IMPORTANCE AND DEVELOPMENT OF FOREIGN DIRECT INVESTMENT: AN ANALYSIS FOR TURKEY

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Abstract

After 1980, with the increased globalization race investments in Turkey increased significantly with the lifting of barriers to capital flows. With the Economic Stability Decisions of January 24, 1980, Turkey entered this race and entered into full financial release with Decree No. 32 issued in 1989. In this study, the relationship between inflation, unemployment and industrial production, which is one of the economic indicators of foreign direct investments in Turkey, was analyzed with the VAR model. Johansen cointegration test, Impulse - Response analysis and Variance Decomposition analysis were conducted to evaluate the relationship between variables. The outcomes highlight that inflation, unemployment and industrial production have a crucial impact on foreign investments for Turkey.

Keywords: Capital Flows, Foreign Direct Investments, Economic Development and Growth, Turkish Economy, Inflation, Unemployment, Industrial-production index

INTRODUCTION

In the world trade system, until the beginning of the First World War in 1914, British Hegemony was accepted and performed. However, the First World War critically unsettled the countries' economies, so this system started to decline steadily. Until 1931, this system still

continued and finally the attachment between pound and gold was removed. As a result, the value for all of currencies was lost and financial discipline disappeared. During Second World War, America, the other rising power of world, stepped in and started to manage the world financial economy with England. Under the leadership of two countries the most important condition in finansal discipline was that capital flows were not liberal. For this reason, the policies of advocating the continued fixed exchange rate system were followed all over the world. Before the War ended, these policies were announced to the whole world at the Bretton Woods Conference in 1944. However, the British pound became more depreciation and could not fit this system, the American dollar has been valid in world trade alone and continued since 1950s until today. In 1971 the attachment of gold and dollar was removed then gold was become worthless for countries' currencies and capital flows. After all this, fixed exchange rate system has ended completely and flexible exchange rate system has started.

When at the beginning of the 1980s, financial system of the world had entered different dimension and the barriers to capital flows were starting to disappear. Liberalization movements provided the development of market economies on the other hand it caused to increase in investment. With the recent globalization of the world economy, Turkey has also searched for ways to provide the foreign investment it needs. As a result, foreign capital flows began to raise quickly. Turkey has taken a big step in the transition to free market economy with the Decisions of January 24, 1980, which are also called as the "economic stability program", which is an integration with world markets such as stopping the bad economic trajectory, achieving stable growth in the economy, controlling inflation. After 1980, there were important increases in FDI (Foreign Direct Investment) of Turkey. These decisions are in the same with Turkey's foreign policy and the country's political, economic stability has been tried to be achieved, and the foreign capital and foreign investment movement has not been fully weakened.

CAPITAL FLOWS AND FOREIGN DIRECT INVESTMENT

Neoliberalism, which was the dominant opinion in the global economy in the following period 1980, stated that globalization was inevitable for all states in the world with the Washington Consensus in 1989. The Washington Consensus is generally a ten-point policy proposal. It means that the U.S. Treasury, IMF and World Bank experts and other internationally based on financial institutions jointly develop policies and that all of these improved policies are widespread and implemented around the world. Williamson said that in this context, Washington-based organizations should implement a decisive policy (Williamson, 1990, 2002).

The United States, which was the country that made the most foreign direct investment after the Second World War, hosted very little foreign investments until 1980 (unlike British investments). In the 1970s, their volume was around 3-5 billion dollars annually. However, significant increases were experienced after 1980, and foreign direct investments in the USA peaked with the contributions of the UK, Japan and the Netherlands. It exceeded $ 50 billion annually and occured a quarter of the total capital inflow. The reaction of the USA, which is the leader of liberalization in all sectors in the world, against this increase is quite interesting. The USA was the first country to host direct foreign capital now (McCulloch, 1993).

China, which became the main source of reaction in both the USA and the EU in the early 2000s, has become the favorite country of direct investments. On the other hand, Hong Kong is seen as China's new New York. This market, with a market capitalization of more than $ 2 trillion, becomes a source of capital for Chinese companies. With the addition of China's state reserve funds of more than trillion dollars, the size of the amount created is threatened the developed countries. Measures are being taken to prevent important facilities from passing over to Chinese companies (Wehrofritz, 2007).

Since the beginning of the 20th century, when globalization started, financial integration has increased significantly and foreign direct investments to developing countries have intensified remarkably. While the total of international capital flows in 1913 corresponded to 30% of the world gross product, this rate reached 90% in 2001 and even more than 100% as of the end of 2007. From this point of aspect, there is an view that supports the impression that world economies are globalized and integration is increasing. On the other hand, while underdeveloped countries received 48% of the investments in 1913, in 2001 this rate decreased significantly to 12.5%. In addition, while 9 of the 12 economies with the highest capital inflows in 1913 were developing countries, it is drawing attention that as of 2001, only China was the developing country among the 12 countries in the relevant list. This process has started to reverse again after the 2000s. According to the World Bank data, the capital flow from India to England after 2004 is less than the capital flow from England to India confirms this. In other words, capital flows have started to move from developed countries to developing countries, not from developing countries to developed countries. In other words, it can be claimed that the integration that started from the beginning of the 20th century has been reversed in terms of developed and developing countries (Schularick, 2006).

