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DETERMINANTS OF FOREIGN DIRECT INVESTMENT IN TURKEY: EMPIRICAL EVIDENCE FROM ARDL APPROACH

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ABSTRACT

Since the 1980s, there has been constant growth in Foreign Direct Investment (FDI), and in the previous 20 years, FDI has moved from advanced nations to developing economies. As they bring more growth prospects. Hence, this study looked critically in some selected factors that determine FDI in Turkey utilizing yearly data stretching 44 years (1974-2018). The objectives set for this study are; to ascertain influence of trade openness on FDI, to explore the interaction between FDI and economic growth in Turkey, and to verify if increase in Gross Capital Formation (GCF) will trigger FDI. ADF and PP, which are the conventional unit roots test and Zivot-Andrew unit root test, were utilized and the outcome reflects variables are stationary at mixed level. Thus, paving way for the estimation of the ARDL Bound test. Results from this test signify that variables are cointegrated in the long-run. Furthermore, the ARDL long run estimate depict increase in trade openness, and growth will triggers FDI in the long, though increase in gross capital formation will not trigger increase in FDI. The ARDL short-run estimate shows increase in GCF will trigger FDI. Recommendations were drafted based on these research findings.

Contribution/ Originality: This study explored the determinants of foreign direct investment in Turkey. The study contributes to the existing literature by employing the ARDL technique to investigate the short-run and long-run interconnections.

1. INTRODUCTION

Since the 1980s, there has been constant growth in FDI, and in the previous 20 years, FDI has moved from advanced nations to developing economies. As they bring more growth prospects. Also, the rates of investment in developing countries are becoming increasingly attractive in terms of return on investment (Adebayo, 2020b; Apanisile, 2018). FDI's fast growth has paved the way for multinationals' growth at the world level. According to Niko and Escobar (2016) FDI also earned even greater rewards from host nations, notably emerging economies, as a major external source of finance, resources, and training in the capital, management, knowledge, movement of production, technology, abilities, and innovation. Additionally, to enhancing economic development, the spillover impacts on emerging economies are helpful in wider respects. The global FDI market in emerging economies has

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thus, become more viable (Mallampally & Sauvant, 1999; Onyibor, Bah, & Tomiwa, 2018). FDI is undoubtedly the most viable way of funding such an investments for developing nations out of the three capital influxes since there are some difficulties for the other two channels. There is a limitation placed on commercial loans placed on private firms in developing countries. Investment made in enterprise in a nation situated in another nation by purchasing a company there or by offering founding capital for a newly-founded firm or by expanding the capital of an existing company is a foreign direct investment (Adebayo, 2020a). According to United Nations (2019) intra-FDI stocks rose from 346 billion US dollars to 4393 billion US dollars over the 1982-2007 period, up 11 percent yearly. Although, the developing economy has recorded increased growth in inward FDI stocks in absolute numbers over this period, in 2007, the advanced economies still held 67% of overall internal FDI stocks with an annual average growth of 13.7%. In attracting FDI over the same term, Turkey surpassed both developing economies and developed economies. The FDI inventory grew from $8 billion to $157 billion between 1982 and 2007; on average, it grew 14.1 %. In addition to the surge in the FDI, imported goods to Turkey grew. Due to the FDI surge in Turkey, the predictor of sectoral FDI in Turkey must be examined critically. The most strategic domestic economic control industries are foreign direct investments, including construction, telecommunications, manufacturing, mining, and transport. FDI is not restricted to telecom, production, mining, and transportation. Banking, finance and other sectors benefit from the above-mentioned sectors because this creates more investment opportunities. Due to this great advantage from this sector, determinant of FDI in Turkey have to be determined. Several factors for the determination of FDI inflow in communications, manufacture, mining, and transportation have been identified in the literature. These include size of the market, income per capita, competitiveness, infrastructure, open trade, political instability, level of employment and skills, dissemination of technological information, transfer of knowledge and relationships, rules and regulations on currency exchange, natural resources, among many others (Apanisile, 2018; Arawomo & Apanisile, 2018; Awosusi, Adebayo, & Adeshola, 2020; Momeni, 2014; Polat & Payaslıoğlu, 2015). These studies show that many of these factors had an adverse effect on the FDI inflow, although some variables had positive effects on FDI. But most of these studies examined some research factors that might have caused some other important factors to be overlooked. On this basis, a more detailed study is needed in this field. Therefore, the thesis examines the determinants of FDI in Turkey. To find a solution to the aforementioned objectives of the study, the study as questions such as; What impact does economic growth have on FDI in Turkey? What impact does trade openness have on FDI in Turkey? What impact does gross fixed capital formation have on FDI in Turkey? The remainder of the paper is arranged as follows: second part of literature study, segment 3 depicts data, methods, and fourth part explanation and discourse of outcomes, the fifth section illustrates conclusion and policy recommendations based on the empirical evidence.

