept of economic development, on the other hand, is that the economy under study shows progress and growth in terms of macro elements. In other words, economic development defines the same concept as economic growth in a narrow sense. Accordingly, the development of a country is measured by the growth of its economy. In the Dictionary of Economics Terms prepared by the Economic Terms Working Group of the Turkish Language Association (TDK), economic growth is defined as "the positive increase in the national income created in any country and the amount per capita from one year to the next" (Türk Dil Kurumu, 2007). As can be understood from the definition, economic growth is a numerical phenomenon.

Since economic growth is a numerical phenomenon and the level of economic development is measured by economic growth, what is the numerical

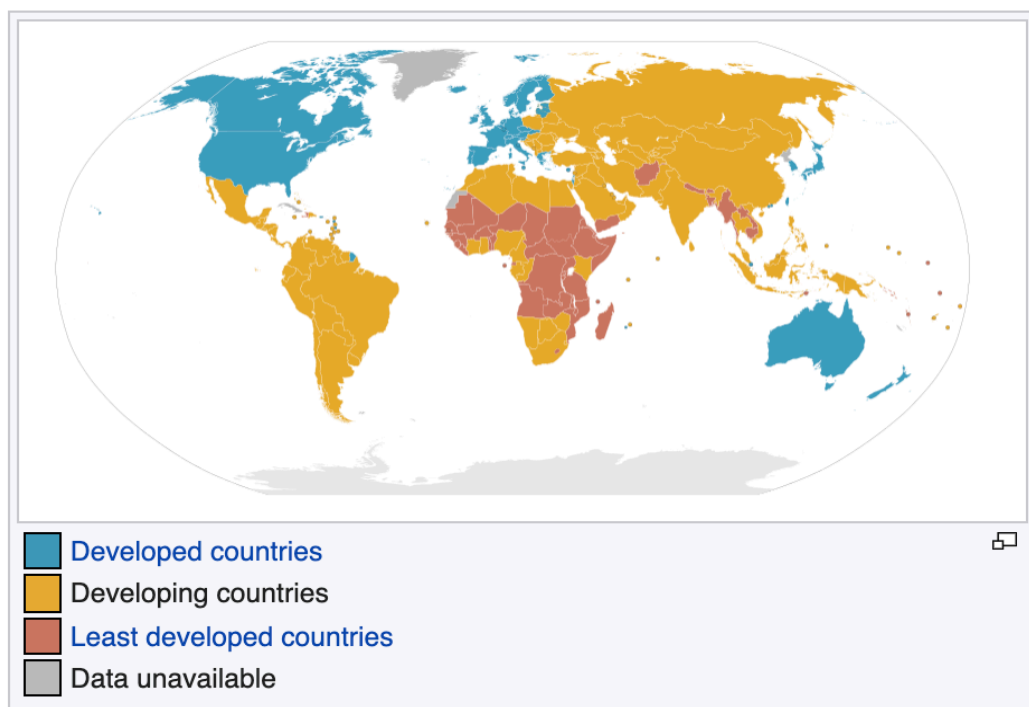
value that determines whether a country has developed sufficiently in economic terms? Since economic growth is a numerical phenomenon and the level of economic development is measured by economic growth, what is the numerical value that determines whether a country has developed sufficiently in economic terms? The development or underdevelopment of the countries has been tried to be expressed by putting forward the measures, but a definitive definition has not been reached. H.W. Singer's statement as "... *Underdevelopment looks like a giraffe, which is easy to recognize when seen, but difficult to describe ...*" reveals how difficult it is to define the distinction and concept in general with the criteria (Han & Kaya, 2002).

As it can be understood from here, a definition in which the exact criteria for underdevelopment and developing countries are put forward could not be made in the economics literature. The main reasons for this situation are that the geographical distribution of the underdeveloped countries is wide and the countries show historical, cultural, social and political differences both between each other and regionally. However, it is generally decided that the countries are developed or developing countries by taking the per capita Gross Domestic Product criterion into consideration.

Canbolat (2004) stated in his work on developing countries that the concept of development is dependent on individual and social value judgments, and therefore it is not possible to make a general definition. However, he emphasized that comparative definitions can be made by using various elements and the development levels of countries can be determined accordingly.

After the Second World War, the international community took on a bipolar structure. Accordingly, Eastern Bloc and Western countries are named as poles different from each other. There was also a community of countries that did not have the general characteristics of these poles, but did not have a common structure that would allow them to be grouped within themselves and defined a

wide geography. These countries have been defined as third world countries during the cold war period. With the end of the cold war and the acceleration of liberalization-globalization movements, the concept of developing country was used instead of the concept of the Third World. No matter which definition is met with which concept; it is possible for countries to have different existence with their social, economic and political structures. In this study, the concept of developing countries, which is a more recent definition, was used (Canbolat, 2004). When developing countries are mentioned, it is meant countries with middle level national income and low level national income countries determined by World Bank (WB) according to Atlas Method.



Classification of Countries by Development Level

Figure 1.1

In the application part of the study, a sample among these countries was chosen and the countries included in this sample will be expressed in the application part.

When trying to examine the common aspects of developing countries, it is possible to examine them under two headings: economic features and other features. Economic features can be grouped under headings such as macro economic and sectoral features. Other features include the demographic characteristics, socio-economic and socio-cultural characteristics of the country (Kaplan, 2004).

As stated in the above definitions, the basic criterion when measuring the development of nations is the national income level. However, as the quantitative size of the population of the countries potentially has the power to raise the national income level of the country in question, the national income value per individual is used when comparing the development of the countries as in the Atlas Method of the World Bank. National income per individual is lower in developing countries than in developed countries. The main reason for this situation is that the production increase of developing countries is low and the population growth rate is generally high (Durman, 2006).

If we come to the relation between the per capita national income of developed countries and developing countries; we see that the income gap between developed countries and developing countries is gradually widening. One of the reasons for this is that the difference in growth rate between developing countries and developed countries cannot even be kept constant rather than decreasing. This difference is widening in favor of developed countries day by day (Durman, 2006).

Other basic macroeconomic features of developing countries can be listed as;

- Due to the low national income per individual, the share of private consumption expenditures in the national income is very high, as a result of the obligation of individuals to allocate a large part of their income to their basic needs,

- Low share of investment expenditures in total expenditures,
- The share of imports in national income is higher than the share of exports in national income,
- Inflation and consequently high real interest rates,
- Low capacity to create new jobs and high unemployment rate,
- High foreign debt service ratio (Kaplan, 2004).

Considering the sectoral characteristics of developing countries, we see that the industries of the countries in this category are not sufficiently developed. In other words, developing countries are agricultural countries. While the share of agriculture in total production in less developed countries can reach 50%, this rate is around 10% in developed countries (Durman, 2006). In addition, when we look at the share of agriculture in total employment, we see that this rate is quite high in developing countries. However, the contribution of agriculture to the economy remains very low due to the fact that the productivity and the quality of the labor force are lower in developing countries compared to developed countries. This again leads to the widening of the difference between developed countries and developing countries.

## **1.2 DEFINITION AND TYPES OF FOREIGN INVESTMENTS**

The introduction of mass production with the industrial revolution and the gradual spread of this mode of production in the following period resulted in an increase in the amount of output obtained as a result of production activities. In addition, the diversification of the subject of production activities has increased the variety of products and the amount of production. This accelerated the spread of trade across borders. All these developments have increased the fluidity of production factors. Of course, the mobility of capital, which is the most fluid factor among production factors, has been realized in larger areas and faster than others. This situation provided the development of international capital mobility, which lasted until the 1st World War and was named the first globalization. The increase in the mobility of production factors as a result of globalization and

technological developments has brought forward the idea of obtaining the capital needed by countries with relatively lower levels of development from non-national sources in order to eliminate the development differences between countries, and in some periods this idea has become a necessity for countries to achieve this goal (Aktan & Vural, 2006). Accordingly, the acquisition of wealth by non-residents within the boundaries of the country in question is called international investment or, more commonly, foreign investment (Candemir, 2006).

The definition of foreign investment made by the Organization for Economic Co-operation and Development (OECD) is as follows; *“The share of the foreign investor in the company's earnings that are not distributed and transferred to the company to be reinvested, the foreign investor's purchase of stocks or debt in cash or in kind for long or short term, debts provided to the company by foreign investors, non-cash machinery and production rights by foreign investors and commercial and other loans provided to the company by the foreign investor.”*

Considering the Turkish Foreign Exchange Legislation; According to the Foreign Direct Investment Law numbered 4875, foreign investment defined as *“brought from abroad; cash capital in the form of convertible money traded by the Central Bank of the Republic of Turkey, company securities (excluding government bonds), machinery and equipment, industrial and intellectual property rights, provided domestically; through economic assets such as profit, revenue, money receivable or other rights related to investment with financial value, rights to exploration and extraction of natural resources used in reinvestment; means establishing a new company or opening a branch, acquiring shares other than securities exchanges, or becoming a shareholder in an existing company through acquisitions that provide at least 10% share or the same voting right from stock exchanges.”*

When attention is paid to both definitions; In the definition of foreign investment made by the OECD, the concept of foreign investment has been more generalized and its scope has been kept broadly, while the concept of foreign investment in the Turkish Foreign Exchange Legislation has been more pronounced, and its scope and nature are more narrowed. In addition to these two definitions, there are many approaches to define foreign investment in economics literature.

### **1.2.1 Foreign Investment Types**

While there are different approaches regarding the definition of foreign investments, as stated above, there is a general structure in their classification. Accordingly, it is possible to classify foreign investments as in Figure 1.2 below.

Accordingly, foreign investments are grouped as financial investments and direct investments. Investments are differentiated for the second time as short-term financial investments and long-term financial investments according to the time dimension. Long-term financial investments are also called portfolio investments. According to a general definition, financial investments are called portfolio investment and physical investments are called foreign direct investment or direct investment.

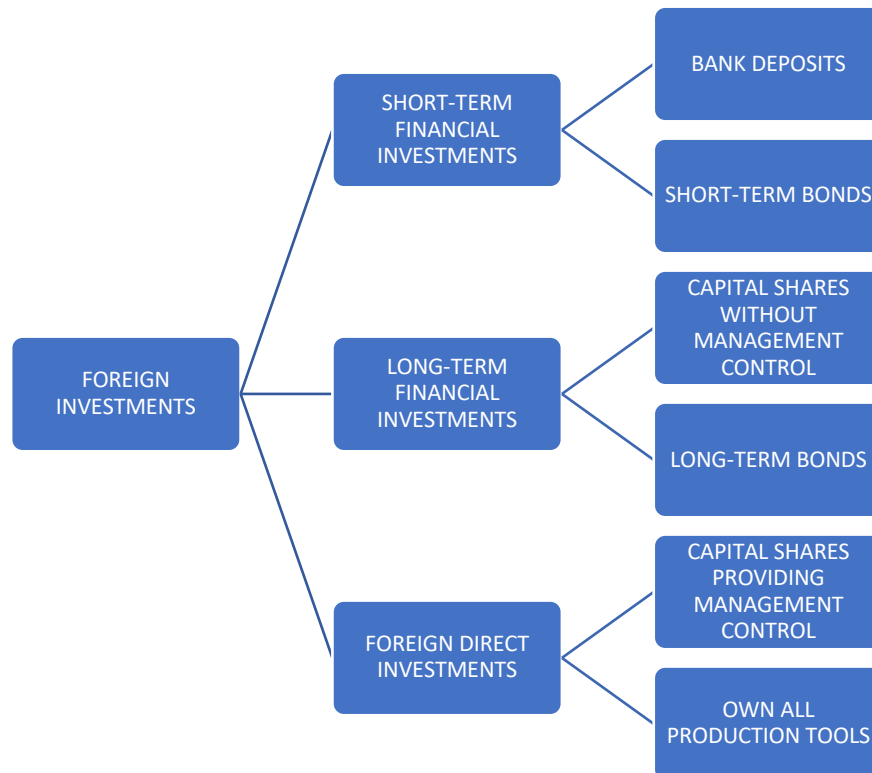


Figure 1.2 (Karaçuka, 2001)

### ***1.2.1.1 Portfolio Investments***

Portfolio investments are all kinds of activities carried out by non-resident persons or institutions to acquire financial wealth within the borders of that country. In short, portfolio investments; It is possible to define it as foreigners' investments in securities such as bonds, stocks and similar securities (Batmaz & Tunca, 2005).

According to another definition made by Liangsheng (1992), portfolio investments; consists of long-term bonds (which include contracts with a maturity of more than one year, excluding pledge contracts) and the acquisition of business shares that do not fall under the FDI class.

In a study, portfolio investment is defined as "Portfolio investments, the investments made through the purchase of stocks and bonds issued in a foreign

country from international capital markets, and thus the movement of capital from one country to another" (Kırankabeş, 2001).

#### ***1.2.1.2 Foreign Direct Investments***

Foreign direct investment is the undertaking of one or more international investors to undertake all of the investments within the borders of a country or to undertake the investments together in the form of a partnership with one or more companies residing in that country.

Foreign direct investments according to Seyidoğlu's (2003) definition; "A company establishes production facilities or purchases existing production facilities in countries outside of its headquarters in order to expand its production beyond the borders of the country where it is established".

On the other hand, Karluk (2003) in his study, underlines that foreign direct investments are made in the form of transfer of capital transfers from one country to another without any market transactions, and that a foreign element whose foreign direct investments are not domiciled in a country can increase the capital of a company in the country or buy a company or a newly established company. It is defined as the investments made in the form of providing the establishment capital. In addition, he emphasized that foreign direct investments also brought technology and business knowledge to the country with it.

Foreign direct investments consist of three elements. These are equity, reinvested earnings and internal borrowings. Equity refers to foreign investors buying shares from ventures outside of their own country. On the other hand, reinvested earnings, refer to the share of foreign investors, who have a share in realizing direct investment, in the undistributed profits. Finally, in-company borrowings refer to short or long-term debt funds between parties participating in direct investment or affiliated enterprises.

