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EXCHANGE RATE, FDI AND ECONOMIC GROWTH IN MALAYSIA: AN ARDL – ECM APPROACH

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ABSTRACT
This research examines the importance of the Autoregressive Distributed Lag Model (ARDL) and Error Correction Model co-integration between foreign direct investment, exchange rate, and economic growth in Malaysia for the period 1970 to 2018. The model shows that while the dependent variable is Gross Domestic Product, the factors are integrated in both short-term and long-term.But the long-term ECM test reveals that it is not statistically significant. The model is structurally compatible with CUSUM and CUSUMSQ and it has no breaking lags.Moreover, all the diagnostic and stability tests other than the J-B test verify the reliability and significance of the tests.The Chow Breakpoint Test reveals that no structural breaks exist in 2001. In addition, FDI has an optimistic and important effects on Malaysia's economic growth, unlike the exchange rate. On a diplomatic front, the government should raise FDI by investor opportunities, a robust macro-economic situation, and the cautious use of low inflation and an effective mechanism for monetary control in terms of exchange rate stability for economic growth.

JEL Classifications: C50, O40 , C32, F31, F21

1.INTRODUCTION

The FDI plays an increasingly important role in developing countries, describing it as the driver of growth in foreign direct investment in developing nations (Hoang et al., 2010). In the long term, researchers, scientists and policy experts concentrated on the correlation between

economic growth and foreign direct investment on specific development issues(Tiwari& Mutascu, 2011). As the literature on economic growth shows, many influences are continuously shaping FDI. The literature on developing or industrialized countries in depth and framework is based on the relationship between foreign direct investment and economic growth of a country(Sharif Karimi & Zulkornain, 2009). Several FDI and economic development studies have been conducted. Such findings differ from different study methods. Although the model is known in various regions, multiple investigators find that the FDI has a significant impact on economic growth in different regions.

Regarding WAEMU nations, the study of Ndiaye & Xu (2016)concisely finds the results that indicate FDI's economic growth has a significant effect and concluded that WAEMU's FDI would boost exports, liberalize WAEMU, strengthen economic conditions, produce over the-air prices and convergence, and positively affect its country's growth rates.In order for foreign investment to be directly related to GDP in Vietnam, the findings ofHoang et al. (2010) have a strong connection towards enlightening the conintegration between FDI and economic well-being.The study furtherly encircles the periods from 1995 to 2006 and the study consists the panel model and ituses to improve the economic operation of Vietnam using the human capital, the trade and the state of the art technical flows from FDI inflows, in 61 Vietnamese provinces.

While the beneficial relationshipbetween these two factors has been found, causality is still asserted and tested by utilizing observational evidence over several years. Most considerably taking examples of (Abbes et al., 2015; N. Ahmad et al., 2012; Belloumi, 2014; Feridun & Sissoko, 2011; Hassen & Anis, 2012; Joseph Magnus & Eric Fosu, 2006; Kurtishi-Kastrati, 2013; Sothan, 2017; Tafirenyika, 2016). According to Sothan (2017),the rise of Cambodia's physical capital helps to boost foreign direct investment to the economy.However, technology itself does not have a vital role to play to pull more FDI inward. This could be because of the country's small production base.Furthermore,the researcher suggests that Cambodia's long-term development has been described by output and the overall accumulation of fixed capital (investments). In line with South African empirical data, Tafirenyika (2016) acknowledges the cointegrated economic growth, FDI inflow, and export. He acknowledged that the country's growth is driven through direct foreign investment, as well as exports.

Nonetheless, Zekarias (2016) finds the effect of foreign direct investment inflow on economic growth in fourteen East African countries while considering the application of the use of autocorrelations and model requirements checks, inclusive of optimistic GMM figures.His results assert that the economic growth of FDI is optimistic and relatively high, that the value of economic integration is 5 percent, that there is no substantial domestic investment reversal from FDI, that domestic investment and trade interaction are interdependent and have significant impacts.Hence, what his argument reflects was what the general belief in foreign direct investment is that FDI is stimulating economic growth by financial advancement, foreign investment, and open trade.Nistor(2014) explains how these two variables interlink and states that FDI and growth rate of GDP current in host countries