2. LITERATURE REVIEW

Numerous research studied sectorial FDI and economic growth interconnection utilizing different methods. Nonetheless, only those relevant to this analysis will be given attention to in this thesis. Although some studies find a positive economic growth effect of FDI, others identify a negative relationship between these two variables. Some studies indicate strong positive results, whereas some studies do not consider the independent effects of FDI on growth in the host nation. In addition, the current studies have concentrated on exploring the effect of inward FDI on economic growth in the host nation. For instance, De Mello (1999) indicated that depending on the number of skilled workers in the host nation, whether increase in FDI would cause economic growth to increase. Alfaro (2003) investigated the interaction between FDI and growth using yearly data. Findings from his study shows evidence that FDI has an uncertain impact on the host nation economic growth. Furthermore, there is negative nexus between FDI inflows into the primary sector, and economy growth, with a positive spillover in the manufacturing sector. Once FDI and growth showed a positive association, the influence in the host country do (Borensztein, De Gregorio, & Lee, 1998) find dependent on human capital as. Local capital markets level of development is critical to

realizing these beneficial effects. Better local environments encourage not only foreign businesses but also encourage host economies to optimize foreign investment benefits. However, for FDI to have a positive influence on economic growth certain criteria must be met by the host nation such as development in education, technology, infrastructure, money markets, and health in order to add to economic growth. Therefore, when the host nation attains certain level of development, FDI will responds to economic growth, which will accommodate the technological advancement it brings. For the period 1981-1999, Alfaro (2003) cross-country data showed that FDI in the manufacturing sector had a positive impact on economic growth. As per (Blomström, Kokko, & Mucchielli, 2003) in their analysis on industrialized countries, FDI's inputs to a nation's economy are widely acknowledged as bridging the gap between needed investment and national savings, raising tax revenues, and enhancing administration and technology, as well as labor skills in the host nation. These might assist the nation to combat its way out of poverty. Nonnemberg and De Mendonça (2004) have shown that FDI is associated with the level of education, the degree of openness of the market, risk and macroeconomic variables such as unemployment, hazard, and average economic growth rate. Economic growth raises the size of the market of the host nation's economy and enhances market mechanisms pursuing FDI leading to a situation where FDI and economic growth benefit each other. FDI inflows are a driver of technological progress and job growth in most developing nations, rising the goods and services and eventually increasing Growth. Policies should be used to entice export-oriented FDI rather than domestic demand-oriented (Iram & Nishat, 2009) in order to boost economic growth. A research conducted by Yan and Majagaiya (2011) on Foreign Direct Investment and Economic Growth Analysis of the Time Series using Nepal as a case study confirmed that the growth rate of Nepal's Gross Domestic Product is not based on FDI in particular. Shahbaz, Nasreen, Abbas, and Anis (2015) took a critical look at the impact of Foreign Direct Investment on Sri Lanka's GDP. The finding shows that there is still a positive and meaningful connection between GDP and FDI, whereas the connection between GDP and inflation is negligible. Aizhan and Makaevna (2011) investigated the effect of Foreign Direct Investment on Kazakhstan's economic growth to show FDI's role in Kazakhstan's economic growth and its prospects for the future. The study showed heavily dependent on the energy industry could have a negative effect on Kazakhstan's economy. They proposed that steering FDI to other sectors might be preferable to ensure lengthy-term growth. Using panel data (Phuyal & Sunuwar, 2018) evaluated the 10years (2007 to 2016) Sectorial Analysis of Foreign Direct Investment on Nepal's economic growth. The overall outcome of the empirical study forecasts that during the stipulated time-frame, manufacturing, tourism sector, agricultural, and FDI will triggers growth in the economy. In this regard, outcome from this research put forward the necessity for development of strategy by government and various stakeholders to open up FDI in other industries, furthermore, helping to turn informal initiatives into practice. Eventually, it is acknowledged that the creation of a new plan and policy will be a necessary requirement but not an adequate phase in the development process, so that the key suggestions can be put forward for appropriate actions and measures which authorities involved will utilized to update and execute plans that are initiated which enable the FDI stream to attain, boost and maintain Nepal's strong economic growth rate. Momeni (2014) examined FDI predictors in Turkey and selected European nations using the 2000-2010 panel data. Explanatory variables utilized in this analysis are RGDP, GDP, unemployment as a proxy for macroeconomic stability, exchange rate, the user of internet and expectancy of school life, where the two are used as proxies for physical capital and human capital respectively. The random effect panel data analysis offered support for all six correct sign control variables. However, the results revealed that for selected countries all six variables were important. It seems as though large market scale, solid macroeconomic stability, growth opportunities, monetary inflation, and technologies including web and school life span are important factors in bringing foreign investors into these nations throughout a specified period. To analyze the predictors of foreign direct investment (FDI) employing board of 19 OECD nations bilateral external FDI stocks in Turkey between 1982 and 2007. Esiyok and Ugur (2011) used a knowledge-capital model and found typical national income, per capita gap, investment liberalization, and export