Graph 1 shows the distribution of FDI in developed and developing economies, BRICS countries and the European Union between 2000-2019. It is clearly seen in the graph that direct investments are moving from developed economies to developing economies after 2000. In 2000, while approximately 200 billion USD of FDI was realized to emerging economies, 1.1

trillion USD was realized to developed economies. In 2019, these amounts were 685 billion USD and 800 billion USD, respectively. Another attention point is that the crisis that started in the USA in 2008 and rapidly spread to the world and became a global crisis also negatively affected FDI. Investments in the USA and Europe region have dropped significantly and have not reached these levels until today. BRICS countries (Brazil, Russia, India, China, South Africa), defined as the Fragile Five, also recovered from the crisis in a very short time and investments were increased again. Investments made in both developing countries and BRICS countries have become a priority, especially with the effect of the investments made in China. While a total investment of 250 billion USD in 2018 came to the BRICS countries, it exceeded 300 billion USD in 2019.

Graph 1: Foreign Direct Investments for Developed and Developing Economies, BRICS, EU Between 2000-2019 (million USD)
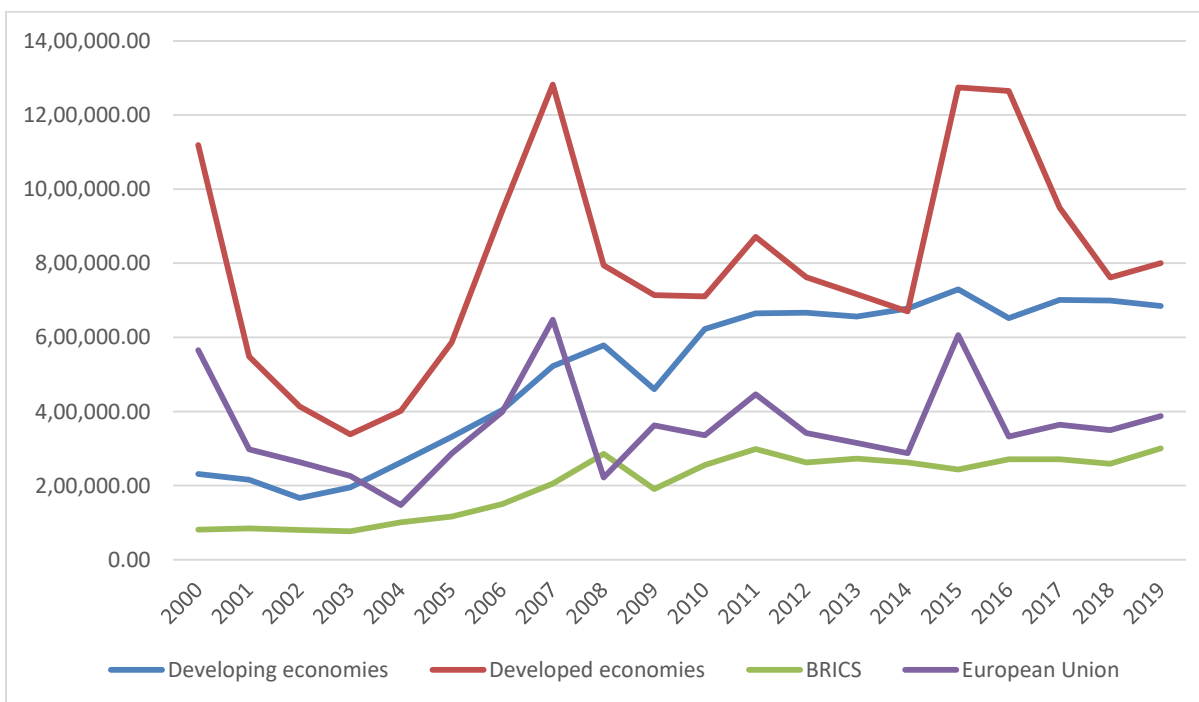
Source: UNCTAD

Capital can enter a country in different ways. The most important of these ways are direct investments. A person or company that invests foreign directly can use its own technology and brand name whenever it wants to enter a company or organization in that country. Foreign direct investment is an investment from one country to another by taking over a firm from another country, financing a newly opened firm, or increasing the capital of an existing company. The investor allows the company in country where it wants to enter the market to use

its technology or brand name, meaning that companies enter a licensing agreement. Foreign investment is the direct income of countries and is a real investment towards capital stock, production (Karluk, 2007).

Before attending the liberalization movement, Turkish economy was a country with a continuous current account deficit. The FDI, which came to the country due to the effect of entering the outward process, has increased over time and this contributed positively to the current account deficit decreasing and during the current surplus in 1988 and 1989 year. In 1980, total exports increased from 3.6 billion USD to 11.6 billion USD in 1989 due to incoming investments and increased approximately 3 times. The impact of investments with positive contributions to the country's economy on inflation and unemployment is clearly seen in Table 1. Unemployment rate was 93% inflation and 94.30% in 1980, decrease to 38% in 1987, driven by the FDI which increased nearly 6.5 times. Another thing to note is the change in amount of GDP. It raised from 94.7 USD billion in 1980 to 147.5 USD billion with incoming investments in 1989.