According to the definition of United Nations Committee of Trade and Development (UNCTAD), foreign direct investors can be private persons or legal entities. The investments of these investors can either express all or cover some of the investment activities in the country where they are not resident. It can come to mind here, "How much of the investments will be considered within the scope of foreign direct investment?" The answer to the question is expressed in the subsidiary definition of the definition of multinational companies, which UNCTAD made before defining foreign direct investments in the same report. Accordingly, the investments made by the foreign investor with at least ten percent of the company's capital are considered as foreign direct investment (UNCTAD, 1999).

In short, foreign direct investments are made by natural or legal persons not residing in a country to investments within the borders of that country; It refers to the participation of a company by purchasing, providing the founding capital for a new firm or by increasing the capital of an existing firm. These investments carry technology, business knowledge and control authority to the country where the investment is made, together with the capital (Kırankabeş, 2001).

### ***1.2.1.3 Key Differences Between Portfolio Investments and Foreign Direct Investment***

Even if portfolio investments are medium or long-term capital flows; There are some fundamental differences between international portfolio investment and foreign direct investment. These differences can be listed as follows;

- Portfolio investments are pure financial assets such as bonds and stocks. On the other hand, direct investments are real investments in factories, capital goods, land and inventories in which both capital and management are involved and the investor controls the use of the invested capital.
- For foreign direct investments, the firm established abroad is under the direct control of the parent company. In other words, the management staff of this company are formed by the persons sent from the main company. In portfolio

investments, there is no direct intervention in the management of the firm (Alkin, 1999).

- In foreign direct investments, besides foreign investor capital; While it brings values such as production technology, management knowledge and brand, investors only bring capital in portfolio investments.

- While investors can be real persons in portfolio investments, investors in foreign direct investments are generally large multinational companies (Gündoğan, 2002).

- If the portfolio investments are made through bonds, the payment terms of the interest and principal should be predetermined. If portfolio investments are made through stocks, the return will be in the form of royalties, service fees, commissions and transfer pricing, except for dividends and capital gains.

### **1.3 RELATIONSHIP BETWEEN DIRECT FOREIGN INVESTMENTS AND MULTI-NATIONAL COMPANIES**

Multinational companies (MNCs); are companies that carry out their functions in one or more countries, although their headquarters are located in a certain country. Strategic decisions regarding investment, production, research function and personnel policy of MNCs are taken at the headquarters where the main center is located. Therefore, the firm that owns and operates the physical capital in the foreign country in foreign direct investments is called a multinational company.

MNCs are very open companies for research and development and the funds they allocate for this are very high.

While MNCs provide some benefits to the countries in which they operate, they can also be harmful. These beneficial or harmful effects; It differs according to the characteristics of multinational companies and the social, political and economic infrastructure of the country where they operate.

For these reasons, there are opinions in economics literature both in favor of and against MNCs. Table 1.1 shows the pros and cons of MNCs depending on the subject titles.

	POSITIVE OPINIONS ON MULTINATIONAL COMPANIES	NEGATIVE OPINIONS ON MULTINATIONAL COMPANIES
In terms of Resource Usage	They can ensure that idle resources such as raw materials, mines and energy in underdeveloped countries participate in production.	There may be a waste of resources.
In terms of Capital Accumulation	MNCs can help to eliminate the lack of savings and foreign exchange of the country they invest in, with the capital they bring with them.	It may be possible to create economic agglomeration and political dependence from such capital relations for the country of operation.
In terms of Employment	MNCs create labor force employment by opening new business areas in the countries they operate. They can improve the knowledge and skills of the workforce in the countries they are visiting.	It can lead to cheap labor abuse and wage imbalances.
In terms of Technology Transfer	They can enable the spread of new technologies to the countries where they operate.	Instead of new technologies, they can buy outdated technologies in the countries they go to.
In Terms of Its Effects on Balance of Payments	It can make a positive contribution to the balance of payments by providing foreign currency input.	Guarantees granted to foreign investors, transfer pricing, low tendency to export from the local country may cause imbalances

		in the balance of payments.
In Terms of Socio-Political Effects	Since MNCs are economic organizations, they can produce goods and services that will make a profit by taking into account the economic, political and legal factors related to the local country.	The activities maximize the profits of the multinational corporation and the interests of its own country rather than improving the social welfare of the local country.

### Positive And Negative Opinions on Multi-National Companies

Table 1.1

#### 1.4 ECONOMIC GROWTH CONCEPT

In economic theory, economic growth forms the basis of macroeconomic analysis. It is accepted by many economists that long-term growth analysis is as important as business cycle analysis. The first important step in economic growth was taken in Adam Smith's "The Wealth of Nations". Later, David Ricardo, Thomas Malthus, Frank Ramsey, Allyn Young, Frank Knight, Joseph Schumpeter, Paul Romer and Robert Barro gradually contributed to the development of modern growth theories. The following section includes the definition of economic growth, its basic features, types, effects and the historical process it followed (Parasız, 2003).

##### 1.4.1 Definitions and Measurements of Economic Growth

Economic growth is defined as continuous increases in the level of total production in an economy over time as measured by its Gross Domestic Product (GDP).

The economic growth rate is a rate that shows what percentage of real domestic income increased compared to the previous year.

While measuring the economic growth rate of countries, the change from one year to the next is taken into account in the amount of goods and services produced. In other words, the growth rate; It is expressed by dividing the change in real GDP by the initial real GDP value and this expression is as shown in equation (1.1).

$$\frac{\Delta Y}{Y} = \frac{Y(t+1) - Y_t}{Y_t}$$

Equation 1.1

According to another definition, economic growth means the increase in the output over time. To be able to talk about economic growth, there must be an increase in output. If there is no increase in revenue, there will be an economic recession. In addition, the increase in output must be continuous for economic growth.

A GDP value that does not take into account population growth cannot reflect the increase in welfare of individuals in the society. Real GDP per capita growth is used as the measure that reflects the increase in welfare of the people in the society. In international comparisons, GDP per capita value is more important than the size of GDP.

While describing economic growth, it is necessary to put forward the long-term and short-term differences. In the short term, while inputs cannot be employed fully and effectively, increases in GDP per capita can be achieved through the increase in total demand in the country's goods and services markets. In this, especially the governments' expansionary monetary, fiscal, exchange rate and foreign trade policies may also have an effect. These short-term (independent from the production scale) fluctuations that occur in time constitute the subject of examination of conjuncture theories, not growth theories. However, in order to

talk about economic growth, the increases in GDP per capita must be continuous and real. The problem of economic growth is generally regarded as a long-term problem, as these increases can only be brought about by the expansion or more productive use of the country's production scale or potential in the long run. For this reason, growth is determined more on the supply side in macroeconomic terms (Kibritçioğlu A. , 1998). In other words, the reasons that cause a country's production possibilities curve to shift outward or the long-run aggregate supply curve to the right constitute the subject of economic growth theories.

As a result, the concept of economic growth; It refers to the increase or expansion of the labor force, natural resources and other production factors in the economy to provide more GDP per capita from year to year. Accordingly, the measure of economic growth is the changes that occur in the value of the country's real income. Therefore, the basic concepts that are the criteria of economic growth will be expressed below.

#### **1.4.2 Characteristics of Economic Growth**

When looking at the characteristics of growth, the first items that stand out are listed as follows.

- Growth is a numerical phenomenon and growth analysis shows a quantitative feature.
- Growth is a long-term phenomenon. In other words, economic growth has to take into account the changes and developments over time. Long-term analysis tools are used in its calculation (Ertekin & Günsoy, 2001).
- Growth represents a real increase.
- Growth is a dynamic phenomenon and cannot be explained in static terms.
- Growth shows a cumulative characteristic. In other words, the small rate difference in economic growth can cause a large difference in rates in the future. Even small differences cause significant changes, as the growth rate

increases exponentially over time. The cumulative effect of small annual growth increases is great (Kaya & Han, 2002).

### **1.4.3 Types of Economic Growth Concept**

Economic growth types can be grouped in 9 groups. These can be grouped under the following headings respectively;

#### ***1.4.3.1 Spontaneous Growth***

Spontaneous growth; While the intervention of the state in the economy is negligible, it is called that the factors of production take action in the market spontaneously and ensure the growth of the economy. This growth model; It takes place in the theories put forward by physiocrats, classical and neoclassical economists.

#### ***1.4.3.2 Planned Growth***

The purpose of planned growth, which indicates that the limited resources of the economy will be transferred to the production of which goods and how much, should be carried out within certain plans, the purpose is to increase productivity in all sectors of the economy.

#### ***1.4.3.3 Closed Growth***

In the closed growth, the country realizes economic growth by using its own resources in production. The aim of such growth is to eliminate the economic dependence of the country on foreign countries. In order for this growth model to work, the state must have the authority to intervene in the economy in all areas.

#### ***1.4.3.4 Open Growth***

In the open growth, the opposite of the closed growth model is true. Accordingly, if an economy achieves economic growth with explicit production factors abroad, it is called open growth. The healthy functioning of deficit growth is directly proportional to the state's departure from economic interventions.

International labor and capital have an important place in the open growth model. This type of growth is applied in all countries that have adopted a free market economy.

#### ***1.4.3.5 Stagnant Growth***

In the stagnant growth, the growth rate of the population in the economy and the rate of increase of the national income are equal. For this reason, there is no increase in per capita income. Because the increasing population neutralizes the real increase in income.

#### ***1.4.3.6 Exponential Growth***

If there is ever faster growth in an economy, this type of economic growth is called exponential growth. However, a country that realizes this kind of economic growth is rarely encountered in the world economy.

#### ***1.4.3.7 Biological Growth***

In the biological growth, first of all, there is a rapid growth in the economy and then the growth rate of the economy gradually decreases. Thus, a more sustainable economic growth will prevail compared to the exponential growth model.

#### ***1.4.3.8 Balanced Growth***

In the balanced growth, all sectors of the economy grow at similar rates. Thus, dependency between the sectors of the economy is preserved. This dependency is valid in both production and consumption. As long as this dependency is maintained, the economy will achieve growth without any structural change. For this reason, a balance must be established in all sectors in this type of growth. Otherwise, the economy faces waste of resources.

#### ***1.4.3.9 Unbalanced Growth***

The unbalanced growth type has been put forward based on the idea that the balanced growth model is not realistic. Economies exhibit a structure in which inequalities, imbalances and hierarchies are included. Therefore, in every economy, some regions or sectors grow more than others. This results in an unbalanced growth of the economy. According to the unbalanced growth model, the growth or development differences between regions or sectors are facilitating the growth / development of the economy.

### **1.5 FACTORS EFFECTING ECONOMIC GROWTH**

There are four important factors that determine economic growth. These; developments in capital, labor, natural resources and technology.

#### **1.5.1 Capital**

Capital is one of the factors that drive production and growth, and the source of capital is savings. Capital stock is the accumulation of means of production that the country has at a certain point in time. In the capitalist economy, capital is a property and enables its owners to get a share of production. If capital is defined as the sum of physical assets such as machines and factories, net investments are also new machines and factories that increase this stock.

Increase in the amount of capital increases the amount of output in the economy. The capital stock increases from one year to the next as long as it is higher than the depreciation rate (depreciation rate) of the capital stock. However, every investment undertaken to increase the capital stock will not be added to the capital stock until the project is completed (Tansel & Güngör, 1997). Existing factors of production, which are the products of classical economic thought, needed new definitions depending on the changes in economic and social life. Because, for the classical economic theory, which sees money as a net on economic activities, the concept of capital consisted of machinery, equipment, etc. used in production. However, the fact that there was no need for intense

knowledge in the production activities carried out in the said years and the thought that treating human as capital would be a humiliating attitude prevented the evaluation of human values as capital. In this context, Alfred Marshall opposed human capital because of the lack of a market for human capital. J. Mill also opposed human capital because wealth is for people and cannot be seen as a source of prosperity (Schultz, 1971).

As for today, positive values such as knowledge, skills, experience and dynamism, which emphasize the qualification of the person in general and that the person participating in production has, are accepted as human capital (Tansel & Güngör, 1997). Because these positive values enable the use of other factors used in production more efficiently and allow them to be used in production with the invention of new technologies. Therefore, rationality in economic activities increases and the country's economy can grow faster (Karagül, 2003).

Human capital can be defined as the sum of knowledge and skills contained by the workforce and refers to the investment made in manpower. Among the investments made in human capital; education and training activities, personal development programs and social services implemented for human capital (health services, social security and motivational studies) (Kibritçioğlu A. , 1998).

### **1.5.2 Labor**

Economic growth is determined by the amount labor and the quality of the labor. The size, structure and population growth of a country's population is one of the most important factors affecting economic growth. Because the structure and quantity of the population make up the labor supply. However, not everyone that makes up the population makes up the labor. The part of the population that is actively working in a business constitutes the labor and the ratio of this working population to the total population; It is expressed as the labor participation rate. Difficulties are also encountered in calculating the labor stock. Because there are great differences between the skills, experience and education levels of the labor

in the economy. Therefore, simple models based on growth theories start from the concept of a homogeneous labor and accept the labor as a fixed percentage of the population. In addition, they assume that the population and therefore the labor are increasing at a constant speed and with an external effect (Ertekin & Günsoy, 2001).

### **1.5.3 Natural Resources**

When it comes to natural resources, all kinds of land available in nature (agricultural soil, factory and workplace soil, residential areas, etc.), underground and aboveground wealth; mines, forests, rivers, seas and lakes, solar and wind energy. The most important feature of the soil factor is that its amount is scarce and cannot be reproduced and transported elsewhere. Studies show that there is an inequality between countries in terms of the distribution of natural resources. However, the number of countries that turn natural resources into sustainable growth is very limited. Therefore, natural resources contribute to economic growth, but they are not sufficient in determining growth alone.

### **1.5.4 Technological Growth**

Technological development is one of the important elements used in explaining economic growth, and its importance is emphasized more in the recent economic growth literature. In short, technology is the main factor that increases productivity in the composition of production factors. Technology causes rapid increases in production capacity as it enables the use of resources more effectively and efficiently in the economy.