are optimistic and essential in terms of the region and sector in which they invest as per the stated terms.According to Nistor (2014), Antwi et al. (2013), Sothan (2017), and Kurtishi-Kastrati (2013)FDI contributed to an increased view of the economic system and behavior, at the micro and macro level, which allowed new fields of research to be opened up in economic theory.It also believes that expanded FDI inflows contribute not only to a rise in the actions of financial actors, but to higher economic growth and vice versa.The intensity of what the independent variable, which is FDI, is more significant and overwhelming in terms of increasing its level on that at the international level, that the effects of this shift in nature while considering the likely consequences of policy uncertainty that could pose a serious threat to foreign investors as it relates to the economic crisis, have been rationally evaluated by Afolabi & Abu Bakar (2016) to raise the magnitude of FDI inflow and the probableefficacy of the FDI inflow on economic growth.Meanwhile,Simionescu (2016)notes that series of time analyzes establishes a number of countries with no FDI efficacy on the economic growth level.The general contribution to economic analysis was rendered for a brief span of time through the review of the partnership between international investment and economic development after the start of the world economic crisis. The significance of determining whether direct foreign investments are economic growth is illustrated for the EU-28 and the panel results indicate that the European Union developed strong positives in 2008 between the FDI and economic growth (Simionescu, 2016).

The causality relation is not the only constraint to certain few of the studies that encircle a few of the Asian or African countries;Many research items on FDI and economic growth were however carried out and attempt was made in Malaysia to establish the causality of FDI. Most notably, the studies of the Haseeb et al. (2014), Kinuthia (2010), Mohamed et al. (2013), Salim et al. (2015), Fadhil & Almsafir (2015), Mun et al. (2008), Al-Shawaf & Almsafir (2016), Wong (2013), Anwar & Sun (2011), and Lean & Tan (2011)are bringing the convergence of FDI and economic growth in one direction, structuring their relationship essentially through specific time series and causal checking.The majority of all its findings have created a similar platform, which demonstrates a significant and robust link between these two variables mentioned above. In this regard, Fadhil & Almsafir (2015) also argued that the host nation's FDI's more significant share of economic growth and human capital accretion is also influenced. The technological disruptions of FDI influxes are, however, not adequately linked to human capital in order to contribute to economic growth. His study considers data of 45 years, considering the years 1975 – 2010.

Meanwhile, according to Salim et al. (2015), the data studied in 2000–2010 suggest that all variables used in Malaysia, such as FDI and economic growth, were co-included in the long-term analysis, and the FDI causality of Granger to economic growth occurred unidirectionally.As noted above, Mohamed et al. (2013) undertakes foreign investment and economic growth in Malaysia.The findings suggest that the causalities between domestic investment and economic growth are long – term stable.However, the correlation between FDI and domestic spending has not been important

and vice versa.Haseeb et al. (2014)finds the converse efficacy with that of the result of the study of Mohamed et al. (2013)by attaching exports to FDI and economic growth in Malaysia.Mun et al. (2008) and Salim et al. (2015) have taken on three variables. Their findings suggest a similar approach as it provides on Malaysian data for those other scholars who have carried out causality checks.In the co-integration model, Fadhil & Almsafir (2015) and Haseeb et al. (2014)use FDI infiltration and economic development in Malaysia to assess the causality. The only thing is that the information is different in terms of years. The results of the two studies show that data have a positive effect on FDI and economic growth. We have a big impact on Malaysia's economy.