Table 1: Turkey Economic Indicators and FDI Relationship Between 1980-1989 (million USD)

YEAR	FDI	GDP	GDP per capita (USD)	Export	Account defıcıt / surplus	Inflatıon	Unemployment
1980	18,00	94.702,53	2.153,51	3.621,00	-3.408,00	%93,00	%94,30
1981	95,00	97.794,12	2.173,76	5.967,00	-1.936,00	%37,61	%37,60
1982	55,00	88.852,61	1.930,51	7.808,00	-952,00	%29,14	%29,10
1983	46,00	84.907,56	1.803,72	7.844,00	-1.923,00	%31,39	%31,40
1984	113,00	82.582,27	1.716,38	9.609,00	-1.439,00	%48,39	%48,40
1985	99,00	92.554,35	1.883,72	11.119,00	-1.013,00	%44,96	%45,00
1986	125,00	104.246,35	2.079,58	10.580,00	-1.465,00	%34,61	%34,60
1987	115,00	119.995,99	2.348,22	10.190,00	-806,00	%38,86	%38,90
1988	354,00	125.068,43	2.402,68	11.662,00	1.596,00	%68,81	%68,80
1989	663,00	147.493,74	2.783,30	11.625,00	938,00	%63,27	%63,30

Source: CBRT, TURKSTAT, Word Bank Data

Most of the capital flows that came to Turkey in the 1990s were through borrowing from abroad by domestic banks. During this period, the most important factor that pushed domestic banks to borrow from abroad was the high nominal interest rates on GDDS (Government Domestic Debt Securities). Banks wanting to take advantage of these high interest rates used the funds they obtained by borrowing from abroad to buy GDDS. In other words, capital inflows

from abroad were directed towards the domestic borrowing needs of the government rather than providing funds for production. Speculative movements reached peak levels during this period as high interest rates on GDDS spread capital owners' attempts to make money instead of production. For this reason, in the 1990s, a very small part of the capital flows were FDI (Orhangazi, 2020).

The 1990s, with two minor recessions and two major financial crises, were very difficult years for the Turkish economy. The economy was stated that improvement during periods of unstable foreign capital investment and narrowed in capital outs. Since 2000, the Turkish economy has entered into a stabilise programme entirely under the supervision of the IMF (International Monetary Fund). One of the goal this program had a limitation monetary expansion and the CB (Central Bank) to growing up the economy with capital inflows, wholely dependent on net foreign assets. The programme was aimed of lowering inflation based on the exchange rate and, as a result, increasing capital flows again.

Kemal Derviş, the former vice president of the World Bank, who taking head of the Turkey's economy after the 2001 crisis, urgently had reform packages prepared and quickly approved in the parliament. The main theme of these packages, which were mentioned to the literature as "15 laws in 15 days", was to open the way for international capital to invest in Turkey and to give various guarantees. Thus, foreign investors could apply to international courts for a solution in case of non-compatibility in Turkey and participate in public tenders without limits. On the other hand, foreign investment was tried to be inflow by privatizations in various sectors. In this direction, Turk Telekom, TUPRAS, THY, Tekel, Seker Institution, TEAS, TEDAS and Erdemir Celik were the priority among the institutions to be customized. Privatization revenues in Turkey reached $4.5 billion in the 1990s from $160 million in 1986-1989. From 2003 to 2018, privatizations accelerated and total privatization revenues amount to $61.9 billion.

Foreign investments significantly increased in our country between 2004 and 2007 in the form of privatizations, mergers and acquisitions. In 2005, our country's $2 billion foreign direct investments came from the purchase of real estate. At the same time, $7.8 billion is obtained from customized companies such as Turkcell, Türk Telekom, Garanti Bank and Fortis Bank. In 2006, the situation was not so different. It consisted of privatization revenues of $13.4 billion in foreign direct investment. The other way of the merger, acquisitions revenue, was $2.9 billion. When the consideration of this data, it is clear that foreign direct investors are more likely to join country in the form of acquisitions, partnerships or real estate investments than new investments (Acar, 2016).

Within the framework of TSEP (Transition to a Strong Economy Program) implemented in 2000, the distribution of foreign direct investments between 2000 and 2020 by Turkey, which has not captured the returns and growth it expects from financial liberalization, is also shown schematically in Graph 2. With the impact of the European Union harmon cohesion process, FDI increased continuously until the 2008 global crisis and peaked up in 2007 with 22 billion USD. FDI decrease continuously until 2011 due to the impact of the crisis, and in 2011 it dropped to 16.2 billion USD. In 2015, there were 19.3 billion USD of FDI inflows and these levels have not been reached to until these days. FDI, which tends to decline continuously in the ongoing years, has diminished rapidly due to the effect of the dollar crisis in 2018. As of March 2020, when the coronavirus case that appeared in Vuhan, China in December 2019 was first seen in Turkey, FDI reacted seriously and began to leave the country. While 1 billion USD FDI entry occurred in March 2020, the 6 million USD outflow in April 2020 reveals how dangerous Covid is for the Turkish economy.