Technological development can be defined as a new production method or the emergence of a new product. It can be said that factor productivity may result from innovations in production methods, that is, the effective organization or

management of companies. Mass production technology can be given as an example of technological developments.

One of the greatest technological advances is Henry Ford's idea of mass production via the assembly line. Mass production has increased the productivity of labor and capital employed in the automobile industry, and this type of production has also spread to other industries. With this technological advance, Ford caused a significant reduction in workers' average working hours. The amount of manpower to assemble the automobile has been reduced and in addition, automobile unit costs have been reduced due to more production (Kaya & Han, 2004).

Another type of technological development has emerged in the 1990s. This production system, which is called lean production, has reduced the unit cost by providing innovation in production methods, while increasing the product variety and quality (Karagül, 2003; 79).

It is possible to classify technological development from various angles. We can divide technological development into non-contained and embedded technological development, according to its contribution to growth. Non-involvement in technological development is defined as productivity gains that result from improvements in management and organization. Included technological development is the increase in productivity in machinery and equipment that depends on the realization of investments. Each machine that goes into production will be more productive than the previous machine as it contains the latest technology. Therefore, the capital factor shows a heterogeneous feature (Karagül, 2003; 81).

## 1.6 ECONOMIC GROWTH MODELS

While the factors affecting economic growth can be listed as mentioned above, the models of economic growth can be examined under 5 headings. These headings are;

- Classical growth models,
- Keynesian growth models,
- Neo-Classical growth models,
- Post Keynesian growth models,
- Endogenous growth models.

### 1.6.1 Classical Growth Model

Classical growth theory was first put forward by Adam Smith at the end of the 18th century and later developed by Robert Malthus, David Ricardo and Karl Marx (Parasız, 2003). The common analytical point adopted by these economists, who helped the development of the classical growth model, is that their analysis deals with the distribution of the total product created in the society between classes and the long-term capital accumulation process. In this respect, it can be said that the classical framework has a dynamic nature in its essence, and also, the basic variables used in the analysis are variables of structural nature focusing on social and institutional relations.

The founder of the classical growth model is Adam Smith. According to Adam Smith, although the only measure of value is labor, there are three factors of production. These are labor, capital (or as he called it stock) and land. With this approach, production according to Smith can be expressed as a function of these three factors as follows;

$$Y=f(L, C, S)$$

Y : Output, L : Labor, K: Capital, S : Soil

That is, the amount of production (output) is related to the inputs of labor, capital and soil. At the same time, the increase in output is affected by the increase in population, investments, and the increase in soil, all of which ultimately increase productivity. This function depends on the principle of increasing efficiency. Smith argued that the internal and external savings caused by the growth of the markets will reduce production costs over time. Savings arising from growth are in production and marketing; it will emerge through more division of labor and mechanization. Therefore, economic growth that has started once will continue in a self-sustaining manner.

Classical economic doctrine, founded by Adam Smith, made supply-side approaches to economics. In this context, Smith stated that the factor that creates value in the economy is the labor force and defined the increase in labor force as economic growth (Kaya A. A., 1998). The increase in the labor force has been attributed to the increase in population, and the population growth has been linked to the level of wages that will provide the acquisition of goods and services necessary for survival.

Since David Ricardo made the most important contribution to the classical growth theory, especially as a prelude, classical growth theory is mostly studied under the title of the Ricardo model. David Ricardo, as Adam Smith did, took into account the conditions of England, which was the most important economy of its time. He thought that the declining productivity in the agricultural sector in the UK at that time affected the whole economy, and the increase in the proportion of the part allocated to landowners and labor owners from the growing national income with a gradually decreasing rate would reduce the share of the entrepreneur-capitalist class from the national income relatively. He stated that this development would cause the stagnation of investments and eventually a general recession in the economy (Alkin, 1981).

Smith's growth model is a superior model in the classical growth model. David Ricardo brought change to this model by including the diminishing return of soil. According to Ricardo, although soil is fixed in quantity, it is variable in terms of quality. That is, more soil can be made arable to keep growing, but more soil cannot be created. This situation has two effects on economic growth. First, rents increase over time, but the profits of entrepreneurs decrease relatively, and secondly, wages earned by those working in the agricultural sector increase over time.

The increase in the relative incomes of labor and landowners results in an increase in the population. In this case, the need for nutrients will increase. The expansion of the need for nutrients requires the cultivation of farther and less fertile soils. This causes a decrease in productivity and production. As a result, as the price of the new products will be at a level to cover the cost of production in the worst-qualified soil, rent income, which is an undeserved income that gradually increases in soil that are more productive and closer to settlement centers will arise. It is here that Ricardo called this rent income differential rent, and stated that differential rent would drive the economy into stagnation (Kaya & Han, 2004).

In Ricardo's model, any economy will spontaneously enter into a "stagnant economy" process. The course of this economy can be handled in two stages: the development stage and the stagnation stage. The rate of capital accumulation is high as the law of increasing yields is valid for capital during the development phase. However, since quality land is scarce and there is an obligation to cultivate more and more unproductive lands, the law of diminishing productivity in labor and capital will prevail in the upcoming period. In the recession phase, because of the supernormal profits investments will be zero. This results in constant total output and per capita income (Hiç, 1975).

Another feature of Ricardo's growth model; the model considered growth and distribution together and linked growth to the development of factor shares. This model is based on limited assumptions, however, given the period in which it was put forward, it provided important explanations for the distribution (Uysal, 2007).

Marx's growth model also; Like Ricardo's growth model, it emerged largely influenced by the conditions and problems of 19th century England. Although Marx's growth model is based on the plus principle in the Ricardo model, there are major differences between the two economists' views in terms of the analysis technique used and the conclusions reached. According to Marx's growth model, although the capitalist system can initially achieve economic growth, as a result, investments will pause, the growth rate will slow down and the economy will be dragged into a general recession. With this approach, Marx's economic growth model shares the view that the economic growth put forward by classical economists will not provide an increase in welfare in the long run (Kaya & Han, 2004).

When we make a general evaluation of the classical growth model; Malthus's Bronze Law argument is out of date because when wages are above the subsistence level, individuals tend to increase population instead of turning to quality and qualified products and goods and services that will meet their social needs. The classical model remains too simple to explain the complex factors affecting the economic growth of countries with low level of development. For example, labor and capital are not homogeneous inputs in developing countries. In addition, when the labor factor is evaluated alone, even the units of labor are not homogeneous. Different types of labor and capital can affect growth in different ways. However, capital accumulation is not necessarily the only target function for economies. These and similar features form the boundaries of Classical growth models (Kaya A. A., 1998).

### 1.6.2 Keynesian Growth Model

It is a growth model developed independently by two British economists, Roy Harrod and Evsey D. Domar. The growth process has been systematically analyzed with the help of this model for the first time. The model is mainly based on Keynes' theory of income generation. Keynes did not take into account the capacity-increasing effect of investments. Whereas, the Harrod-Domar model, together with the income and demand effects of investments, put the capacity building effects into the analysis and revealed the conditions necessary for the balanced growth of the economy (Parasız, 2003). The model can be formulated in its simplest form as follows:

$$dY = \frac{1}{k} * I$$

Equation 1.2

dY: Real Income Growth Rate

k: Capital / Output Coefficient

I: Refers to the share allocated to the investment from the GNP.

Domar; He stated that health, education, training, knowledge level, business administration and management, capital accumulation and capital quality, industrial structure, competition, discovery and more effective use of new resources will define economic growth (Peterson, 1984).

The growth model that Domar put forward was associated with the Harrod model immediately after its publication in 1946, and the Harrod-Domar growth model began to be mentioned (Kaya A. A., 1998).

Both economists have approached the broad problem of economic growth in developed economies, giving investment a central role. In addition, both of them made their analysis of the growth process within the analytical framework known as the Keynes model. Harrod-Domar growth model As Keynes stated, there is a

movement in the economy from the underemployment balance to the full employment balance and the problem that Keynes examines from the static perspective has been dynamically addressed by the Harrod-Domar model. Harrod and Domar agree that savings play a key role in economic growth (Peterson, 1984).

Harrod and Domar stated that the driving force of the economy is investment, and emphasized that investments play an important role in economic growth due to their income generation and capacity-generating characteristics. Domar's analysis is forward looking, addressing the impact of today's net investment on tomorrow's capacity or productivity potential. Harrod, on the other hand, handled the subject retrospectively. According to Harrod, if output grows sufficiently between yesterday and today, there is such a net investment that he thinks that this investment will be sufficient to meet today's "full employment savings amount" (Peterson, 1984).

Both analyzes of growth are open to the same general criticism. Both analyzes are overly abstract and linked to rigid assumptions that the invariances of critical determinants such as the propensity to save and the capital coefficient. Harrod can also be criticized for placing too much emphasis on encouraged investment as an important factor in the growth process. The result is an economic picture tightly linked to a very narrow growth channel. In this picture, either a long-term vitality and one of the twin catastrophes in the form of inflation or long-term stagnation will be in question (Kaya & Han, 2004).

### **1.6.3 Neo-Classical Growth Model**

The Neo-Classical growth model first came to the fore in 1956 with articles written independently from each other by Solow from USA and Swan from Australia. The model starts with the formation of the classical production function with mathematical and economic assumptions. Savings, according to neo-classics, are a function of national income (Jones, 2013).

$$S = s.Y$$

S: savings

s: marginal propensity to save,

Y: national income

Investment is net additions to the capital stock and equals saving.

$$\Delta K = I = S = s.Y$$

$\Delta K$ : change in capital stock

I: investments

Production in the economy is a function of capital and labor inputs when a certain level of technology is fixed.

$$Y = f(K, L)$$

K: capital

L: labor

Said production function is a first order homogeneous function. That is, there is a fixed return to scale (Alkin, 1981). In addition, the neo-classical growth model has made basic assumptions such as closed economy, competitive markets, rational individuals and the validity of the law of diminishing yields for capital and labor inputs (Shaw, 1992).

The model includes the assumptions of perfect competition and full employment. In fact, the real starting point of the Neo-Classical growth model is the dynamic conditions that enable full employment. The theory is the dynamic analysis of Keynes' criticisms of the classical economic view (Yülek, 1997).

Other assumptions on which the Neo-Classical growth model is based can be summarized as follows (Kibritçioğlu A. , 1998);

- There are fixed returns to scale,
- The law of diminishing yields for capital operates,
- Population is an external factor and is growing at a steady rate,
- There is substitution between factors.

The neo-classical growth theory explains how savings, investment and economic growth respond to population growth and technological change. In the neo-classical theory, the growth rate of the population affects the rate of economic growth. However, economic growth does not affect the growth of the population. Similarly, the rate of technological change affects economic growth in neo-classical growth theory. However, economic growth does not affect technological change. For example, economies experience technological change by chance. However, nothing can be done that will affect the flow of technological change. As a result; In neo-classical theory, the rate of population growth and technological change are exogenous (Kibritçioğlu A. , 1998).

Since technological change and population growth in the model are external and only capital accumulation is internal, the only force that can stimulate growth is capital accumulation and production can only increase if the amount of capital increases. To determine how much and to what extent capital will increase or not in any given case, it is assumed that, following Solow and Swan, people save a certain part of the income and a certain part of the capital stock is destroyed each year (Parasız, 2003).

Neo-classical theory has two main consequences;

- Growth is temporary when there is no technical progress.
- The acceleration of growth as a result of an increase in the saving rate is temporary.

He stated that technology, which he defines as an exogenous variable in the neo-classical growth model, is the only source of economic growth, and emphasized that economic growth will occur independently of individuals' savings tendency in case of equilibrium. Based on these two results, two features emerge (Ercan, 2000):

- Economies may converge,
- Growth has an exogenous characteristic.

If two economies initially have the same savings rate and different capital levels, the poor country will grow faster than the rich country, and the per capita income levels of the two countries will converge in the long run. In this way, the prediction that development differences will disappear spontaneously is called the "convergence hypothesis" and the catch-up process of developing countries to catch up with developed countries (Kibritçioğlu A. , 1998).

As a result, the comprehensibility of the growth process has been ensured by linking the economic growth to a surplus term as "technological development" or "increase in productivity", or numerical increase of capital and labor, which are factors of production, by the Neo-classical growth model. However, its inability to identify and analyze the factors affecting economic growth is the biggest deficiency of the Neo-classical growth model (Ercan, 2000).

#### **1.6.4 Post Keynesian Growth Model**

The starting point of post-Keynesian growth models is the views of Keynes. The main goal of Post Keynesies is to expand the topics Keynes deals with in general theory and to develop the theory of economic growth, which was not expressed by Keynes. In other words, economic growth theory and its extension conjuncture and determining the distribution of national income constitute the field of activity of Post-Keynesians. Harrod-Domar type growth models underlie the post-Keynesian growth model.

Post-Keynesians' assumptions in growth models can be listed as follows; constant returns to scale, there are two factors of production in the economy, capital and labor, and their revenues are respectively profit and wages, there is no technical progress, that is, the production function does not change in time, the conditions of perfect competition prevail in the market, all profits are saved, all wages is consumed. Production is divided into two groups as investment goods and wage goods, there is no substitution between capital and labor (Kaya A. A., 1998).

Kaldor has been the most effective use of Keynesian tools and especially the concept of multiplier in establishing an income distribution. Although Kaldor calls his analysis Keynesian analysis, his model is in a way a developed version of the Harrod-Domar Growth Model (Alkin, 1981).

The assumptions of the Kaldor growth model can be summarized as follows. Full employment is valid in the economy. Therefore, total production or income is data. Incomes are shared among labor owners and entrepreneurs, including wages and profit. The main difference between these two groups is that their marginal consumption trends are different. Accordingly, the marginal consumption tendency of labor owners is higher than that of entrepreneurs. Based on the above assumptions, Kaldor tried to demonstrate that in a fully employed economy, the relative factor shares are determined by the investment rate (Uysal, 2007). In the Kaldor model, investments are external. According to Kaldor, this approach is one of the main assumptions of Keynesian theory. In addition, Kaldor's growth model considers the saving rate flexible to ensure balanced growth. Contrary to the neo-classical growth model, the capital-output ratio is considered constant in this model (Kaya A. A., 1998).