2. TRENDS AND PATTERNS OF FDI INFLOW IN MALAYSIA

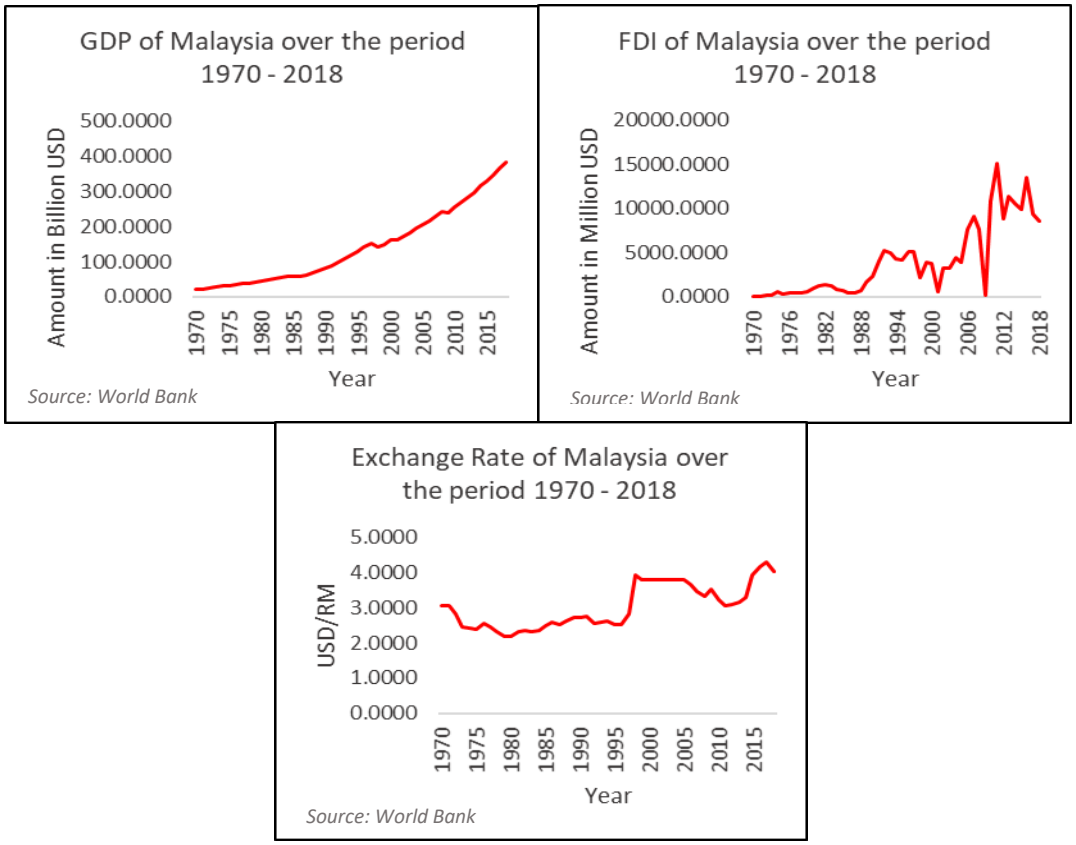
The pattern between Malaysia's GDP, FDI influxes and exchange rates between 1970 and 2018 is shown in Figure 1. In the last three decades , Malaysia has received a great deal of foreign direct investment. Malaysia's FDI portfolio is slowly growing after the 1970s. FDI inflows grew almost 20 times in the 1970s to 90, varying from 94 million dollars in the 1970s and 3787 million dollars in 2002, while fluctuating waves have been expressed in the data over the years somehow.

Nevertheless, while foreign direct investment rose during the year, in contrast with 2000, it declined tremendously in 2001 and almost plummeted by sixth times of the 2000 data.The rise in wages in Malaysia compared to other Asian countries was one of the main reasons for this decline. In Malaysia, the maximum FDI inflows stood at $13,470 million in 2016.Malaysia's 2008 financial crisis, which impacted much of southeast Asia, reduced FDIs. In 2009, the year following the financial crisis, Malaysia received approximately 114.4 million dollars in FDI.Since the beginning of the 2000s, Malaysia's FDI flows have been erratic and fluctuating predictably, but in later years of the financial crisis,Malaysia has also shown a very positive trend in terms of FDI.Considerably observing the GDPconstant of 2010 USD of Malaysia, figure 1 depicts a positive and upward trend over the period 1970 – 2018. The year 1970 in which the total GDP of the country counts only 20.6993 billion USD, but what comes into the picture is that it gradually and steadily increased this level, which ultimately reaches 382.1291 billion USD in the year 2018. This steady increase in the GDP of Malaysia is a clear indication of the country's stability towards achieving higher efficiency and productivity in various specters of the economy.

Nevertheless, the exchange rate as compared to GDP has ups and downs over this period. During the year 1970, the official exchange rate of Malaysia in USD was 3.0612 RM, and slowly over the later years, it has decreased substantially until it reaches back it goes upward in the year 1998, touching 3.9244. The recent five years of the exchange rate of USD/RM has seen a random positive trend and has crossed the value of 4 per each USD.

The key point behind this analysis is that during the time between 1970 and 2018, the variable exchange rate, along with the FDI inflow, is taken as part of the model and makes it mainly in the context of understanding its correlated connection with that of economic growth.Where the data time is also fairly long, Malaysia as a host country is considered in the majority of studies not to be

very up - to - date and accurate, both to measure short - term and long-range evaluations and the use of the ECM model.Therefore, a short-and long-term



co-integration is established with the ARDL and error correction model.

Figure 1GDP, FDI and Exchange Rate of Malaysia Over the Period 1970 - 2018

3. LITERATURE REVIEW

In developing countries, FDI has certainly contributed to economic growth. Many of these studies have also performed econometric examinations.In academic literature, the Foreign direct investment argument is not new. It has been debated several times and has been studied and analyzed by a wide number of economists, researchers, and policymakers. Certain studies focus on the causality and co-integration of FDI with economic growth. Few of them as an example are: (Abbes et al., 2015; Adeolu, 2007; Afolabi & Abu Bakar, 2016; F. Ahmad et al., 2018; Anwar & Nguyen, 2010; Feridun & Sissoko, 2011; Hassen & Anis, 2012; Iamsiraroj, 2016; Khaliq & Noy, 2007; Moudatsou & Kyrkilis, 2011; Nistor, 2014; Rehman, 2016; Salim et al., 2015; Sothan, 2017). On a global basis, FDI enhances a country's economic development(Sothan, 2017), and has a favorable effect on the country's export rates(Acaravci& Ozturk, 2012). According to Afolabi & Abu Bakar (2016), Joseph Magnus & Eric Fosu (2006), Fadhil et al. (2012) and N. Ahmad et al. (2012),FDI research has a role in the context of sustainable development to perform in causal connections with economic growth.This implies that domestic income growth can be used as a trigger for drawing up FDI inflows