Graph 2: Foreign Direct Investments Inflow to Turkey Between 2000-2020 (million USD)
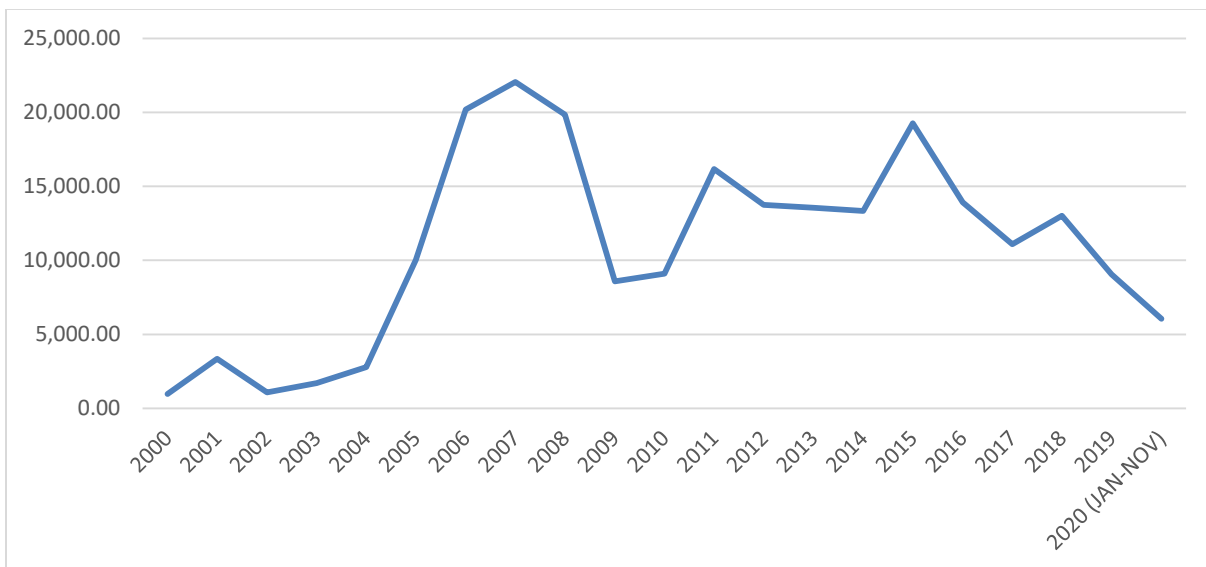
Source: CBRT

LITERATURE REVIEW

Mucuk et al. (2009), examined the causal between FDI and economic growth with monthly data for the Turkish economy between 1992 and 2007. ADF and PP unit root test values are smaller than Mac-Kinnon critical values at 1%, 5% and 10% significant levels, it has been found that FDI and economic growth series are stable at the original level. Based on the predicted VAR model results, it can be seen that there is a mutual positive relationship between

economic growth and FDI. As a result of the cointegration test, FDI and economic growth variables move together in the long time period. The Granger causality test shows that variables are the cause of each other. Impulse-response functions show that economic growth contributes positively to FDI and FDI contributes positively to economic growth. As a result of variance decomposition, it is understood that the impact of economic growth on foreign direct investments is weaker.

Hayakawa et al. (2011), analyzed the FDI inflows of 90 countries, 60 of which were emerging countries, between 1987-2007 in order to determine the political and financial risk factors that affect the FDI decisions of multinational companies. Studies show that political risk is more important than financial risk in making investment decisions.

Aslan et al. (2014), analyzed the relationship between short-term capital flows and economic growth based on quarterly data for the Turkish economy between 1998 and 2011. The research using the Granger causality test concluded that there is one-sided causality from short-term capital inflows to GDP. So, short-term capital flows have an impact on GDP and such capital flows must be taken into account in macroeconomic decisions to be taken.

Sofilda et al (2015), analyzed factors affecting direct foreign capital inflows in 6 ASEAN countries (Indonesia, Malaysia, Singapore, Thailand, Philippines, Vietnam) between 2004-2012. Foreign direct investment was used as a dependent variable, and GDP, global competition, interest rates, exchange rates and trade openness variables were used as independent variables. Panel data method was used in the study. As a result, three of the five independent variables (global competition, GDP, trade openness) were found to have a positive and statistically significant effect on direct foreign capital inflows in ASEAN-6 countries. Among these three variables, especially the GDP variable, is an important factor on foreign direct investment.

Agrawal (2015), analyzed the relationship between foreign direct investment and economic growth in BRICS countries (Brazil, Russia, India, China, South Africa) between 1989-2012. Panel cointegration and panel causality methods were used in the study. As a result, there is a long-term relationship between foreign direct investment and economic growth. In addition, it has been observed that causality in the long term lead to from foreign direct investment to economic growth.

Waqas et al. (2015), examined the relationships between macroeconomic factors and FDI in East Asian countries (China, India, Pakistan and Sri Lanka) for the period of 2000-2012. In the study, they claimed that high interest rates and depreciation of the local currency, low inflation and high economic growth rate reduce the volatility of FDI. Consequently, it was stated that FDI preferred stable macroeconomic indicators.