Another Post-Keynesian growth model was developed by Pasinetti under the assumption that the economy is growing under full employment conditions. The starting point of the model is the inconsistency of the Kaldor model in its

approach to the distribution of income. In the Kaldor model, while capital owners get a share from the income, the working class could not get any. Pasinetti stated that this meant the transfer of the savings of the working class to the capitalists free of charge and developed the class saving function. According to this approach, capitalists continue to be the only class investing and only earn profit income. The savings of the working class, on the other hand, as they are loaned to the capital owners in return for a certain interest income, they enable the labor owners to participate in investments indirectly, if not directly. Labor owners make their investments; It is carried out through securities such as bonds. Pasinetti assumed that under long-term equilibrium conditions the interest rate will equal the rate of profit (Uysal, 2007).

Another post-Keynesian growth model was put forward by Michael Kalecki. The difference of Kalecki from others is that it has defined growth in a structure that is more suitable for today's conditions under disruptive competition conditions. Accordingly, the price policies of firms are determined according to the prices of competitors and average basic costs, rather than the principle of profit maximization. Basic cost is the sum of wage payments and payments for raw materials and auxiliary materials used (Uysal, 2007).

Kalecki's model of distribution takes into account not only how income is shared between production factors, but also the distributional relations within the factors themselves. However, the model; There is a deficiency that it is established not at the national economy level but at the sectoral level. Therefore, it is not possible to benefit from the model in the analyzes that deal with the whole economy. The model's assumptions of lame competition and low capacity are in line with today's conditions. However, the assumption that the level of employment is determined only by the level of production is controversial. In addition, the changes that may occur in factor prices are not taken into account in the model (Uysal, 2007).

### **1.6.5 Endogenous Growth Model**

Traditional growth models have failed to explain the long-term growth processes of economies. For this reason, endogenous growth theory has been introduced as an alternative to the Neo-Classical growth theory that dominates the growth literature. Technology has been internalized in endogenous growth models and the assumptions of the Neo-Classical theory have been changed and an important contribution has been made to economics literature (Karabulut & Emsen, 1997).

In Neo-Classical growth models, only physical capital is accepted as the capital element and the decreasing return of capital is mentioned. In the endogenous growth model, a capital definition including human capital is made and the increasing return of capital is mentioned. In endogenous growth models, it is said that economic growth will have internal economic foundations and the thesis that the income levels of countries will automatically converge is demolished. In new growth models, technology is internalized and the mechanisms by which public policies affect economic growth are highlighted. Contrary to the Neo-Classical model, if the less developed countries do not take the necessary measures, the difference with the developed countries will increase even more (Dursun, 1998).

Paul Romer, who was the pioneer of the endogenous growth model, took as basis the lame competition conditions. This approach is an important contribution that has increased the fidelity of the growth model (Kasabali, 2004).

The main motivation in Romer's research is to primarily evaluate the determinants of long-term economic growth. In this study, which brings a new perspective to the theory of growth, rather than presenting a new theory of technological change, an equation has been created in which competent manpower is defined as capital. In the said equation, it is argued that depending on the development of the economy, a decrease in productivity in capital will not occur,

but on the contrary, it may have increased efficiency. Romer argued in his studies that technological progress can be achieved through research and development activities and that the growth rate can preserve the positive trend in the long run (Gübe, 1997).

Robert Barro stated that the source of economic growth is public goods and infrastructure investments. He emphasized that in the Barro model, infrastructure investments create positive externality for private capital and this increases the productivity of firms (Parasız, 2003).

Providing another important contribution to the development of endogenous growth models, Lucas, in his article written in 1988, discussed the relationship between physical capital and accumulation in a single-sector economy. In his study, he included the population as an exogenous factor in the model. According to Lucas, instead of developing a growth theory directly, Solow came up with a model that only examines the growth dynamics of the US economy. Therefore, the general validity of the results obtained cannot be justified. He stated that in the Solow model, the underdeveloped states in the USA would converge to the developed states. On the other hand, Lucas argued that the growth and accumulation of physical capital due to the increase of marginal productivity of capital and external economies will be stronger in developed countries compared to the relatively less developed countries, and this will result in divergence contrary to the economic convergence (Parasız, 2003).

In summary, the general differences of endogenous growth models from Neo-Classical growth models are as follows (Bulutay, 1995);

- The market is not obliged to comply with the conditions of perfect competition.
- Expresses that the efficiency of human capital will be improved and its efficiency will be increased with the concepts of information dissemination and

research and development. In other words, it is possible that increasing yields can be processed for capital.

- The acceptance of technological development as an external factor has been abandoned.
- Human capital has gained a great importance in the development of economies.

## **2. THE EFFECTS OF FOREIGN DIRECT INVESTMENTS ON THE HOST COUNTRY ECONOMY AND RELATION BETWEEN ECONOMIC GROWTH**

In this section, the effect of FDI, which is the main subject of the study, on economic growth will be discussed. Before mentioning the aforementioned effect, it will be mentioned in the economics literature how FDIs affect the basic economic indicators of the host country economies and then how the positive effects of FDI on the economic growth of host countries will be explained within the framework of the Neo-Classical and Internal growth models in the third part of the first chapter. In the last part of the section, applied studies in both foreign economics literature and domestic literature will be given and their evaluations will be made.

### **2.1 THE EFFECTS OF DIRECT INVESTMENTS ON THE HOSTED COUNTRY ECONOMY**

It is possible that FDIs have micro and macro effects on the economy of the invested country. These effects can sometimes have positive and sometimes negative consequences. As with every economic activity, FDIs also have alternative costs. If the contribution of FDI to the host country's economy is greater in terms of economic value than the said alternative cost, it can be said that FDI has a positive effect on the host country's economy. Otherwise, the opposite result will be valid.

The effects of foreign capital on the country's economy have been discussed with both optimistic and pessimistic perspectives since the first periods of capital

flows. Our preliminary argument in this study is that changes in net inflows of foreign direct investments to developing countries have a positive effect on the domestic incomes of these countries. Therefore, in this section, contrary to our preliminary argument, we will start with negative impact expectations and then talk about positive effects. After examining the positive effects on economic growth, the applied studies on the effect of FDI on economic growth and their results in the post-1990 economics literature will be mentioned.

### **2.1.1 Negative Effects of Direct Investments on the Hosted Country Economy**

The negative effects of foreign direct investments on the host country economy; It is possible to discuss it in three different groups as negative effects on balance of payments, on competition and on production technology.

#### ***2.1.1.1 Negative Effects on the Balance of Payments***

Physical capital, which enters the host country's economy through FDI, returns to the home country of the firm making foreign investment as profit transfers in the long run. These profit transfers will have a negative effect on the balance of payments of the host country, that is, it will negatively affect the balance of payments.

Considering the fact that the companies that carry out FDI are MNCs and that the value of capital accumulation of some MNCs is higher than the national income of some EMIs, it can be better understood how an excessive profit transfer to be realized by FDI will have an important effect on the balance of payments of the EM economy (Batmaz & Tunca, 1989).

In addition, when the foreign company gives up its investment in the host country, it will withdraw its physical capital, and it will have a negative effect on the balance of payments of the host country for once.

In addition, the high income generated by the foreign firm can stimulate the import of the host country if the marginal consumption trend in the host country where the foreign firm operates is high. In this case, as the level of imports will exceed the level of exports, it will again occur as a result of the negative impact of the balance of payments (Batmaz & Tunca, 1989).

Finally, considering that the dependence of exports on imports is high in underdeveloped economies and assuming that FDI produces production to meet domestic demand rather than exports to the host country, it will arise as a result of the negative impact of the balance of payments from FDI.

As can be seen, FDI realized under these assumptions will have negative consequences on the balance of payments of developing economies.

#### ***2.1.1.2 Negative Effects on the Competition***

If the legal regulations regarding competition in the host country of the FDI are not made at a sufficient level, foreign companies will have negative effects on competition in the host country economy. Because every market tends to be monopolized.

The strong capital structure of foreign companies increases the possibility of monopoly in the countries where they invest. In addition, if the legal regulations preventing monopolization are not at a sufficient level in the country in question, then an anti-competitive result will emerge in the form of foreign firms' dominance in the market.

The monopolization of foreign firms can take place for different reasons and in various ways. A foreign firm with a tendency to monopolize can either monopolize the host country by taking advantage of the gaps in the competition laws of the country, or monopolize it with the help of incentives provided by the host country in an uncontrolled manner.

The method of partnership with a local company is mostly used to take advantage of legal gaps. Thus, the foreign company strengthens the capital structure of the local firm of which it is a partner and ensures its dominance in the market. With the low price policy it mostly follows, it causes small local companies to withdraw from the market and expands its market share.

The situations in which the negative effects of foreign investments may arise in terms of competition can be summarized as follows; (Kırankabeş, 2001)

- The foreign company acquires a company that is a leader in the host country,
- Two foreign companies operating in one country seeking a merger,
- Acquisition of a foreign company that previously exported to the country, a company operating in the country in question,
- A combination of potentially competitors.

### ***2.1.1.3 Negative Effects on Manufacturing Technology***

It is generally accepted that FDI's have positive contributions to the production technologies and human capital levels of developing countries. In addition, under some assumptions, foreign investments may have negative effects in terms of production technologies.

If we take into account the truth of the view that the main reason for the activities of foreign capital companies in developing countries, which was frequently discussed in the last quarter of the 20th century, is the use of the underground resources of these countries and cheap labor, the production of foreign companies, especially in which cheap labor is used, We naturally conclude that there will be labor-intensive production is rather than technology-intensive production.

In such a case, the foreign firm will cause the host country to maintain its existing levels instead of developing the production technologies and expanding the human capital accumulation.

In another approach, while foreign companies share their knowledge and skills regarding production with local companies through license agreements, they are free from the obligation to share such information when they operate in the country through FDI. In this case, it again constitutes an obstacle to the development of the host country in production technologies.

As a result, the negative effects of FDI on the country's economy are in question under certain assumptions. However, it is the positive effects of FDI on host country economies, which is more heavily defended in the economics literature.

## **2.1.2 Positive Effect of Foreign Direct Investment on the Host Country Economy**

### ***2.1.2.1 Positive Effect on Capital Accumulation***

The first and most important contribution of foreign investments to a country's economy is the deepening of the capital in the host country. Considering the fact that the capitals of developed countries are less than other production factors, it is better understood how important this capital accumulation provided by foreign investments is for the country's economy (Batmaz & Tunca, 1989).

In order to get out of the vicious circle of poverty, developing countries need a capital accumulation that will increase their investments and increase their income level. For this reason, the capital accumulation provided by foreign companies to developing economies through FDI plays an extremely important role in these economies (Nazan, 1992).

### ***2.1.2.2 Positive Effect on National Income and Employment***

Secondly, the effect of FDI on the host country's economy will be seen at the national income level. The deepening of the capital accumulation of the host country will result in an increase in investments and consequently a rise in the national income level. Since an increase in national income will increase the production potential of the country, it is an understandable result that the employment level will also increase (Aktan & Vural, 2006).

### ***2.1.2.3 Positive Effect on Balance of Payments***

One of the important expectations of host countries where FDI is realized from foreign investments is that foreign investment will help the developing country's balance of payments. The founding capital of the company that carries out the FDI creates a positive effect on the balance of payments of the host country for once.

When FDI starts production, it also creates a positive effect on the balance of payments through both the increase in exports and the realization of import substitution. However, this process takes place under certain conditions. If the country has a large domestic market and is closed to foreign trade with a strict protection regime, then FDIs will not have a positive effect on the balance of payments as they will only target the domestic market. On the contrary, if the domestic market in the host country is not very attractive, the country has relative advantages in terms of foreign investment, the functioning institutions of the economy are high and the economy is well integrated with foreign markets, then the investments to be made in this country, which is extremely attractive for FDI, will increase the level of exports. It positively affects the balance of payments (Batmaz & Tunca, 1989).

In addition, foreign companies may increase exports themselves in the host country, or they may have the effect of forcing local companies operating in the

host country to export by reducing their sales in the domestic market. In this case, the balance of payments of the host country will be positively affected.

#### ***2.1.2.4 Positive Effect on Technology***

Multinational companies that carry out FDIs perform most of their R&D activities in the world. As a result, they use the most advanced technology in their production activities. Spreading these companies to developing countries through FDI means that the host countries benefit from the emerging external economies without participating in R&D activities (Aktan & Vural, 2006).

Since technology is not a commodity that is mostly traded like physical goods, it is an important advantage for developing country economies that the technologies achieved as a result of R&D studies carried out with large expenditures are transferred to the developing countries through FDI.

In addition to the transfer of technology to the developing country's economy through FDI, the human capital that will use the technology in the production process is also provided through learning by doing. This is also an important advantage for developing countries' economies.

#### ***2.1.2.5 Positive Effect on Prices***

If the product produced by FDI in the host country is a product that was previously produced in the host country, then the price of the said product will decrease as the production amount will increase with the foreign investment. This is a positive development for consumers in the host country.

When an evaluation is made in terms of the prices of the factors of production, the prices of the factors of production will increase, as there will be a competition between the foreign firm and the local firm regarding the use of production factors. Of course, the realization of this depends on certain conditions. For example, if FDI is for raw material supply and processing, then

the factor price will not change, because world raw material prices are determined according to global supply and demand (Aktan & Vural, 2006).

In addition, when the valuation is made regarding wages, it is seen that FDIs mostly increase the wage levels domestically. The main reasons for this situation are as follows; As a result of the desire to establish good relations with the public, foreign firms feel the obligation to keep their wage levels high. Also, labor owners prefer domestic firms to foreign firms. In order to change this preference, foreign firms are obliged to keep their wage levels high, and the labor employed in foreign firms is qualified and until this happens, the foreign firm has paid a price for the development of labor. Foreign companies feel the obligation to keep the wage level relatively high in order not to lose the mentioned skilled labor and to bear the costs of retraining (Batmaz & Tunca, 1989).