in economic growth with an inconsistent causality to FDI. In addition to having a short-term co-integration, FDI has a longer-term casual co-integration, which stimulates a country's economic growth positively(Haseeb et al., 2014; Hassen & Anis, 2012; Mohamed et al., 2013; Salim et al., 2015).

Inward FDI allows developing nations with a way to manipulate their economies by restructuring, economic liberalization, exchange and business growth, new structures of financial institutions, enhanced administrative efficiency, job creation possibilities, expanded connectivity, higher regional wages, improved technology, and human labor and competitiveness by the transition. In 2000 to 2010, Salim et al. (2015) examine the causal relationship of FDI with Malaysian development as a framework of ARDL-based research into FDI and economic growth in the fields of empirical research. In addition, the study ofAlmfraji& Almsafir (2014)shows that FDI and economic growth can achieve long – term co-integration and promote it.. Similarly, the findings of Mohamed et al. (2013), in their study of foreign direct investment and domestic investment, reveal that short - term crowding impacts in Malaysia. Furtherly, theirstudy find that domestic investment often cointegrates with the economic expansion in Malaysia.

The study of Asghar et al. (2011) takes selected Asian countries. His studies suggest that tests from this broken causality theory indicate that in Malaysia alone, FDI's causality is bidirectional.The study furtherly indicates that economic growth in Nepal, Singapore, Japan, Thailand is also evident from the single cause of FDI, though large causality from Economic Growth to FDI decreases also in Pakistan, Bangladesh and Sri Lanka. However, Asghar et al. (2011) findings show that in India, Maldives, Indonesia, China, Korea, Philippines, and Singapore, there are no causalities among the two variables.Few other studies such as Abbes et al. (2015), Tiwari & Mutascu (2011), Moudatsou & Kyrkilis (2011),Agrawal (2015), Srinivasan et al. (2010), Pradhan (2009), F. Ahmad et al. (2018), Zekarias (2016), Suleiman et al. (2013) and Yucel (2014)focuses on panel data approach, while taking the data of different areas such as Eastern Africa, SACU countries, Baltic countries, New EU countries, ASEAN economies, selected Asian countries, and BRIC countries. Study by Agrawal (2015) indicates that the data from the panel shows that BRIC countries are associated with direct foreign investment and economic growth and display a long – term correlation. The findings of his research on causality have shown that the long – term causal effects of these systems vary from direct foreign investment to economic growth.

Meanwhile, Srinivasan et al. (2010) study conclude that Johansen Cointegrationforms the long – term relationship between GDP and the FDI in the five ASEAN countries, namely Indonesia, Malaya, the Philippines, Singapore and Vietnam. However, their findings also conclude that the long-term causality from GDP to FDI in the case of Indonesia, the Philippines and Singapore is clear from the empirical VECM results. Nevertheless,Sghaier& Abida (2013) not only consider FDI and economic growth, but they also add financial development as a third variable in order to find the co-integration among them while using the panel data approach. Results have been identical to those of the Baltic States, which are also the precise result of the Yucel

(2014) study thatdepictthe FDI is not only a short-term, but also a long-term feature of Baltic economic development.

Nevertheless, observations on the debates that take into account the roots of financial globalization and the economic development of foreign direct investment were empirically analyzed and explored in the panel data, and they are specifically being examined in the studies of Pradhan (2009), F. Ahmad et al. (2018), Liu et al. (2009), Asghar et al. (2011), and Moudatsou & Kyrkilis (2011).The findings suggest that FDI and economic growth are cooperating both in the short and long term, because of the same framework, although the results from different regions vary.The example of Srinivasan et al. (2010) is quite vivid in this case.Furtherly, the studyalso finds the five ASEAN countries listed have long term co – integration and a large wave of innovations is evident between FDI and economic growth. Similarly, the study of Pradhan (2009)argues also that foreign direct investment is co – integrated at a panel level with economic growth, demonstrating the long - lasting association of these factors.His findings indicate that FDI has delayed economic development because domestic learners are shrugging, local resources have been used, money has been brought back into their home countries, and some public officials have opened the door to corruption.Besides, industry-specific variables in the host and home countries would influence the FDI's effect on growth (Ayouni et al., 2014; Louzi & Abadi, 2011; Philip & Ogundipe, 2013). Their main conclusion is that econometric findings show that foreign direct investment does not individually influence economic growth.