Acar (2016), analyzed the relationship between foreign capital investments and economic growth in Turkey between 2001 and 2015. Economic growth and FDI data were used on an annual basis between 2001 and 2015 and were taken from the World Bank. Unit root tests of variables were performed and the degrees of stability and integration were determined, ADF and PP were significantly stable at the level of variables for values of 1-5-10%. Later, according to granger causality analysis results, there is no relationship was found between economic growth and foreign direct capital investments.

Zghidi et al. (2016) analyzed the relationship between economic freedom, economic growth and foreign direct investment for four North African countries (Tunisia, Morocco, Algeria, Egypt) between 1980 and 2013. Panel data were used in the research. In conclusion, there is a positive correlation between foreign direct investment and economic growth. In addition, economic freedom was balanced foreign direct investment.

Koyuncu (2017), examined whether there is a long-term relationship between foreign direct investments, economic growth and employment or not in Turkey. FDI, GDP and unemployment rate data were used and annual data covering the years 1990-2015 were obtained from CBRT. When the first difference of variables were taken in the unit root test, it becomed stationary. In the cointegration test, there is long-term relationship between foreign direct investments, economic growth and employment series at a significance level of 5%. According to the Granger Causality test, a one-way causality relationship was found from foreign direct investments to economic growth. On the other hand, there was no causality between foreign direct investments and employment.

Karaçor et al. (2017), conducted examinations in order to reveal the relationship between FDI and economic growth in Turkey. In the study, the datas between 1989-2015 were taken from the CBRT and TURKSTAT. According to the results of ADF and Phillips-Perron unit root tests, the datas were stable at level and a long-term relationship was found according to Johansen cointegration test results. According to the granger causality test conducted after, there was no relationship between FDI and economic growth.

Balkanlı (2019), analyzed the causality relationship between FDI and GDPCointegration and stationarity analysis were used in the study. Although the variables were not stationary at the level, they became a stationary when their first difference was taken. It is possible to talk about the integrated relationship between foreign investments and GDP. When look at the stationarity of error terms, it is stable at the level and there is a cointegrated long-term relationship between GDP and FDI at the rate of 0.68.

Canbay et al. (2020), conducted examinations to determine the impact of FDI on the unemployment rate in Turkey. In this context, they used ARDL boundary test and Granger

causality test with data from the period 1991-2016. The datas were taken from World Bank. If the first differences of the variables were taken, it were stationary at the level of statistical significant level of %1. According to the results of the ARDL boundary test, it was determined that there was a relationship of cointegration. In addition, statistically significant relationship between foreign direct investments and unemployment could not be determined in the short term. However, the 1% increase in foreign direct investment in the long term raises unemployment by approximately 0.96%. In addition, according to the results of the causality analysis based on the error correction model, there is a causality relationship from foreign direct investments to unemployment in the long term.

METHODOLOGY

The data used in statistical tests are foreign direct investments, inflation, unemployment and the industrial production index, which has the largest share in GDP and allows interpretation without gdp being announced. Foreign direct investments from the datas used in the tests are from the CBRT and the World Bank; unemployment, inflation and industrial production index were taken from TURKSTAT. All datas is at a monthly frequency and covers periods from January 2005 to May 2020.

- All data have been converted into percentages by taking changes compared to the previous month.
- It has modeled by taking the absolute values and logarithms of the data.
- ADF unit root test performed, then the appropriate length level determined.
- Cointegration test was performed as a result of the suitable Var model.
- Finally, were interpreted with impulse-response graphs and variance decomposition.

ADF Unit Root Test

The most important criteria is stationary in time series. In the regression model established with non-stationary series, even if there is no relationship between variables, R^2 becomes larger than it is. Although coefficients are significant, t and F test results are not valid. In this case, the spurious regression problem occur. If the stochastic process is not stationary, it is often difficult to show the past and future time intervals of the time series with a mathematical model (Sevüktekin vd. 2007).

VAR Model and Lag Length

The power of variables to affect each other and their ability to act is demonstrated in econometrics with the vector autoregressive (VAR) technique. The main assumption of the

model is that there is no need to distinguish between internal and external variables. VAR models are also similar to regression models. Important progress has been made in this area in recent years. VAR technique does not require the use of various constraint assumptions in the process of building an econometric model. Therefore, a model can be constructed independently of economic theory. Thus, determining the econometric model more accurately increases the reliability of the causality experiment and reduces the number of problems other than variable selection (Akdi, 2003).

Johansen Cointegration Test

After the lag lengths are determined with the VAR model, how many cointegrated vectors are in the VAR model is determined by the Johansen's highest likelihood ratio test (Maximum Likelihood Ratio Test, LR trace test).