#### ***2.1.2.6 Positive Effect on Market Competition***

While there are quantity restrictions in international commodity trade, realization of FDI has great importance in terms of national competition. Because quantity restrictions lead to the formation of national monopolies and oligopolistic market structure. Providing liberalization in commodity trade through FDIs ensures the removal of quantity restrictions, thus increasing the number of companies in the market and the formation of a more competitive market structure (Kırankabeş, 2001).

However, if the production of FDIs was previously a natural monopoly in the country, foreign companies can eliminate the natural monopoly in the country thanks to the economies of scale of MNCs that perform FDI. Thus, FDIs increase the competition in the markets and vitalize the host country economy (Aktan & Vural, 2006).

### ***2.1.2.7 Positive Effect on Macroeconomics Indicators***

It is thought that FDI will increase the savings in the economy and lead to an increase in investments. With the increase in investments, there will be an increase in the employment level and the unemployment rate will decrease. This development provides the economy to reach a more stable structure. According to WB, if an open developing economy has a positive saving, the arrival of FDI in the country will increase efficiency (Aktan & Vural, 2006)

In a study conducted by Moran in 1998, 183 FDI projects were examined and it was observed that one fourth of these investments had negative effects on the welfare of the host country. It was emphasized that the reason for this is the lack of competition in the markets of the countries (Aktan & Vural, 2006)

FDIs have a more positive effect on the macro indicators of the economy compared to portfolio investments, also known as hot money, in conjuncture fluctuations. Because, in the event of a possible global or local financial crisis, the mobility from the portfolio investment structure will decrease. However, FDIs will not leave the country as a result of their more inactive characteristics, and thus, in a crisis where the economy will be adversely affected, it will be possible to overcome the crisis with less effect.

### **2.1.3 Reasons of Foreign Direct Investments**

The basis of International Trade Theory is based on Comparative Advantages Theory. According to this theory formulated by David Ricardo, every country specializes in the production of which goods are relatively cheaper. In this context, it will export the product it has specialized in its production, and will import the product that the other country specializes in. The aim of the liberal interpretation, which is based on Adam Smith's Theory of Absolute Advantages, is to reach the Wealth of Nations, which gave Smith's book its name. The basis of this liberal theory is that the common interest will create wealth. Although the

Comparative Advantage Theory can explain the basic logic of international trade, it falls short of fully expressing the reasons for FDI (Seyidođlu, 2001).

The main reasons for FDI can be listed as follows.

### **2.1.3 Raw Material Sources**

Raw material resources are not evenly distributed across the earth. Investments for the processing of raw materials are established where these resources are located, such as in mines. In terms of political history; Countries that got stronger with the Industrial Revolution as a result of the relationship between raw material resources and industrial production have created a colonial system where the world's raw material resources are available. The 19th and 20th centuries are the times when this economic-political system reached its peak and was liquidated by two great world wars caused by this competition. The reasons for traditional foreign investment are related to this. In the 19th century and the beginning of the 20th century, the investments of Western companies were made to the underdeveloped countries where these resources were available in order to provide the raw materials needed by the main countries' industries (Karluk, 2003).

#### ***2.1.3.2 Integrating Activities***

In cases where it is beneficial to gather all activities from the first stage to the final product stage (vertical integration) or production activities in the same stage under a single management (horizontal integration), integration in production is made (Göver, 2005). In such cases, production spreads to different countries for reasons such as securing input supply or realizing certain stages in different countries creates an operational advantage. Each part of a product with this structure is produced in different countries within the framework of efficiency with cost advantage and expert knowledge.

### ***2.1.3.3 Protection of Titles and Secrets***

Companies that make a very positive name in commercial life may prefer to produce their products abroad in order not to damage the quality of their products and their brand image. These companies prefer to produce their products abroad, as they think that their products cannot be produced in the same quality through license agreements. Although FDI resulting from this reason, especially for developing countries, creates important resources, employment and export opportunities, it is ineffective in terms of establishing connections and sharing information within the framework of cooperation with local companies. In cases where confidentiality is important in production-related information, the preference of FDIs over license is related to the protection of secrets.

### ***2.1.3.4 Life Cycle Hypothesis of the Product***

With firms reaching the edge of development in the domestic economy, there are no more opportunities to make more profit in this market. In order to sustain the increase in profits, it may be necessary to produce in foreign markets, which are less entered and perhaps more limited competition. According to this view put forward by Raymond Vernon, foreign investment; It is a result of having settled in the country for a long time and doing good business. From this point of view, the dominance of American firms in foreign markets is related to their presence in the advanced stages of product cycles (Seyidođlu, 2001).

### ***2.1.3.5 Avoiding Tariffs and Quotes By Importing Countries***

The exporter company faces the danger of losing that market in the face of the tariffs and quotas imposed by the importing country. In this case, the way to get rid of the effect of tariffs and quotas and to keep that market is to start production in that market. This is why the rapid flow of American investments into Western Europe in the 1960s is relevant. When the European Economic Community (EEC) was established and a common tariff was applied to the countries outside (including the USA), the exports of American companies to the

region were affected negatively. Upon this, the companies in question have begun to invest massively in the countries of the community (Göver, 2005).

#### ***2.1.3.6 Avoiding Domestic Restrictions***

The effort to get rid of various domestic restrictions is an important factor in the international expansion of banks and some manufacturing industry sub-sectors. The regulations brought by banking laws in the USA and other industrialized countries led banks to open branches abroad in order to get rid of them. Similarly, manufacturing industry firms that want to get rid of the restrictions imposed by environmental protection standards in the country have chosen countries with low environmental standards for production. Among these, industries that are polluting and harmful to public health can be particularly mentioned (Kaya & Han, 2002).

#### ***2.1.3.7 Production Flexibility***

As predicted by the purchasing power parity theory, it predicts a correct relationship in the long run between the inflation rates between countries and the relative changes in the exchange rates of these countries. It is the arbitrage mechanism that provides this. But sometimes there may be deviations from purchasing power. In such cases, producing in countries whose money has depreciated in real value is a cost-reducing factor. In this respect, the place of production can be changed in order to take advantage of the opportunities created by the real depreciation. Even though such instabilities can benefit companies, real value losses show the unstable and weak structure of a country (Seyidoğlu, 2001).

#### ***2.1.3.8 Diversifying Investment International***

Foreign investments indirectly provide portfolio diversification for shareholders. If production is limited to a single market, cash flows show a relative instability. The company may try to balance this situation to some extent

with product diversification. However, it is normal for the sales conditions of all products in the same country to be affected similarly. In other words, systematic risk cannot be eliminated with diversification. However, the company can reduce this risk to some extent by diversifying its production internationally. Because not all country economies fluctuate in the same direction (Seyidođlu, 2001)

#### ***2.1.3.9 Using Cheap Foreign Factor***

Labor and natural resource costs vary widely across countries. Therefore, the establishment of labor and natural resource intensive goods in places where these factors are abundant and cheap has a lowering effect on production costs. These factors have an impact on most American companies' investments in countries such as Mexico, Malaysia, Korea, India, Hong Kong and Taiwan. Japanese firms are also increasingly turning towards Mexico and other cheap labor countries.

#### ***2.1.3.10 Using Foreign Technology***

Multinational Companies can establish production facilities abroad or purchase existing facilities, learn the technology of the country in which they invest, and then use this information in the development of their production processes. This factor was particularly relevant for European or Japanese international companies investing in the USA.

#### ***2.1.3.11 Taking the Advantage of Monopol***

According to the industrial organization theory, companies with production knowledge and skills that their competitors do not have an advantage in terms of opening to foreign markets. According to this view, if all information, resources and goods were fully mobile and could be acquired at any time, monopolistic structures would not be encountered in any market. However, these conditions cannot be met in real markets. Certain firms in a market gain an advantage over

others due to some privileges (Demircan, 2003). For example, if we take technology, the company that owns a technology can use this advantage in domestic and foreign markets. Technology can be related to a new commodity, production process, marketing or financing method. Therefore, a company that has an advantage over its competitors in these areas can open up to international markets more easily by using this advantage.

#### **2.1.4 Effect on Economic Growth**

Theoretically, the expected effect of FDI on economic growth is often stated positively. In the economics literature, there are also approaches and findings regarding the negative effect of FDI on economic growth. However, it is a more accepted approach that the effect will be positive. In addition, the main expectation in this study is that there is also a positive effect. For all these reasons and because the view that FDI may have a negative effect on economic growth is a very little accepted view in the economics literature, the positive effects of FDI on economic growth will be discussed in this section.

In the first part, the definition of economic growth is made, its types and theoretical development are mentioned. For this reason, under this title, it will be mentioned how foreign direct investments affect economic growth in Neo-Classical and Internal growth models, which will form the basis of our applied work in the third section.

The Neo-Classical growth model was developed by Robert Solow in 1956 (Barro, 2007). For this reason, the Neo-Classical growth model is referred to as the Solow growth model. The Solow model was initially created with the assumption that the population and production technology did not change. Where these two factors do not change, Solow defined production as a function of labor and capital inputs. According to this; The following equation, where  $Y$  symbolizes the amount of production,  $L$  symbolizes labor, and  $K$  symbolizes capital, defines the production function.

$$Y = f(K, L)$$

Equation 2.1

In the Solow model, he assumed that the law of constant returns to scale and diminishing marginal yields for both capital and labor works. Under these assumptions, Solow considered the effect of capital accumulation on economic growth in its growth model. Therefore, by proportioning each element in the above function to the amount of labor, it points out the direct relationship between the amount of production and capital as shown below.

$$\frac{Y}{L} = f\left(\frac{K}{L}, 1\right) \Rightarrow \frac{Y}{L} = f\left(\frac{K}{L}\right)$$

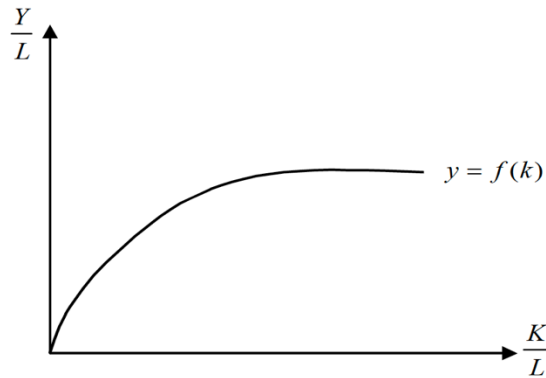
Equation 2.2

Here  $\left(\frac{Y}{L}\right)$  ratio indicates the amount of production per labor and  $\left(\frac{K}{L}\right)$  expresses the capital per labor. If it is symbolized as  $\left(\frac{Y}{L}\right)=y$  and  $\left(\frac{K}{L}\right)=k$ , the production function will be shown as follows.

$$y = f(k)$$

Equation 2.3

The chart below shows the production function in question. In the graph, the shape of the total production function per labor is drawn in such a way that continuous increases in the amount of capital per labor will increase production per labor less and less. The reason for this is the law of diminishing marginal yields, as stated above.



Graph 2.1

In order to generalize his model in which total production per labor is represented by the amount of capital per labor, Solow postulated that the elements expressed per labor are equal to their per capita values.

Accordingly, in the model in which the population and technology level are considered constant, production per capita is a function of the amount of capital per capita. When the production function, which Solow expresses in per capita terms, is derived by time, it will be seen that the change in production per capita is equal to the change in the amount of capital per capita. At this point, it is seen that the simple Solow growth model has emerged. Thus, in the simple Solow growth model, economic growth arises only from the change in the amount of capital. At this point, some economists divided the source of capital into two as local and foreign and argued that the arrival of foreign capital in the country would positively affect economic growth as mentioned in the simple Solow growth model. The economic growth model expressed in this view can be summarized as in the following functional form;

$$\Delta\left(\frac{Y}{n}\right) = f\left[\Delta\left(\frac{K_D}{n}\right), \Delta\left(\frac{K_F}{n}\right)\right]$$

Equation 2.4

In this equation; While " $\Delta$ " denotes change, " $n$ " refers to the population, " $K_D$ " to the amount of local capital and " $K_F$ " to the amount of foreign capital flowing into the country. Accordingly, there are two factors affecting the change in the amount of production per capita, these are; it is the change in the amount of domestic capital per capita and the amount of foreign capital flowing into the country. These changes are expressed in absolute terms.

If percentage change due to time is taken into consideration instead of absolute change, then the equation will be as follows;

$$\left[ \frac{\left( \frac{Y_t}{n_t} \right) - \left( \frac{Y_{(t-1)}}{n_{(t-1)}} \right)}{\left( \frac{Y_{(t-1)}}{n_{(t-1)}} \right)} \right] = f \left[ \left( \frac{\left( \frac{K_{Dt}}{n_t} \right) - \left( \frac{K_{D(t-1)}}{n_{(t-1)}} \right)}{\left( \frac{K_{D(t-1)}}{n_{(t-1)}} \right)} \right), \left( \frac{\left( \frac{K_{Ft}}{n_t} \right) - \left( \frac{K_{F(t-1)}}{n_{(t-1)}} \right)}{\left( \frac{K_{F(t-1)}}{n_{(t-1)}} \right)} \right) \right]$$

Equation 2.5

In the above equation, " $t$ " refers to the year under study, while " $(t-1)$ " refers to the previous year. The left hand side of the equation shows the percentage growth rate of the per capita output of the economy. The first element of the function is the percentage growth rate in the amount of domestic capital per capita, and the second element is the percentage growth rate in the amount of foreign capital per capita entering the country.