costs to Turkey have profound effects on Turkey's FDI. However, the possibility of membership of the European Union, policy stability, infrastructure, bilateral exchange rate, the uncertainty of exchange rates and openness to trade play a major role in deciding the amount of FDI in Turkey. Lastly, this study reveals that higher relative unit labor costs and bribery encourage FDI. The main determinants of FDI in the Nigerian telecommunications sector were explored by Arawomo and Apanisile (2018) From 1986 to 2014. The analysis used Autoregressive Distributed Lag (ARDL) to analyze data. The findings showed that the size of the market and trade openness on the positive side as well as inflation and the real interest rate on the negative side were the main determinants of FDI in the business. Oğrül and Eryiğit (2015) focused on the theory of Foreign Direct Investment (FDI) and analyzed climate-related factors affecting foreign direct investment decisions. Analyzes were made using the annual data from the period 1995 to 2012 in this context. The variables known to be able to affect foreign direct investment in particular and/or on a sectoral basis have been identified, generating four various models of regression. Premised on the regression analyses carried out, it can be said that the same economic effects do not exist in the sectors receiving foreign investment in Turkey and that political stability, contrary to expectations, affects foreign direct investment positively.

3. METHODOLOGY

The framework of this thesis is premised on the Momeni (2014) model which was used to explore the determinant of FDI in Turkey. Figure 1 illustrates the study's model.
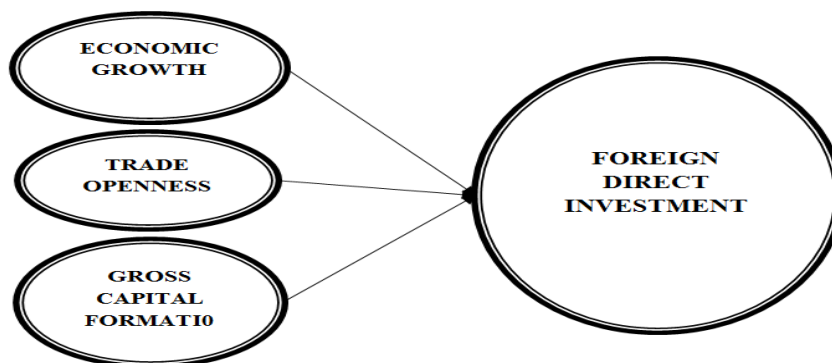

Figure-1. Research Model developed by researcher.