The cointegration test frequently used in the literature is the Johansen - Juselius multiple cointegration (cointegration) technique. Estimation of cointegrating vector numbers in the Johansen - Juselius process is made with the help of Trace Statistics and Max Eigenvalue Statistics. The hypotheses of these tests are as follows.

$$\lambda_{Trace}(r) = -n \sum_{i=r+1}^{n} ln\,(1 - \lambda_i)$$

$$\lambda_{max}(r, r + 1) = -nln(1 - \lambda_{r+1})$$

The statistical value in the trace equation tests the hypothesis that there is no cointegrated vector versus the null hypothesis. If the null hypothesis is rejected, this time the hypothesis that there is one cointegration is checked. The hypothesis that there is a single cointegrated vector is tested against the assumption that it is not cointegrated in the maximum values statistics.

H_0 = There is cointegration between variables

H_1 = There is no cointegration between variables

Impulse – Response Analyses

After the appropriate lag lengths are found within the VAR system, impulse-response functions are obtained. Impulse-response functions determine the effect of shocks on variables using tables or graphs. This process helps us understand which variables are affected by each other and how variables react to these shocks. In order to specify how the shock occurs, first the transition of variables over 10 periods is examined. The reaction of other series to the 1 unit shock change in the series is graphically showed. The same results can be given as an

alternative in the table. The column part represents the shock variable, while the row part shows the variables' response to these shocks (Tarı, 2010).

Variance Decomposition

Variance decomposition investigates which percentage of the change in a variable is caused by itself and which percentage is caused by other variables. If it explains value close to one hundred percent of the change in variance by itself, it is considered that exogenous variable. The important thing is that prioritizing variables in this analysis. Sorting is done from the outside to the inside. Variance decomposition is the second function targeted in VAR. It examines what percentage of variables are explained by their length and what percentage by other variables. It can also be used as side assessment of whether variables are internal or external (Tarı, 2008).

ANALYSIS AND FINDINGS

ADF Unit Root Test Findings

There are 3 basic critical points to understand whether unit root tests are stationary or not. First, the significance level of the Mac-Kinnon critical values should be smaller than the test statistics values in absolute value. Second, the absolute value of the ADF test statistics result must be greater than the Mac-Kinnon absolute critical values. The last is that the probability value must be less than 0.05. Table 2 shows ADF test results. According to the test results, it is observed that all datas are stationary in level value.

Table 2: ADF Test Results

Variables	ADF Test Statistics	Mac-Kinnon Critical Values			Probability
		1%	5%	10%	
FDI	-11.92087	-4.008706	-3.434433	-3.141157	0.0000
Industrial Production	-15.13649	-4.008706	-3.434433	-3.141157	0.0000
Unemployment	-13.50835	-4.008706	-3.434433	-3.141157	0.0000
Inflation	-11.57522	-4.008706	-3.434433	-3.141157	0.0000

VAR Model and Lag Length Findings

`For a VAR model that coordinates all selected variables together and examines the integrity of the system, it is required to determine the appropriate lag length in order to make assumptions correct. The most common methods for determining lag lengths are: Likelihood Ratio Test (LR), Akaike Information Criteria (AIC), Hannan-Quinn Information Criteria, (HQ), Final Prediction Error (FPE), Schwarz Information Criteria (SIC). The test result for determining the

lag length from is as shown in Table 3. The VAR model is estimated by taking eight length levels. According to LR Test Statistics, Final Prediction Error, Akaike Information Criteria, Hannan-Quinn Information Criteria and Schwarz Information Criteria, the appropriate lang length appears as 1. The lang length, which makes these criteria minimum, is considered optimal.

Table 3: The Lag Length Criteria Results

Lag Length	LR	FPE	AIC	SIC	HQ
0	NA	1,607297	11,82606	12,89784	12,85517
1	33,19637*	1,587884*	11,81385*	12,17274*	11,95940*
2	15,95741	1,730655	11,89966	12,54565	12,16165
3	20,59982	1,830137	11,95484	12,88795	12,33327
4	17,85811	1,963806	12,02402	13,24423	12,51889
5	19,39567	2,082273	12,08048	13,58780	12,69179
6	15,91795	2,253853	12,15654	13,95098	12,88430
7	11,57783	2,508085	12,25911	14,34065	13,10330
8	16,25456	2,699758	12,32702	14,69567	13,28765

Johansen Cointegration Test Findings

In order to understand whether there is a long-term relationship between variables or not that are determined to be stationary, Johansen Cointegration test has been applied. Trace Statistics and the Max-Eigenvalue statistics were used in this test. According to the 4 variables, at the 5% significance level in The Trace Statistics and Max-Eigenvalue Statistics were examined among the critical values. The H_1 hypothesis was rejected at the 5% significance level. Accordingly, it has been concluded that FDI, Inflation, Unemployment and Industrial Production act together in the long term and there is cointegration between 4 variables. In Table 4, Johansen cointegration test results are shown.