If we recall the presupposition that the population at the beginning of the Solow model is constant, then  $n_t = n_{(t-1)}$ . In this case, the growth equation will be below;

$$\left[ \frac{Y_t - Y_{(t-1)}}{Y_{(t-1)}} \right] = f \left[ \left( \frac{K_{Dt} - K_{D(t-1)}}{K_{D(t-1)}} \right), \left( \frac{K_{Ft} - K_{F(t-1)}}{K_{F(t-1)}} \right) \right]$$

Equation 2.6

Accordingly, it is not necessary to express the variables in the model in terms per person. Percentage change in production level; It is a function of the percentage change in the amount of local capital and the percentage change in the amount of foreign capital flowing into the country.

From this point of view, the effect of FDI on economic growth can be easily expressed. Accordingly, if the Solow growth model is shown as stated above, it is seen that FDIs are a part of foreign capital flows and thus have a direct positive effect on economic growth.

In the second stage of the Solow model, the presupposition that there is no technological progress is abandoned. Accordingly, the production function including technological progress is as follows.

$$Y = f(K, AL)$$

Equation 2.7

"A" in here is the technology variable. Technological development occurs with the increase in the value of A over time. The most important assumption of the Solow model, which is most criticized by the Endogenous growth model, is that it accepts technology as external. In other words, technology is an element that is not affected by other variables in the growth model. For this reason, in the Solow model, instead of adding technology to the production function by examining the origins of technology, technology is considered as an external element and the effect of instantaneous changes in technology on production is taken into account.

In the light of this preliminary information, the production function suitable for the Cobb-Douglas model will be as follows;

$$Y = K^\alpha (AL)^{1-\alpha}$$

Equation 2.8

Here, " $\alpha$ " is a number that takes a value between 0 and 1. In this case, since the sum of the exponential values in the production function above is equal to 1, the assumption of constant return according to the scale has been realized. As in the previous model, if we rewrite the terms in the production function with their per labor value, the equation will be as follows.

$$\frac{Y}{L} = \left(\frac{K}{L}\right)^\alpha A^{1-\alpha}$$

$$\frac{Y}{L} = y \quad \text{and} \quad \frac{K}{L} = k \quad \text{so that, } y = k^\alpha A^{1-\alpha}$$

Equation 2.9

If the natural logarithm of the terms in the above equation is taken and then the time-dependent derivative is calculated, the equation will be as follows;

$$\frac{\dot{y}}{y} = \alpha \frac{\dot{k}}{k} + (1 - \alpha) \frac{\dot{A}}{A}$$

Equation 2.10

The situation in which population, capital, consumption and capital are growing at a constant speed is a state of balanced growth. In the case of the said balanced growth, the growth values in the above equation are symbolized as follows;

$$\frac{\dot{y}}{y} = g_y \frac{\dot{k}}{k} = g_k \text{ ve } \frac{\dot{A}}{A} = g$$

Equation 2.11

Accordingly, "g<sub>y</sub>" indicates the growth in the amount of production per labor, "g<sub>k</sub>" indicates the increase in the amount of capital per labor and "g"

indicates the increase in the technology level. These three values under the balanced growth assumption;  $g_y = g_k = g$  will be equal to each other. In other words, production and capital per labor increase at a rate equal to the development speed of technology.

In this case, it is clearly seen that the growth of the economy depends on the speed of development of technology, which is an exogenous factor. At this point, the effect of FDI on economic growth is expressed in another way. Technology transfer from developed economies to developing economies through FDI is a widely mentioned view in the economics literature and accepted by the vast majority. Accordingly, the technology transferred through FDIs will positively affect the economic growth of developing countries that host FDI.

In addition, the Neo-Classical growth model stated that the increase in technology level is a labor-saving increase. In this case, the marginal productivity of capital is higher than the marginal productivity of labor. Accordingly, increasing the use of the production factor with high marginal efficiency in production is a more rational choice. For this reason, FDI will have contributed positively to economic growth as they are one of the factors that provide capital accumulation in the country.

As can be seen, in the Neo-Classical growth model, FDI will increase the economic growth in the short term as it will increase the investment volume and / or productivity level of the economy.

In endogenous growth models, the positive effect of FDI on economic growth is more evident. Because in endogenous growth models, long-term economic growth is a function of technology (Reichert & Weinhold, 2001).

A technology transfer from the developed economy to the developing economies through FDIs will make a very important contribution to the long-term economic growth of the host country (DeMello, 1999).

FDIs will directly contribute to economic growth by deepening the capital stock of the host country, and indirectly by increasing the development of human capital and the level of technology. The opinion of Balasubramanyam et al. On this issue is that FDI is a combination of capital stocks, know-how and technology (Balasubramanyam, Salisu, & Sapsford, 1999).

As a result, as we have stated before, FDI has a positive effect on the economic growth of host countries both through capital channel, technology, productivity and human capital.

#### **2.1.5 Literature Review**

There are many different arguments about the effects of foreign direct investment on economic growth. Studies examining the interaction between foreign direct investments and economic growth have focused on developing countries, Neo-Classical and Internal growth models are the theoretical basis of these studies. Studies examining the relationship between foreign direct investments and economic growth are basically divided into two groups; The first group consists of studies that examine the direction of the effects of investments on economic growth, while the second group is those that examine the factors that affect the choice of host country of foreign direct investments. In this study, as in the studies in the first group, we will examine how the foreign direct investments affect economic growth. For this reason, we will first consider the post-1990 studies on foreign literature and then the studies directly conducted domestically on this subject, among the studies that deal with the impact of foreign direct investments on economic growth. In addition, by stating the results obtained in the studies, we will examine whether they are consistent with the preliminary argument of this study. In some empirical studies, there are positive associations between foreign direct investment and economic growth, but in some of the studies can be seen opposite results. The main objective of the studies focusing on the effects of foreign direct investments on economic growth, especially in

developing countries, is to reveal the mechanisms by which foreign direct investments affect the economic growth in developing countries and, if there is a positive effect, to direct the foreign direct investment policies of the host country governments.

The fact that the classical, Keynesian and Neo-Classical growth models generally stated that economic growth could not be sustained in the long run and that there would be stagnation for economies slowed the pace of studies on economic growth. However, with the introduction of new internal growth models since the mid-1980s, economic growth has been an important field of study in economics. In this context, the investigation of the effects of foreign direct investments on the economic growth of the host country started in the 1990s in the economics literature and has gradually gained momentum.

In terms of technology transfer, foreign direct investments in underdeveloped and developing countries maintain their importance as one of the main channels in reaching advanced technologies. Therefore, one of the main ways for underdeveloped countries and developing countries to reach a developed technology level is to encourage foreign direct investments. Considering the literature that capital accumulation encourages economic development, it is stated that foreign direct investments will contribute to the formation and development of capital accumulation.

Similarly, with an optimistic view of the effects of foreign direct investment on growth, Romer (1996) argued that the main obstacle to the economic development of developing countries in their efforts to gain or catch up with developed countries stems from a lack of knowledge and thinking, or a lack of knowledge level, rather than physical capital which is in progress. The knowledge gap in developing countries is particularly evident in the human or organizational capital structures that exist in multinational companies. Multinational companies are the world's most important source of joint research and development (R&D) activities, and they have a technology level much higher than the available

technology level in developing countries. Therefore, it can be said that the potential of multinational companies to uncover important technological spreads is strong (Aitken & Harrison, 1993)

Based on the production function, Blomström et al. Investigated the effects of foreign direct investments on the economic growth of 78 developing countries during the 1960-1985 period. In their models, they evaluate the country's machinery and equipment purchases as imported technology, while they consider the technology that comes with foreign direct investments as the technology internalized by the country. In the study, in a sense, imported technology and internalized technologies are compared to what extent they affect economic growth. As a result of the application, the authors concluded that imported technology has no effect on economic growth, and that internalized technology provided by foreign direct investments has a positive and statistically significant effect.

In his study Kholdy (1995), dealt with Mexico, Chile, Brazil, Singapore and Zambia, where foreign direct investment inflows were high during the 1970-1990 period and investigated the effects of foreign direct investments in these countries on the productivity of the countries. In his analysis, where he examined countries individually and collectively, he concluded that foreign direct investments in countries other than Singapore are not the cause of capital formation. In his collective analysis, he concluded that capital formation is the one-sided cause of foreign direct investments. In other words, he stated that as the fixed capital formation increases, foreign direct investments to these countries increase, but a reverse relationship cannot be proven.

In their study Barrell and Pain (1997), explored the role of foreign direct investment in the dissemination and adoption of technologies and innovative ideas. For this purpose, they examined the effects of foreign companies coming to Germany and England on technical developments in these countries. In their studies, they first determined the determinants of foreign investments coming to

Germany and England and then measured the effects of these investments on the technical progress and export performances of the host countries. In their analysis of the periods 1972–1985 and 1985–1995, they concluded that international investments had a potential impact on economic growth.

In the study conducted by Lensink and Morrissey (2001) for developing countries in the period 1975-1998, positive effects of foreign direct investments on economic growth were determined, but findings that FDI fluctuations negatively affected economic growth were also obtained.

Borensztein et al. (1995) tested this relationship by using the gross domestic product data of the FDI flows of 69 developing countries for the period 1970–1989 in the regression model. Borensztein et al. Also obtained the growth function by making use of endogenous growth models such as Balasubramanyam et al. The authors, who consider the 1970-1989 period as two separate periods as 1970-1979 and 1980-1989, conclude that foreign direct investments contribute more to the growth of the host country economies than domestic investments. The reason for this has been shown to be that foreign investments are an important source of technology transfer to the host country. However, the authors stated that in order for foreign investments to have this effect, host countries must absorb the technologies brought by foreign investments and that human capital must reach a certain level of quality. They stated that only if when this threshold level is reached, foreign direct investments that bring advanced technology will have a positive effect on economic growth. They also stated that the positive effect of foreign direct investments on economic growth stems from the increase in efficiency rather than the capital accumulation provided in the host country.

In the studies conducted by Campos and Kinoshita (1995) for 25 Central and Eastern European countries and former Soviet transition economies in 2002, it was concluded that foreign direct investment flows had significant effects on economic growth. They concluded that industrialization of these economies and

having a better educated workforce are also more effective in realizing technology transfer.

Bende-Nabende and Ford (1998) analyzed the relations of foreign direct investments with economic growth, domestic capital stock, human capital, labor force, technology transfer, openness in foreign trade and state policies, in the dynamic equilibrium model they created for Taiwan in 1998, by using time series from 1959-1995. At the end of their studies, Bende-Nabende and Ford concluded that foreign direct investments have a positive effect on economic growth and that human capital indirectly affects economic growth.

The causality relationships between foreign direct investment and economic growth were investigated in Choe's (2003) study covering 80 countries for the period 1971–1995. According to the findings, a mutual causality relationship was found, but the causality relationship from foreign direct investments to growth was weaker than the causality relationship from growth to foreign direct investments.

In their studies of De Mello and Sinclair (1995) and De Mello (1997), they stated that FDI has an accelerating effect on economic growth and technological progress. Additionally, in his 1997 literature study on the interaction of foreign direct investments with economic growth, De Mello mentioned a concept as “threshold level of development” for host countries. Accordingly, he concluded that the effect of foreign direct investments on economic growth is statistically significantly more positive in countries with a high level of development. In the same study, De Mello also concluded that as the technology level of foreign investments increases with the technology level of the host country, the effect of foreign direct investments on economic growth decreases. From this point of view, developing countries with low technology cannot be positively affected by foreign direct investments in terms of economic growth, so that the relationship will be negative. This view put forward by De Mello was named as “technology

absorption capacity” in future studies and has been reconsidered in a way to obtain results that support De Mello.

Mody and Murshid (2005) examined the effects of long-term capital (foreign direct investments, foreign debt and portfolio) flows on domestic investments in 60 developing countries for the period of 1979-1999 in 2005, and it was determined from the findings that foreign capital flows stimulated domestic investments. It is concluded that this will have a positive effect on growth in parallel with the improvement in the total investment level.

In his study on the determinants and effects of foreign direct investments in Obwona (2001), discussed the investments in Uganda in the period 1981–1995. In this study, Obwona divided the political process in Uganda into four periods and examined the process followed by foreign direct investments in these periods with the help of time series. As a result of the period he examined, he concluded that foreign direct investments had a positive effect on economic growth.

Karimi and Yusop (2009) examined the relationship between foreign direct investment and economic growth using the Toda-Yamamoto causality test and the Autoregressive Distributed Lag (ARDL) boundary test for Malaysia. The results revealed that there is no strong relationship in the long run, and foreign direct investments indirectly affect economic growth (Karimi & Yusop, 2009)

Magnus and Fosu (2008) analyzed the correlation between these variables for Ghana using the VAR model, cointegration and Granger causality tests based on the annual data for the 1970-2002 period. The findings showed that there was no significant correlation between foreign direct investments and economic growth before 1983, when the structural adjustment program was made, and afterwards, foreign direct investments positively affected economic growth.

Ayanwale (2007) examined the impact of foreign direct investments on economic growth in Nigeria's economy with 1970-2002 annual data. Although the effect of total foreign direct investments on economic growth is not statistically significant, it is concluded that foreign investments in communication and petroleum have a positive effect while foreign investments in the manufacturing sector have a negative effect.

Khaliq & Noy (2007) investigated the contribution of foreign direct investment inflows in different economic sectors to economic growth for Indonesia using data for the period 1997-2006. It is seen in the findings that the total foreign direct investment inflows have a positive effect on economic growth, it has been concluded that the said positive effect differs in sectoral terms.

Practical studies of economists beyond our borders on the economic growth interaction of foreign direct investments are as described above. Even these examples can be increased. While there is such a situation beyond our borders, when the literature on the relationship between foreign direct investments and economic growth in our country is scanned, it is seen that studies analyzing this effect are handled in Turkey and mostly with political economic and political approaches. In most of the studies, the historical process of foreign investments in our country is discussed, and afterwards, analyzes and comments that will evaluate the success of Turkey's post-1980 policy of internationalization are included. There is quite a limited number of studies examining the foreign investments received by Turkey and other countries that attract foreign investment and the effects of these investments on economic indicators.