This study used yearly data spanning between 1974 and 2018. The study transformed the variables into their natural logarithm. This is done to reduce skewness and deviation. It is necessary to ascertain the stationarity properties of the variables. In order to do this, this study used ADF and PP unit root tests. The study economic function is depicted below as follows in Equation 1;

$$FDI = f(Y, S) \tag{1}$$

In the function above, the endogenous variable is foreign direct investment. Furthermore, Y denote growth in the economy whereas S indicates the other determinant of FDI apart from Y. These other determinants are gross fixed capital formation (GCF) and Trade openness (TO). Thus, the function for this research can be re-written as follows in Equation 2;

$$FDI = f(Y, TO, GCF) \tag{2}$$

After formulating the economic function, the study formulates the econometric model, which is depicted as follows in Equation 3;

$$FDI_t = a_0 + Y_t + TO_t + GCF_{t-i} + u_{t-i} \tag{3}$$

It is necessary to examine series co-integration features by determining their stationarity magnitude (Adebayo, 2020b; Eminer, Adebayo, & Awosusi, 2020). Co-integration arises when variables are stationary in a complex

amalgamation, although there is unit root and are independently basis to order I(D). It essentially implies variables X and Y, though both series will probably appear having no unit root when merged, can be independently non-stationary. Those two variables are said to have been co-integrated. Furthermore, we have to confirm that after the stationary test, thus, the ARDL approach is utilized. To investigate the long-term link, ARDL co-integration test can be utilized. Having this in mind, when verifying the co-integration in the long-run, the Johannsen co-integration approach cannot be employed. Thus, the ARDL bound test will be used to verify co-integration in the long-run amongst variables utilized. In this thesis, Auto-Regressive Distributed Lag Model (ARDL) proposed by Pesaran, Shin, and Smith (2001) was utilized. In this thesis, our primary aim is to verify short-run and long-run connection between the foreign direct investment and economic growth with inclusion of other exogenous variables. This method makes it possible to define the connection between foreign direct investment and economic growth and the description is portrayed underneath in the subsection.

The framework of ARDL is a system for co-integration having all lagged endogenous parameter, current and lagged exogenous regression factors (Beton & Adebayo, 2020; Kalmaz & Kirikkaleli, 2019). The specification generally accepted for the ARDL approach is depicted in Equation 4;

$$Y_t = \gamma_{0i} + \sum_{i=1}^{p} \emptyset_i Y_{t-1} + \sum_{i=0}^{q} \partial_i X_{t-1} + \varepsilon_{it}$$

(4)

Where: vector is represented by Y_t, other Variables is depicted by (X_{t-1}), the order of integration is indicated by I (0) or I (1), the variable of both endogenous and exogenous coefficients are indicated by $\emptyset$ and ∂ respectively, constant term is represented by γ, the optimal lag order of both dependent and predictors variables is represented by p and q, stochastic terms is denoted by ε_{it}.

The ARDL framework is supported for other co-integrating designs attributable to the capability to perceive the vectors co-integrating in a series with equilibrium equation in the long run. Furthermore, validation of the ARDL does not incorporate unit root before testing of co-integration, due to I(0) and I(1) variables or merging both of them. Additionally, it should be noted that when variable is I(2), the ARDL approach cannot be utilized to investigate relationship in the long-run except if they are I(0) and I(I).

However, if there is evidence of co-integration amongst the variables utilized, ECM linear equation should be estimated (Adebayo, 2020c). This formula retains almost all of the facts in the long-run in a unified equation with both the short-run, and long-run coefficients and balance. Nevertheless, there may be no ECM framework if the parameters do not have a long-run connection. Utilizing the F-statistics (Wald test) and its critical values, this thesis went further, with specification of the framework and investigate relationship in the long-run amongst the variables (Pesaran et al., 2001) Thus, specification of the ARDL framework is put forward underneath as below in Equation 5;

$$\Delta FDI_t = a_0 + \sum_{i=1}^{l} \alpha_1 \Delta FDI_{t-i} + \sum_{i=1}^{l} a_2 \Delta Y_{t-i} + \sum_{i=1}^{l} a_3 \Delta TO_{t-i}$$
$$+ \sum_{i=1}^{l} a_4 \Delta LGFCF_{t-i} + u_{t-i}$$

(5)