Table 4: Johansen Cointegration Test Result

Cointegration Degree	Trace Statistic			Max Eigenvalue Statistic		
	Calculated Value	Table Value %5	Probability	Calculated Value	Table Value %5	Probability
r≤=0	194,5442	63,87610	0,0000	64,13126	32,11832	0,0000
r≤=1	130,4130	42,91525	0,0000	57,65161	25,82321	0,0000
r≤=2	72,76135	25,87211	0,0000	38,33350	19,38704	0,0000
r≤=3	34,42785	12,51798	0,0000	34,42785	12,51798	0,0000

Impulse – Response Analyses Findings

In graph 2 shows the effects of FDI, Inflation, Unemployment and Industrial production on each other. The second chart shows the impact of the shock to inflation on FDI, while this effect is negatively affected for 2 months, it is seen that it makes positive sense when passed from the second month to the third month. The fifth chart indicates that a positive shock to FDI caused increase in inflation during the first 2 months. The sixth chart shows the response of FDI to unit of shock that occurred in it. This reaction follows negative movement for close to 3 months. In the seventh chart, the impact of FDI on industrial production is statistically meaningfull. In the eighth chart, the negative effect of FDI on unemployment for 2 months is observed, this effect loses its meaning after the 3rd month. In the tenth chart, it is shown that industrial production does not make sense in FDI statistically. The fourteenth chart shows that unemployment has a negative impact on FDI for about 3 months and then lost its meaning.

Graph 2: Impulse – Response Test Results

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.
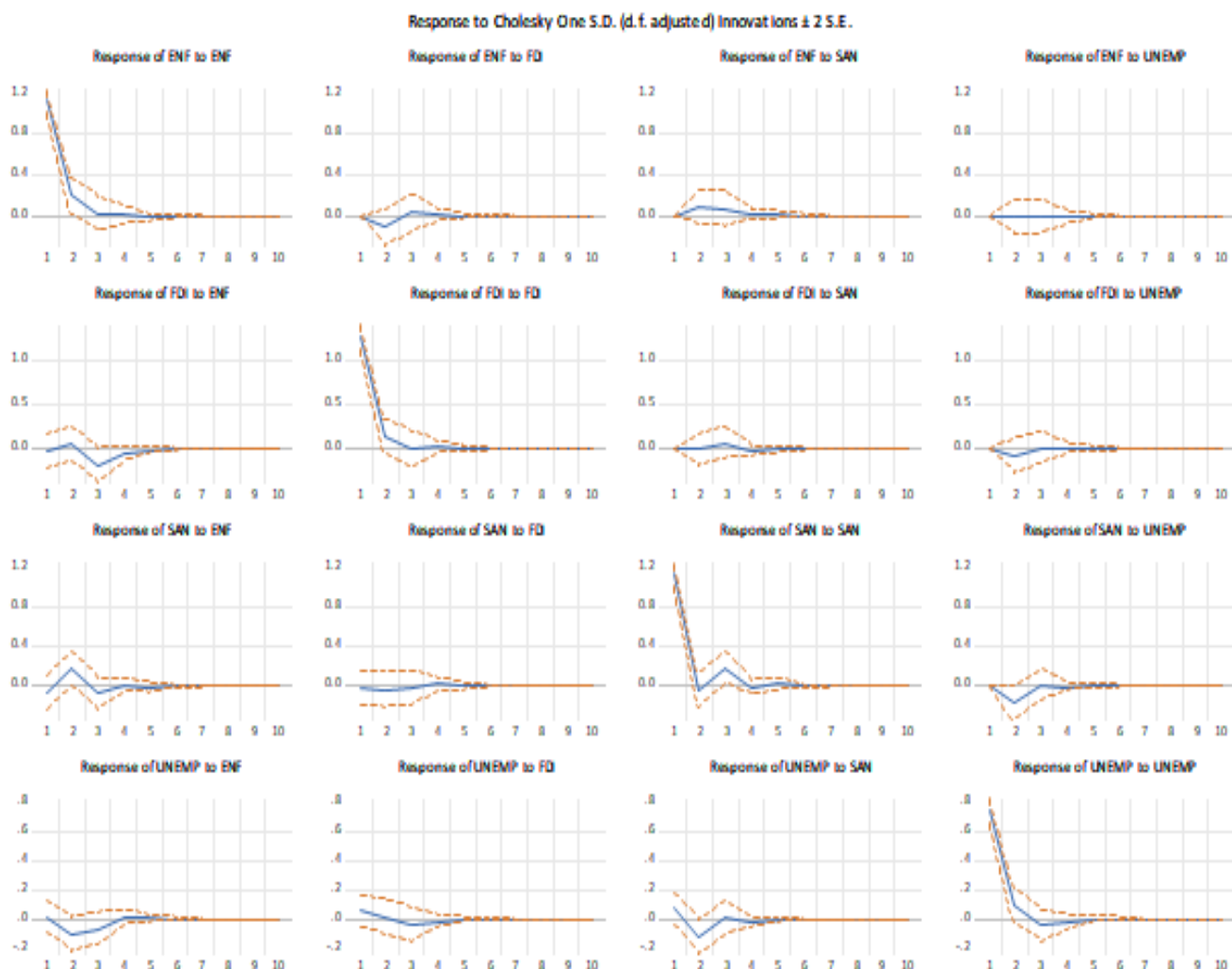
Variance Decomposition Findings

Table 5 shows the variance decomposition of FDI. According to the findings obtained, the variable that has the highest ability to explain change in foreign direct investments over time appears to be inflation. In the first period, the explanation power of FDI on itself decreases to 96.96% by the 10th period while it was 99.97%. Therefore, we can interpret that inflation, unemployment and industrial production factors have significant share in explaining the change in FDI, with an increasing trend.