In his study titled "Contribution of Foreign Capital Investments to Economic Growth in Turkey", which was presented in the seminar titled "Economic Stability, Growth and Foreign Capital" prepared by the Central Bank, Karluk (2001) talked about the relationship between foreign direct investments

and economic growth in a theoretical framework, and afterwards, he stated that the resource deficit in Turkey can be closed through foreign investments.

In his study, Akın (1998) tried to measure the effect of foreign direct investments in Turkey on economic growth between 1965 and 1995, based on the relationship between investment and growth. In his applied work, he adapted the model he used to measure economic growth from De Mello. He applied the Granger causality test to the dataset. He has obtained a bilateral causality relationship between foreign direct investment and production. Thus, he concluded that foreign direct investments had a positive effect on economic growth.

On the other hand, Karaçuka (2001) tested the effect of foreign direct investments on economic growth in Turkey between 1970-1998. Based on endogenous growth models, a model was created for Turkey and the Granger causality test was applied. Accordingly, a relationship between foreign direct investments and economic growth could not be obtained in the short term, but it was concluded that foreign direct investments positively affected the economic growth with a 5-year lag.

Kasabalı (2004) applied the Granger causality test developed by Toda-Yamamoto to analyze the economic growth effect of foreign direct investments in Turkey between 1987-2001. At the end of the test, it was concluded that the real gross domestic product for the period in question was Granger causal of foreign direct investments. In other words, in the light of the data set, foreign direct investments positively affected the economic growth in Turkey for the period in question.

In the study conducted by Güvercin (2007), first unit root tests were performed using 1980-2004 data for Bostwana and Ghana from Africa and 1993-2004 data for the countries separated from the former Soviet Union, and then the

Granger causality test developed by Toda-Yamamoto was applied. As a result, it has been stated that foreign direct investments have a positive effect on economic growth and institutionalization is also effective.

Afşar (2008) examined the relationship between foreign direct investments and economic growth for the Turkish economy for the periods 1992: 1- 2006: 3. Empirical results show that there is a one-way relationship between foreign direct investments and economic growth, and the direction of this relationship is from foreign direct investments to economic growth.

Alagöz, Savaş and Topallı (2008) examined the relationship between foreign direct investment and economic growth in Turkey for the period 1992-2007. The analysis showed that there is no greater causal relationship between foreign direct investment and economic growth. In addition, in this paper, the periods of 2002-2007 are analyzed using regression analysis. According to the analysis, the effects of foreign direct investments on economic growth have been found as moderate.

Örnek (2008) examined the causality relationship between foreign capital and domestic saving by using time series data for the 1996: 4-2006: 1 quarter period in Turkey. Empirical evidence has shown that foreign direct investment has positive and significant effects on domestic savings both in the short and long term. However, short-term capital inflows affect domestic savings negatively both in the short and long term. In addition, short-term capital inflows and foreign direct investments have been found to have a positive effect on economic growth. Well planned and effectively directed foreign direct investments create various positive economic effects on the economy of the host country where the investment is made. These are effects such as production, employment, income, export growth, balance of payments, economic development and general welfare.

The main effect of foreign direct investment is its net contribution to the national income of the host country (Görgün, 2004). However, in addition to its positive effects, foreign direct investments increase the control of foreigners over the economy by providing direct control over the management of the business, on the one hand, while applying advanced production techniques, on the other hand, destroying the economic integrity by preparing the ground for the continuation of the traditional structure, removing the protective restrictions such as customs tariffs and import bans. The possible negative effects such as creating unfair competition against small-scale domestic companies, causing exclusion effects and resulting in technological dependence are also discussed in Seyidođlu (2003). In this context, there are different results in the literature regarding the relationship between foreign direct investments and economic growth.

Deđer and Emsen (2006) investigated the foreign direct investment-growth relationship in transition economies using panel data analysis covering the period 1990-2002, in their study, in which they dealt with the foreign direct investments and growth relations in the 27 transition economies that adopted the market economy after the collapse of the Soviet Union. The findings obtained reveal that foreign direct investments are an important factor in the economic growth of transition economies.

Feridun (2004) analyzed the relationship between per capita gross domestic product and foreign direct investments for Cyprus using the Granger causality test and VAR model, based on the data for the period 1976-2002. The findings show that there is a one-way relationship from foreign direct investments to economic growth. It is seen that the findings obtained in the studies conducted on the Turkish economy also show differences.

Bilgili, Düzgün and Uđurlu (2007) analyzed the interaction between growth, foreign direct investments and domestic investments with the help of quarterly data for the period 1992: 1-2004: 4. The VAR analysis conducted has shown that

the variables discussed are in a mutual interaction, but the growth variable has a more pronounced effect on both foreign direct investments and gross domestic product.

Şimşek and Behdioğlu (2006) tested whether foreign direct investments positively contributed to economic growth by conducting correlation analysis based on the Cobb-Douglas production function. Analysis findings have confirmed that foreign direct investments in Turkey have a positive effect on the gross national product.

Açıkalm, Gül and Yaşar (2006) tested the relationship between real wages and gross national product growth in Turkey and foreign direct investments in Turkey for the years 1980-2002 with cointegration analysis. As a result of the study, they concluded that there is a long-term relationship between wages, gross national product and foreign direct investment.

As can be seen, studies prepared in our country are less in number compared to those in foreign literature. The reason for this is related to the approach to foreign capital in our country, as mentioned before. Rather, few multinational and / or practical analyzes have been conducted, as there is an approach to foreign capital flows in relation to political economic and political preferences. The reason for this approach is actually very understandable. One of the most important problems in the first years of the Turkish Republic was the foreign debt inherited from the Ottoman Empire. In order for these debts to be paid, it was necessary to increase the national income. For this reason, first of all, as stated in the Izmir Economy Congress, national income was wanted to increase with the establishment of a national entrepreneur class, but a private entrepreneur class could not be established due to reasons such as the insufficiency of capital accumulation after the War of Independence and the Great Depression of 1929. Then, public investments were accelerated in accordance with the principle of statecraft. Thus, the way to increase national income and to reach the level of

modern societies was opened. Foreign capital enterprises were a problem for both of these economic policies. For this reason, foreign capital enterprises operating in the country were expropriated one by one. With the approaches coming from these roots, foreign capital flows have always been evaluated with process analysis and benefit-cost perspectives in Turkey. In this study, the subject was approached in a way that does not include any (positive or negative) conditional approach.

In order to achieve this, the effects of foreign direct investments on economic growth from the window of developing countries, including Turkey, have been addressed, rather than a country specific analysis. In addition, applied studies in foreign and national economics literature related to the period after 1990, when foreign capital mobility increased, were included.

### **3. METHODOLOGY AND DATA**

#### **3.1 PANEL DATA ANALYSIS**

Different data sets can be used while conducting economic research. Each data set can only be used for models suitable for their structure. There are three types of data sets. These are cross section data, time series and panel data. Today, panel data analysis method is used in many studies. In this study, panel data analysis was used to investigate the effect of FDI flows to the developing countries on the economic growth of these countries.

Panel data can be defined as a data set in which time series belonging to multiple sections are combined or section data with time dimensions (Greene, 2003). If panel data sets contain equal lengths of time series for each section, such panel data is called balanced panel data, and if it contains different lengths of time series, it is called unbalanced panel data (Atalay, 2007). Simple functional representation of panel data is as follows;

$$Y_{it} = \alpha + \beta_{1it}X_{1it} + \dots + \beta_{kit}X_{kit} + e_{it}$$

$$i = 1, 2, 3, \dots, N \quad t=1, 2, 3, \dots, T$$

Equation 3.1

Here  $i$  indicates the cross section,  $t$  indicates the time. Since the  $Y$  variable takes different values in each time period of each section, it is expressed with two subscripts,  $i$  and  $t$  (Pazarlıoğlu & Gürler, 2007).

Panel data has a number of advantages compared to cross-sectional data or time series. These can be briefly listed as follows;

- Panel data sets contain the information that the sections it covers are heterogeneous, the data set is checked against heterogeneity.
- The high number of observations in the panel data ensures that the regression model to be formed has a high degree of freedom.
- Since panel data analysis has more variability compared to time series and cross-section data analysis, the problem of multiple connections is less in these data.
- Another benefit of the high number of observations in the panel data is that the reliability of the results obtained in the model is high.
- Panel data helps model more complex relationships.
- While there is a deviation for the estimates made with the time series and cross-section data, in a situation where the variables do not have the characteristic of changing depending on the unit and time, the use of panel data allows us to control the bias.
- While only the differences between units can be examined in the estimations made with cross-section data, the differences between units and within each unit depending on time can be examined with the help of panel data.

The disadvantage of using panel data is that it is difficult to compile the values of different units for the same variable in similar time periods. Panel data

models take different names according to the assumptions made depending on the nature of the error term. If the error term of the model is assumed to contain a component called individual effect, which is not covered by the independent variables in the regression, does not change over time, but includes cross-sectional features, the model is named as one-sided error component regression model (Atalay, 2007). Accordingly, while a standard panel data model is as stated in the equation, the error term can be expressed as follows:

$$e = \mu_i + v_{it}$$

Equation 3.2

Here, " $\mu_i$ ", which does not depend on time but differs from section to section, is named as individual effect, while it is assumed that " $v_{it}$ " varies according to both time and section. Accordingly, " $\mu_i$ " indicates the unobservable cross-section effect, " $v_{it}$ " symbolizes the stochastic error term.

The one-sided error component may consist of only the cross-sectional effect and stochastic error term as stated above, as well as the unobservable time effect ( $\lambda_t$ ) and stochastic error term ( $v_{it}$ ) as formulated below.

$$e = \lambda_t + v_{it}$$

Equation 3.3

If it is assumed that in the error term of the regression, besides the individual effect, there is also a component (period effect) that is not predicted in the regression, remains constant from cross-section but changes over time, the model is called the double-sided error component regression model. In this case, the representation of the error term will be as in the following equation;

$$e = \mu_i + \lambda_t + v_{it}$$

Equation 3.4

Here it is assumed that " $\lambda_t$ " is a variable that affects all sections and belongs only to a certain time period and cannot be expressed by the variables in the model (Atalay, 2007). So " $\lambda_t$ " is the unobservable time effect in the model. According to the inclusion of one-sided and two-sided error terms in the regression model, the models have different names as fixed effect and random effect.

### 3.1.1 Fixed Effect Model

The models in which the slope coefficients do not change and the fixed coefficients change only between cross-sectional data or only between time data or for both data are called fixed effects models. In other words, if there is no time-dependent differentiation in the panel variables while there is a difference between sections, then the regression model to be created will be a one-way and cross-section fixed effects model, instead, if there is only a time-dependent differentiation, it is called a one-way time-dependent fixed effects model. If the source of the constant term is the difference between sections and time, then a two-way fixed effects model will come into question.

The general representation of the fixed effects model assumes that the difference between sections can be seen in the differences in fixed terms (Hsiao, 2002), since the difference between sections rather than the difference caused by time in panel data analysis draws more attention (Yücel, 2006). Accordingly, the above equation;

$$Y_{it} = \alpha + \beta_{1it}X_{1it} + \dots + \beta_{kit}X_{kit} + e_{it}$$

Equation 3.1

It also expresses the general representation of fixed effect models. Here it is assumed as  $e \approx \text{IID}(0, \sigma_e^2)$ . In other words, it is accepted that the error terms have an independent and identical distribution with variance equal to zero. Also, each

$X_{it}$  value is independent from  $e_{it}$  value. We can also demonstrate the above regression model using a dummy variable.

Accordingly, if each section “  $i$  “ value is defined with a dummy variable such as ”  $d$  “, the regression model will also be as follows:

$$y_{it} = \sum_{j=1}^N \alpha_j d_{ij} + (X_{1it}\beta_{1it} + \dots + X_{kit}\beta_{kit}) + e_{it}$$

Equation 3.5

Here, if  $i = j$  equality is provided, the digit will be equal to 1, while in other cases it will be equal to 0. Thus, there will be  $N$  artificial variables in the model. The  $\alpha_1, \dots, \alpha_n$  and  $\beta$  parameter values in the regression model can be estimated by the ordinary least squares (OLS) method. These estimators, including the value of  $\beta$ , are called least squares dummy variable (LSDV) estimators (Verbeek, 2004). Least squares artificial variable estimation method is one of the three estimation methods of fixed effects model. The difficult part of making predictions using artificial variables is the presence of a large number of estimators. With the increase in the number of sections, the number of estimators will also increase. This results in a smaller degree of freedom. Therefore, an easier method is used to estimate the value of  $\beta$ .

We average the variables in the classical fixed effects model to eliminate the cross-section effect. Accordingly, the equation is as follows;

$$\bar{y}_i = \alpha + (\beta_{1it}\bar{X}_{1i.} + \dots + \beta_{kit}\bar{X}_{ki.}) + \bar{e}_i.$$

Equation 3.6

Here “  $\bar{\cdot}$  ” sign indicates the average value of the cross-sectional values of each variable according to the time dimension. For example,  $\bar{y}_i$  Refers to the

average of the observation values of the dependent variable in the section  $T = 1, 2, \dots, t$  time periods.

If we subtract equation (3.7) from equation (3.1), which is the initial fixed effects model, the following equation is obtained;

$$(y_{it} - \bar{y}_i) = (\beta_{1it}(X_{it} - \bar{X}_{1i}) + \dots + \beta_{kit}(X_{kit} - \bar{X}_{ki})) + (e_{it} - \bar{e}_i)$$

Equation 3.7

This equation is the equation of the regression model obtained by redefining the variables in terms of deviations from the cross-sectional mean. When equation (3.7) is examined, it is seen that the value of " $\alpha$ ", which expresses the cross-section effect, is not included. This reconstruction of the fixed effects model is called "Within Transformation". For this reason, the estimators obtained as a result of "regressing equation (3.7) using the least squares method to estimate its value are also called "Within Estimators". The last of the fixed effects model estimators is the "Between Estimators". These estimators are the  $\beta$  estimation values obtained by regressing equation (3.6) using the least squares method. However, when determining the Between Estimators, the constant term is also added to the regression model, unlike the Within model. Therefore, Between models also include the cross-section effect.