As a result of long run co-integration, the ECM will be introduce to verify the existence of short run association by incorporating ECT. Therefore, when the ECM is inculcated into the ARDL framework, the model thus, becomes the Equation 6;

$$\Delta FDI_t = a_0 + \sum_{i=1}^{l} \alpha_1 \Delta FDI_{t-i} + \sum_{i=1}^{l} a_2 \Delta Y_{t-i} + \sum_{i=1}^{l} a_3 \Delta TO_{t-i} + \sum_{i=1}^{l} a_4 \ \Delta LGFCF_{t-i} + \varpi ECT_{t-1}$$
$$+ \ \varepsilon_{t-i}$$

(6)

It reflects existence of interaction in the long-run between the dependent and dependent variables. Coefficients of the short run with all the long-run equilibrium equation can be supplied by the error correction mechanism (ECM). The long-term endogenous and independent variables can be defining by ECM. The Error Correction Term (ECT) is provided by the ECM, and it shows researchers how easily the variables are adjusted to restore to equilibrium when the variables overlap across time. The optimal ECT sign must be negative which indicates that variables converge over time. Divergence will occur if the coefficient of the ECT is positive which will make the model to burst, thus making return to equilibrium impossible. The ECM is incorporated in Equation 7;

$$\Delta FDI_t = a_0 + \sum_{i=1}^{l} \alpha_1 \Delta FDI_{t-i} + \sum_{i=1}^{l} a_2 \Delta Y_{t-i} + \sum_{i=1}^{l} a_3 \Delta TO_{t-i} + \sum_{i=1}^{l} a_4 \ \Delta GCF_{t-i} + \varpi ECT_{t-1}$$
$$+ \ \varepsilon_{t-i}$$

(7)

Where the first difference operator is indicated by Δ, the short-run coefficients of variables is represented by α, the maximum lag order of the ARDL model is specified by ι, Error correction term is denoted by ϖECT_{t-1}, and the Error term is represented by ε. For instance, if we fail to accept the alternative hypothesis, the next thing to do is to estimate the short run framework. Therefore, shorter-run interaction have also been tested using the Wald test system statistics to establish whether or not the dependent and the exogenous variables have short run association.

4. DATA ANALYSIS AND INTERPRETATION

Across different research, several measurement approaches designated for unit root tests are embraced. This research, nevertheless, uses two traditional root unit tests (ADF, and PP), and the recent Zivot and Andrew test. They are the test for ADF, PP, and the test for Zivot and Andrews, which would include trend and intercept, were tested differently at level and at first difference for the ADF, PP, and ZA. The three unit root tests ADF, PP and ZA have the same hypothesis. The descriptive statistic is depicted in Table 1.

Table-1. Descriptive Statistics.

Tests	FDI	Y	TO	GFCF
Mean	0.824138	3.542541	38.41175	10.64287
Median	0.453879	3.489478	41.87322	10.63234
Maximum	3.653480	4.097583	60.40272	11.43320
Minimum	0.019501	2.967454	9.099744	9.721246
Std. Dev.	0.894996	0.358327	13.13449	0.535607
Skewness	1.470092	0.226958	-0.645389	0.062142
Kurtosis	4.548843	1.656660	2.463447	1.718796
Jarque-Bera	20.24659	3.686104	3.582324	3.037705
Probability	0.400957	0.158333	0.166766	0.218963
Sum	36.26207	155.8718	1690.117	468.2862
Sum Sq. Dev.	34.44373	5.521111	7418.136	12.33561
Observations	44	44	44	44

Furthermore, Table 2 depicts the summary of ADF, PP, and ZA unit root tests utilizing trend and intercept. The ADF unit root test depicts that FDI and TO are significant at 5% and 10% respectively at the level I(0), while

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Y, and GFCF are stationary at I(1) at 0.01 level of significant. Pertaining to PP, all the variables, that is FDI, Y, TO, and GFCF is significant at 1% level of significance at 1(1). In relation to ZA, only FDI is significant at I(0) at 1% significant level with a structural break in 2004, whereas, Y, TO, and GFCF are significant at I(1) at 1% significant level respectively with structural break in 2001 for Y, 1995 for TO, and 2001 for GFCF.

Table-2. Unit root test results with trend & intercept.