Table 5: FDI Variance Decomposition

Period	S.E.	Inflation	FDI	Industrial production	Unemployment
1	1,267979	0,030257	99,96974	0,000000	0,000000
2	1,279446	0,208516	99,33755	0,003826	0,450111
3	1,293997	2,174273	97,12102	0,259573	0,445136
4	1,295159	2,310801	96,97366	0,268710	0,446833
5	1,295228	2,318521	96,96463	0,269845	0,447001
6	1,295245	2,319385	96,96275	0,270848	0,447019
7	1,295246	2,319381	96,96260	0,270989	0,447031
8	1,295246	2,319415	96,96252	0,271033	0,447031
9	1,295246	2,319419	96,96252	0,271034	0,447031
10	1,295246	2,319420	96,96251	0,271035	0,447031

When we look at the variance decomposition of inflation in Table 6, it appear that in the first period, only has an explanation of itself. When it comes to the 10th period, 98% is explained from itself, while the largest share of the remaining 2% is explained from industrial production with 0.93%.

Table 6: Inflation Variance Decomposition

Period	S.E.	Inflation	FDI	Industrial production	Unemployment
1	1,130696	100,0000	0,000000	0,000000	0,000000
2	1,156291	98,69401	0,768167	0,531187	0,006638
3	1,159212	98,21306	0,884419	0,893616	0,008906
4	1,159635	98,16533	0,902416	0,912541	0,019708
5	1,159742	98,15052	0,902259	0,927293	0,019929
6	1,159753	98,14974	0,902541	0,927787	0,019929
7	1,159755	98,14964	0,902541	0,927890	0,019929
8	1,159755	98,14964	0,902541	0,927890	0,019929
9	1,159755	98,14964	0,902542	0,927890	0,019929
10	1,159755	98,14964	0,902542	0,927890	0,019929

According to the Table 7 for industrial production variance decomposition, almost all of it explained by itself in the first period. With the progress of the period, there was steady increase in the ability to explain inflation and unemployment.

Table 7: Industrial Production Variance Decomposition

Period	S.E.	Inflatıon	FDI	Industrıal Production	Unemployment
1	1,137001	0,345620	0,028148	99,62623	0,000000
2	1,161548	2,476261	0,096594	95,66869	1,758454
3	1,179877	2,846707	0,124368	95,30659	1,722332
4	1,180391	2,865946	0,156984	95,25192	1,725148
5	1,180744	2,877786	0,158170	95,23933	1,724717
6	1,180752	2,877817	0,158309	95,23895	1,724923
7	1,180758	2,878116	0,158337	95,23863	1,724918
8	1,180758	2,878117	0,158337	95,23863	1,724919
9	1,180759	2,878120	0,158338	95,23862	1,724919
10	1,180759	2,878121	0,158338	95,23862	1,724919

According to Table 8, 98.38% of a shock to unemployment is explained by itself in the first period. After 10 periods, 93.35% explained of the itself and approximately 6.65% of them are explained on FDI, industry and inflation. The effect of unemployment on itself shows reduction of 5% in 10 periods.

Table 8: Unemployment Variance Decomposition

Period	S.E.	Inflatıon	FDI	Industrıal Production	Unemployment
1	0,760293	0,055769	0,549853	1,008117	98,38626
2	0,782727	2,020898	0,550891	3,138512	94,28970
3	0,787547	2,651507	0,760171	3,132228	93,45609
4	0,788143	2,670334	0,788276	3,174205	93,36718
5	0,788198	2,679343	0,789313	3,173831	93,35751
6	0,788217	2,682118	0,789529	3,174956	93,35340
7	0,788217	2,682128	0,789529	3,175018	93,35333
8	0,788218	2,682131	0,789530	3,175019	93,35332
9	0,788218	2,682131	0,789530	3,175023	93,35332
10	0,788218	2,682131	0,789530	3,175023	93,35332

CONCLUSION

In this study, the impact of foreign direct investments on the Turkish economy between 2005 and 2020 was tested with statistical analysis. The series were examined by ADF unit root tests and observed that all series were stationary in level value. According to the results of the Johansen cointegration test, it appear that there is a long-term relationship between foreign direct investment and inflation, unemployment and industrial production index within the Turkish economy. With the impulse-response graphs and analysis of variance decomposition, it was concluded that inflation, unemployment and industrial production directly affect foreign investments and have an explanation power on FDI. According to the output of analyses, it is necessary to create the appropriate physical environment for increasing foreign capital investments, to ensure domestic economic, political and legal stability, to make arrangements that encourage foreign capital. Especially, a policy should be followed to decrease inflation and unemployment rates, which are indicators of economic growth and GDP should be risen by increasing industrial production. Coming from the foreign investments should become from the type of foreign direct investment and it should be supplied that these investments both create new markets and new employment areas by establishing a new facility. This study makes an analysis on Turkey. The outcomes may have different effects on FDI profile for different income level countries. Furthermore, political risk may also have an crucial impact on the matter. Thus further studies may examine other factors such as political risk and confedence indeces.

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