## 3.2 ESTIMATION OF THE MODEL

### 3.2.1 Model

In order to determine the effects of foreign direct investments on economic growth, the Neo-classical production function is mostly used in economics literature. The most used models in econometric applications are the models that Balasubramanyam et al. Used in 1996 and De Mello's studies in 1999. These models are also derived from the Neo-classical production function. Therefore, this study uses a growth model derived from the Neo-classical production function.

As stated in the previous chapters, in the neo-classical (Solow) growth model, the production function in the steady-state equilibrium;

$$Y = f(K, AL)$$

Equation 2.7

It was defined as. Here Y is the real output level; K is the amount of capital; L is the amount of labor; A symbolizes the efficiency of knowledge or labor.

In the functional definition above, there is no distinction between national and foreign capital within the definition of capital. To illustrate this distinction, we can redefine the function as follows;

$$Y = f(AL, K_n, K_f)$$

Equation 3.8

Here  $K_n$  stands for national capital accumulation, while  $K_f$  symbolizes capital accumulation of foreign origin at home.

If we use domestic product per capita instead of Y, then the function will be as follows;

$$GDP = f(AL, K_n, K_f)$$

Equation 3.9

It can be restated in the form. Here, GDPPC symbolizes the GDP per capita value and its value has been calculated in real terms. In the next step, the values expressed as arguments will be detailed. Accordingly, A indicates the knowledge level of the society or the efficiency of labor, as emphasized before.

In this study, the schooling data carried out in the relevant period in the country in question were used as the instrument variable instead of the said

independent variable. The amount of labor is expressed in terms of the workforce of the relevant section. In terms of capital, while gross fixed capital formation value is used for national capital, foreign direct investments are selected for foreign-sourced capital. Accordingly, the production function obtained by using the Neo-classical production function was formed as follows;

$$\text{GDP} = f(\text{SCH}, \text{LBR}, \text{GFCF}, \text{FDI}, \text{CELL})$$

GDP: Gross Domestic Product Annual Growth Rate

SCH: Year to Year Schooling Data

CELL: Mobile Cellular Subscriptions Per 100 People

LBR: Labor Force Participation Rate

GFCF: Share of Gross Fixed Capital Formation in GDP

FDI: Share of Foreign Direct Investments in GDP

Ultimately, since the aim of this study is to measure the impact of the change in foreign direct investments on the economic growth of the host country, the values in the above function should expressed as follows;

$$\text{GDP}_{it} = \beta_1 + \beta_2 \text{FDI}_{it} + \beta_3 \text{LBR}_{it} + \beta_4 \text{GFCF}_{it} + \beta_5 \text{SCH}_{it} + \beta_6 \text{CELL}_{it} + e_{it}$$

Equation 3.10

### **3.2.2 Data Used in the Model**

Based on the growth equation defined in the previous section, it is thought that using a single source in the selection of data to be used to create the regression model will give more healthy and realistic results. For this reason, databases that can collect data on countries defined as developing countries have been scanned. As a result, data for the 1991-2017 period of 29 developing countries were obtained from the World Bank's World Development Indicators (WDI) database and the regression model was created in the light of these data.

When we come to the measurement of the data; GDP data are values calculated in US Dollars, schooling data (SCH) are used in the schooling data of

the respective countries in the relevant years. Labor (LBR) is the participation rate of people whose are between the ages of 15-64 to the labor force. Gross fixed capital formation (GFCF) is the value that is the share of gross fixed capital formation in GDP. FDI is the value of the share of the Foreign direct investment in GDP. CELL represents the mobile cellular subscriptions per 100 people.

### 3.3 PANEL DATA ANALYSIS RESULTS AND EVALUATION

Fixed effect model was obtained with the help of E-Views 11 package program by using the mentioned data set. The models in question are as follows.

**Table:1 Fixed Effect Panel Estimations Variables**

	model-1	model-2	model-3	model-4	model-5
	Growth	Growth	Growth	Growth	Growth
FDI	0,119 ***	0,124 *	0,124 *	0,122 *	0,126 *
	0,068	0,069	0,074	0,074	0,074
LBR		-0,053	-0,053	-0,064	-0,059
		0,069	0,070	0,069	0,069
GFCF			-0,001	0,001	-0,004
			0,073	0,073	0,074
SCH				0,272	0,225
				0,170	0,171
CELL					-0,013
					0,010
N	638	638	638	638	638
Ad. R-Squared	0,221	0,220	0,219	0,219	0,219

#### Panel Data Fixed Effect Estimation Results

Table 3.1

Table 3.1 contains the results of five different models. Our first Model is our simplest regression model based only on the growth rate and foreign direct investment as our research topic. In later models, labor, gross fixed capital formation, annual schooling data and mobile cellular subscriptions were added to

the regression, respectively, and the regression was gradually expanded in each model.

In line with the expectations, the sign of the foreign direct investment variable was found to be positive. According to the results of the first model, we see that a standard deviation increase in the foreign direct investments variable increases the growth index by 0,119%, and foreign direct investments seem significant at the 1 percent significance level.

When labor force data is added in the second model, the coefficient of direct investments increases. According to Model 2, although 1 standard deviation increase in labor force reduces growth by 0,053%, 1 standard deviation increase in foreign direct investments positively affects growth by 0,124%, and foreign direct investments are significant at 10 percent significance level in this model. Although the workforce appears negative, it is not significant at all three levels of significance.

When it comes to the third model, gross fixed capital formation is added to the model. It is observed that gross fixed capital formation has a negative effect on growth and is not significant at all three significance levels. After this variable added to the model, the impact rate of foreign direct investments did not change. However, foreign direct investment still has a significant impact and is significant at the 10 percent significance level.

When it comes to the 4th model, schooling variable were added and the analysis was made. According to this, foreign direct investments are still significant at 10 percent importance and 1 standard deviation increase in foreign direct investments increases growth by 0,122%. Schooling, labor and gross fixed capital formation variables are not significant at all three significance levels.

Finally, when it comes to the last model all the variables; FDI, labor, gross fixed capital formation schooling and mobile cellular subscription variables added to the regression model and the largest regression model created with data mentioned for this study. At this model foreign direct investment have the biggest impact between all five models. 1 standard deviation increase in foreign direct investment increases growth by 0,126%. Also, FDI is significant at 10% significance level.

Labor force, gross fixed capital formation, schooling data and mobile cellular subscription variables are seems to be insignificant all the models that they included. As a result, foreign direct investments, which are the subject of research, have a positive and significant effect on growth in these models, which supports our hypothesis.

Regarding the FDI-economic growth relationship, which is the main subject of this study, a statistically and economically significant positive effect was obtained, as expected. In this case, we can say that FDI flows to developing countries make a positive contribution to the economic growth of these countries. This is the activities of policy makers in the country in question to encourage FDI; demonstrates its necessity and justification. However, the point that we need to evaluate while making this comment is the fact that the obtained result is a statistical result. Although we generalize the interpretation to all countries included in the model since the accepted model is a fixed effects model, the presence of statistical errors is always a possibility. The comments made are valid in the data conditions explained at the beginning of the study. For this reason, the validity of the interpretations can be reinforced by obtaining similar results as a result of repeating similar studies with different observation values. At this point, we can refer to similar results obtained as a result of similar studies in foreign economic literature regarding the reliability of the results obtained in the study.

### **3.4 CONCLUSION**

The phenomenon of development, with the simplest definition, refers to the improvement of the existing situation. The development of economies, on the other hand, includes the improvement of the basic indicators by which the development is measured. The indicator most associated with economic development in the economics literature is economic growth, which expresses the increases in the production capacities of economies. Economic growth, as can be understood from its simple definition above, is a quantitative element. However, the answer to the question of whether the level of development of economies can be expressed in precise quantities is no. Nomenclature and definitions of countries' development levels are different. The main reason for this difference is; political approaches, schools adopted by economists, and therefore some economic concepts are different forms of understanding.

Before starting this study, the main aim was to measure the impact of FDIs on economic growth. However, the reason why the concept of developing countries is preferred in naming countries with relatively less development level in the classification of countries according to their level of development is the fact that the concept of developing countries is used more in the growth literature, and therefore the need and desire to achieve uniformity in classification and definition.

After giving the above information about the nomenclature and definitions used in the study, the main purpose of this study can be mentioned. The aim of this study is to measure the effects of FDI, which is a type of international capital movements, on the economic growth of the economies of developing countries that host these investments.

For the purpose of the study, in the first part, both the concept of developing countries and the general characteristics of the countries in question are mentioned, as well as the definition and classification of the concepts of foreign investment and economic growth. After the aforementioned acceptance regarding

the classification of developing countries, the general characteristics of these countries were mentioned.

In the first chapter, after mentioning the common features of EMs, the definition of FDIs is given and approaches in which FDIs are handled according to the conditions of perfect competition and imperfect competition are mentioned. While some of these approaches are aimed at defining FDIs, others are aimed at explaining what it is and why it occurs. After these definitions, MNCs are mentioned as the element that carries FDIs to the host countries and the methods and basic motivations of these companies to operate in foreign countries are given.

In the first part, the concept of economic growth is discussed. Here, besides the definitions of economic growth, the types, general characteristics, results of economic growth and the theoretical development of growth models are mentioned. Thus, in the first part of the study, the conceptual ground that will form the basis for the analysis of the FDI economic growth relationship, which will be mentioned in the second part, is presented.

In the second part, the effects of FDIs on the economic indicators of the host countries are discussed in general. Here, first of all, the negative effects of the host countries on the balance of payments, competitiveness and production technology, which are included in the economic literature, are mentioned, and in which cases the possible negative effect will occur. Afterwards, the positive effects, which are widely accepted in the economics literature today, are included. Accordingly, brief information is given on how the positive effects of FDIs on the capital accumulation, national income level, balance of payments, technology level, general price level, competition and other macroeconomic indicators of the host countries are realized.

In the continuation of the study, the positive effects of FDI, which is the main subject of the study, on the economic growth of the host countries are discussed within the framework of Neo-Classical and Internal growth models. Since the growth theories are mentioned in the first chapter, the mechanism of the positive effects of FDIs on the economic growth of the host countries of the Neo-Classical and Internal growth models, which we will use only in the application part of the study, is included in this chapter. The issue that should be mentioned here is that the impact mechanisms of FDIs on economic growth are not explicitly included in the economic literature in Turkish and foreign languages. The studies were either handled as a process evaluation or evaluated as a purely econometric application and only the results were mentioned. For this reason, in this study, the mechanism by which the positive effects of FDIs on economic growth occur has been limitedly included.

After mentioning the theoretical approaches regarding the effects of FDIs on the growth of the host countries' economies, in the next part of the second part, applied studies in the economics literature are given. The applied studies in question are handled from a dual perspective as foreign and national studies. While there are many studies on this subject in the foreign literature, it has been seen that the studies in the national literature are mostly handled within the political framework and are generally examined in the form of process analysis. For this reason, very few studies have been reached in the national economic literature, especially in the form of multi-country analysis. In this sense, it is thought that this study will contribute to the literature, especially since it is a multi-country time series analysis.

In the third and last part of the study, an econometric application using the panel data analysis method to measure the effect of FDI flows hosted by developing countries on the economic growth of these countries is included. In this section, firstly, the definition of panel data analysis is given and its advantages compared to other methods are mentioned. Afterwards, the

classification of panel data analysis is given and in this sense, the characteristics of the fixed effects and random effects model are mentioned. Finally, in this section, the mechanism by which the effects of random effects occur is given in a limited way.

The model used in econometric application is a model developed from Neo-Classical and Intrinsic growth models. The model in question is Balasubramanyam et al., Borensztein et al. and De Mello, Jr. It was created by taking into account the models used. Accordingly, the growth values were obtained by taking the derivatives of the variables of the production function with respect to time, and the interaction of the growth values of the said variables was analyzed.

The basic form of the model is the following function.

$$GDP = f(AL, K_n, K_f)$$

In this study, the schooling data and mobile cellular subscriptions carried out in the relevant period in the country in question were used as the instrument variable instead of the said independent variable. The participation rate of labor is expressed in terms of the labor force of the relevant section. In terms of capital, while national fixed capital formation value is used for national capital, foreign direct investments are selected for foreign-sourced capital. Accordingly, the production function obtained by using the Neo-classical production function was formed as follows;

$$GDP = f(SCH, LBR, GFCF, FDI, CELL)$$

GDP: Gross Domestic Product Annual Growth Rate

SCH: Year to Year Schooling Data

CELL: Mobile Cellular Subscriptions Per 100 People

LBR: Labor Force Participation Rate

GFCF: Share of Gross Fixed Capital Formation in GDP

FDI: Share of Foreign Direct Investments in GDP

After the model used in the application was determined as above, it was thought that obtaining a data set from a single source would give more accurate results when it comes to obtaining the data to be used in estimating the econometric model in question. When the databases related to this were searched, it was decided to use the WDI database of the WB, which includes datasets for many variables from all countries. Accordingly, the regression model was estimated by using the data of the years 1991-2017 related to 29 developing countries.

When it comes to estimating the regression model, E-Views 11 package program was used to perform this process. Panel data models are estimated as fixed effects.

Accordingly, suggestions can be made to policy makers regarding the promotion of FDI. However, the point to be considered here is the nature of FDIs. There is a widely expressed suspicion that only FDIs coming into the country in the form of acquisitions of established physical capital or mergers will positively affect economic growth. This is because foreign investments entering the country through acquisitions and mergers do not add value to the existing physical capital stock. In such a case, positive impact on growth and employment will not be achieved, and the positive impact on technology transfer, which is considered as the most important contribution of FDIs to host countries, will not be achieved. For this reason, encouraging policies should be followed, but the positive effect of FDIs on the country's production capacity should be considered as an important criterion.

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## **ETHICS BOARD APPROVAL**

Ethics Board Approval is available in the printed version of this dissertation.