Variables	ADF		PP		ZA	
	Level	**Difference**	**Level**	**Difference**	**Level**	**Difference**
FDI	-3.8147**	-6.127	-2.8282	-11.71*	-5.98*(2004)	4.653(2008)
Y	-2.0840	-6.841*	-2.377	-6.835*	-3.199	-7.98*(2001)
TO	-3.28***	-7.632	-2.795	-4.100*	0.52**	-6.18*(1995)
GCF	-2.4245	-6.561*	-2.727	-6.561*	-3.311	-7.42*(2001)

Note: *, ** and *** depicts 0.01, 0.05 and 0.10 levels of significant respectively.

4.1. ARDL Bounds Test

To detect the cointegration between the endogenous and exogenous variables, the ARDL bound test was utilized. This is denoted by the Table 3 .

Table-3. ARDL Bound test.

Bounds test case III: Unrestricted intercept and no trend	
Model	FDI =F(Y, TO, GCF)
Lag structure	4, 5, 1, 5
F-statistics	7.94*

Significant level	Critical bounds levels	
	I(0)	I(1)
10%	2.72	3.77
5%	3.23	4.35
1%	4.29	5.61

Note: *, ** and *** depicts 0.01, 0.05 and 0.10 levels of significant respectively.

Table 3 indicates the link between the endogenous and exogenous variables by utilizing the ARDL bounds test with inclusion of it critical value and utilizing case 3 (utilizing the unrestricted no trend and intercept). In chapter four, the criteria for this test has been highlighted which concur with that the estimated F-statistic (7.94). Since this value is more than the lower and upper bond critical value of 1%, 5%, and 10% level of significant. Since this is the case, we fail to accept the Zero hypothesis. Thus the alternative hypothesis is accepted and we confirm that cointegration between the endogenous and exogenous relationship surfaced. Evidence shows that all the variables employed in this research are cointegrated in the long-run i.e. they move together in the long-run.

4.2. Estimation of ARDL Long-Run and Short-Run Coefficient

The main objective of this thesis is to ascertain if there is any evidence of long-run and short-run interaction between the dependent and independent parameters. Furthermore the outcome of the estimated long-run and short run result of the ARDL is portrayed i the table below. Additionally, the Table 4 depicts the error correction term, which is vital parameter in this analysis.

In Table 4 the results indicate that at 10% level of significance, the lagged dependent variable (FDI (-1)) is negative and significant. This simply means the previous FDI can predict the current FDI. As anticipated, a 10% significance level, Y influences FDI positively. This scenario simply indicates that for every increase of $1 in Y, FDI is liable to increase by $4.5. This is because when Y increases, it makes the economy look robust and thus, attract foreign investment. This outcome of this finding is in line with the outcome of Momeni (2014); Oğrül and Eryiğit (2015) and Arawomo and Apanisile (2018). Y and FDI have link that is positive and significant. Furthermore, when other factors are constantly held, increase of $1 in TO will lead to an increment in FDI by $0.044. These findings is

accepted by various researchers (Arawomo & Apanisile, 2018; Esiyok, 2011). These researchers found a positive and significant relationship between TO and FDI that is increase in TO will cause FDI to increase. Finally, the study did not find any significant relationship between GFCF and FDI. This view is in accordance with Oğrül and Eryiğit (2015). İn the short run, when all things are held constant, $1.64 increase in FDI is as a result of $1 increase in Y. This analogy shows that in the short run Y and FDI move together. Also, $1 increase in TO will not cause a significant increase in FDI when other variables are held constant. Finally, $7.22 increase in Y is because of $1 increase in GCF. This analogy shows that in the short run GCF and FDI move together. It predicted our ECM to be negative and significant statistically, as mentioned earlier in the chapter four. This model supports the long-run association between the variables utilized in the case of Turkey pertaining to this study. The coefficient of the ECM is -0.89, which is as expected, and it indicates 89% is the adjustment speed. Having the adjustment speed to be 89% denotes last year discrepancy can be corrected in the present year. Hence, there is evidence that in the long-run there is convergence to equilibrium.

Table-4. The ARDL long-run and short-run estimates.

Long-Run Estimate of ARDL				
Variable	**Coefficient**	**Std.Eror**	**T-Stat**	**PV**
FDI(-1)	-0.3358	0.1814	-1.8506	0.0790***
Y	4.5669	2.0537	2.2236	0.037**
TO	0.0444	0.0161	2.7436	0.012**
GFCG	3.1633	2.2860	1.3837	0.181
Short-Run Estimate of ARDL				
ΔY	1.6455	1.7760	0.9265	0.365
ΔTO	0.0151	0.0145	1.0449	0.308
ΔGFDCF	7.2213	1.5138	4.7702	0.000*
ECT(-1)*	-0.8953	0.1480	-6.0455	0.000*

Note: *, ** and *** depict 1%, % and 10% level of significant levels.

4.3. Diagnostic Test

Table 5 illustrates the diagnostic test of the model.

Table-5. ARDL Diagnostic tests.

Test	**Result**
R²	0.92
Adj R²	0.89
F-statistics (Prob-value)	14.4 (0.0000)*
Breusch–Godfrey LM test (B)	0.7792 (0.5867)
Normality test	1.364 (0.504)
Breusch-Pagan Heteroscedasticity test (Prob-value)	0.5818 (0.4887)
Ramsey Test	2.738473 (0.1242)

Note: *, ** and *** depict 0.01, 0.05% and 0.10% level of significant levels.

R², which will be regarded to have been 0.92 or 92% of the calculated value, displaying that perhaps the exogenous variables demonstrate around 92% of the adjustments in the endogenous variable, however the existing 8% are compensated for and portrayed by all the other omitted variables by error terms. The equation thereby illustrates that the different variables have such a strong predictive power and are often backed by a strongly adjusted R². The F-statistic illustrates the overall significance level of the formula, i.e. it demonstrates what the exogenous variables in the endogenous variable can describe variations. With just an F-statistical value of 14,075 and a significant value of 0,000, it is apparent that perhaps the independent parameters can jointly describe the alterations in the dependent variables and therefore render us conform to conclusive results from such a model. The decision rule for the preceding diagnostic tests was clarified in the past chapter. The check for normality, existence of heteroscedasticity test, Ramsey RESET test for misspecification were carried out. With Jarque–Bera and p-value of 1.364 and 0.504 respectively, the check for normality was carried out. Looking at the p-value of 0.50, which is

more than the 10% significant level, we fail to reject the Zero hypothesis. Hence we reject the alternative hypothesis of residuals are not normally distributed. With the Fstats, and Pvalue of 0.7792 and 0.5867 respectively, Breusch-Godfrey serial correlation test was carried out to ascertain if their is any existence of serial correlation. İn this view that is with a pvalue more than the 10% level of significance, the alternative hypothesis is rejected. Thus, it clear their is clear evidence that residuals are not serially correlated. To detect heteroscedascity, with outcome of Fstats and Pvalue are 0.5818 and 0.4887, the Breusch-Pagan heteroscedasticity give room to accept the null hypothesis of no heteroscedascity in the model that is the model is homoscedascity. Therefore, we agree there is homoscedascity. The RAMSEY test of misspecification was carried out to determine if we have included irrelevant variables, or need to include more variables. With a. F-Stat of The F-stat of 2.729384 and pvalue of 0.1121 for the Ramsey RESET test, there is vivid and clear evidence that there is no misspecification in the model. The outcome shows that this thesis model is good and not suffering from misspecification or inclusion of irrelevant variables. Hence, with this view in mind, the model is good and not lacking in functional form. All the above diagnostic tests shows that the model is good ad meaningful and significant conclusion can effectively ad efficiently be drawn from such model. The final test is the test for stability, which was carried out utilizing the CUSUM and CUSUM Square tests in Figures 2a and 2b respectively. From the diagram below it clear that the model is stable as indicated by both the diagram of CUSUM and CUSUM Square.
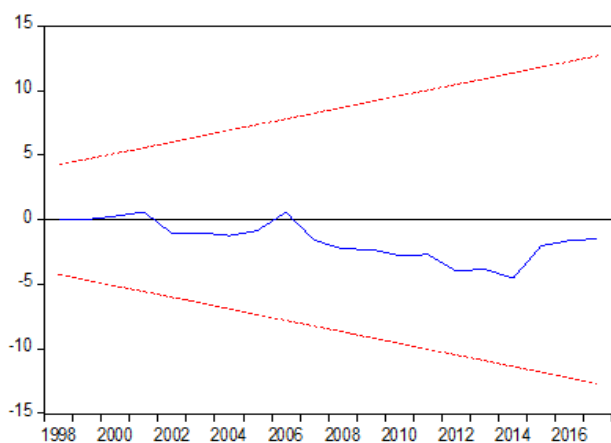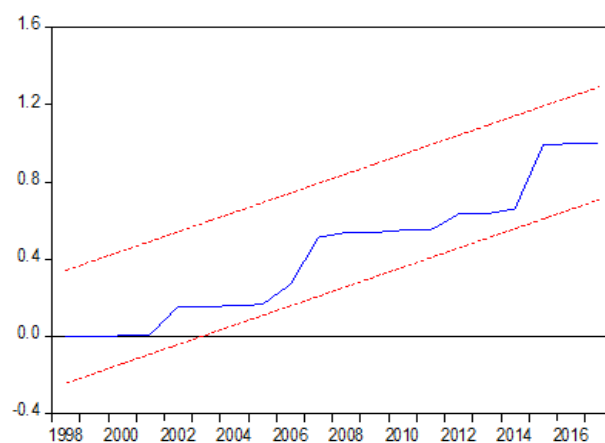

Figure-2a. CUSUM.

Figure-2b. CUSUM Square.

5. CONCLUSİON

This study critically explores foreign direct investment determinants in Turkey. To investigate this research, yearly data covering a 45 years period (1975 -2018) was utilized. The study uses yearly data ranging from 1974 to 2018. İn this thesis, foreign direct investment (FDI) depicts the dependent variable while economic growth (Y), trade openness (TO), and gross fixed capital formation (GFCF) represent the exogenous variables. To verify the stationarity of the data utilized, the ADF and PP, which are the conventional unit root tests and the Zivot- Andrew unit root test, which can detect structural break, were employed. All the unit rot tests employed to reflect the stationarity of variables used at a mixed level that I(O) and I(1). The ARDL bound cointegration techniques is suited to analyze the short and long-run relationship if the variables are integrated at mixed levels. Therefore, this study used the ARDL cointegration techniques to investigate the relationship between foreign direct investment, and economic growth, trade openness, and gross fixed capital formation. Cointegration test outcome indicates evidence of cointegration between the endogenous and exogenous variables in the long-run. The result of the long-run estimation shows a positive interaction between foreign direct investment, and trade openness, and economic growth. However, gross fixed capital formation has a positive relationship with foreign direct investment; this

relationship is not statistically significant. Therefore, an increase in economic growth and trade openness will increase foreign direct investment in Turkey. In the short run, economic growth, and gross fixed capital formation have positive ad statistical significant relationship with foreign direct investment with the exemption of trade openness, which has positive but insignificant relationship with foreign direct investment. The coefficient of the ECM is -0.89, which is as expected, and it indicates 89% is the adjustment speed. Having the adjustment speed to be 89% denotes last year discrepancy can be corrected in the present year. Hence, there is evidence that in the lon-grun there is convergence to equilibrum. To ascertain if the model is good, effective, efficient, and consistent various diagnostic tests were carried out such as; Normality test, heteroskedasticity test, Ramsey reset test, and serial correlation test. The result of these tests shows that the model is good and fit. Furthermore, the stability of the model was examined using the CUSUM and the CUSUM of squares. The result of these tests shows that at at 5% critical level, the model is stable. The study suggests that there is an insignificant relationship between local investment and foreign direct investment in Turkey, government should enforce related policies such as joint ventures to give indigenous producers the opportunity to participate and reap income together with foreign direct investors. As they are subjected to new technology, this local partner will benefit from such initiative, and thus increase the country's productivity. Furthermore, the study suggest that FDI policymakers in Turkey might be to develop or form incentive programs for new investment, which is capable of attracting investors. Additional focus should be given to formulating policies to optimize FDI gains by creating the environment for an effective FDI. In addition, since economic growth influences FDI, the government should ensure continuous growth in the economy to attract foreign investments.

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