Many studies on Malaysia's data are conducted over separate periods. Some research involves the long -term cointegration of FDI with economic growth.Our conclusions that differ in terms of principles, but the inference is focused on one statement regarding co-integration. Few of the examples are the studies of (Al-Shawaf & Almsafir, 2016; Fadhil & Almsafir, 2015; Haseeb et al., 2014; Kinuthia, 2010; Lean & Tan, 2011; Mohamed et al., 2013; Mun et al., 2008; Salim et al., 2015; Wong, 2013). Salim et al. (2015)analysis notes that the FDI is co - integrated in the long run as well as the economic growth measures employed in the review. The findings also demonstrate that Granger FDI-GDP is unidirectional.His result gives a similar output as what Haseeb et al. (2014), Al-Shawaf & Almsafir (2016), Fadhil & Almsafir (2015) and (Mohamed et al., 2013) findings have concluded. However, the studies of Duasa (2007) and Anwar & Sun (2011) are against the findings that were found in the studies, as mentioned above. They acknowledged that the causal relationship between FDI and economic growth is not significant. Nevertheless, Anwar & Sun (2011)also addressed the financial growth stage in this regard, pointing out that financial developments contributed to an increase in Malaysian domestic stocks but have a statistically insignificant effect on economic growth.

4.METHODS AND ECONOMETRIC FRAMEWORK

4.1. Methodology

Most econometric models measure FDI's impact on economic growth. To better understand this study, calculating its impact on Malaysia's GDP growth includes not only FDI, but also the exchange rate.Our model's preference is

dependent on the presence of variables. Estimates and steps based on a modern time series analysis such as co-integration testing, stationary tests unit root tests, ARDL, and models for error correction are used sequentially.

Taking into consideration the studies of Hassen & Anis (2012), Haseeb et al. (2014) and Joseph Magnus & Eric Fosu (2006), we can write as follows:

$GDP = f(FDI, EXCHR)$ ……. (1)

Where:

GDP = Gross Domestic Product; and *EXCHR* = Official Exchange Rate.

If we take the *ln* of the equation (1)we derive a new equation that is (2) and as follows:

$lnGDP = \beta_0 + \beta_1 lnFDI_t + \beta_2 lnEXCHR_t + \varepsilon_t$ ……. (2)

Where:

$\beta_0 = Intercept,\ \beta_i = i = 1,2,3, \ldots . . n)\ arecoefficients, and$

$\varepsilon_t = anerrorterm$

An essential element in determining relationships is the concept of causality. Also, for checking the co-integration between the variables, the ARDL method is used. Approaches to co-integration and error correction through the ARDL method are not unique to comprehensive research experiments using the root unit study. Nonetheless, a new approach to this study is to group the factors, including FDI and exchange rate, and to test their impact on GDP.

4.2. Data Sources

All of the series used to reflect the duration from 1970 to 2018 are obtained from the (World Bank, 2020), which publishes numerous annual economic statistics. World Bank figures may be accurate, as many researchers have used information published by the World Bank.

4.3. Empirical Results and Analysis

4.3.1. Unit Root Test

The Augmented Dickey-Fuller Test (ADF), proposed by Dickey & Fuller (1979), is performed in this article to study the stationary properties of time series. The test involves calculating regression:

$\Delta X_t = a + \gamma t + \beta X_{t-1} + \sum_{i=1}^{k-1} \theta_i \Delta X_{t-1} + \varepsilon_t$

…… (3)

In the equation given above, a is the constant, and γ is the coefficient of the time series. The variable *X* is the crucial variable in the equation. Therefore, the *X* variables include in our case as ln(FDI), ln(EXCHR), and ln(GDP). ΔIt is the generator of first divergence (difference); *t* is a trend of the time, and **ε** is random error stationarity. The coefficient given in equation (3) indicates that the test for $a$unit root is carried out for the X_{t-1}. If that coefficient differs significantly from the directional bias, which is zero (i.e.,$\beta \neq 0$), we retain the alternative hypothesis and therefore reject the null in which the variable *X* has a unit root problem, indicating that this particular variable does not have a unit root. The optimal duration of lag is also determined with the Akaike Information Criterion (AIC) in the Augmented Dickey-Fuller test. The findings in Table 1 containing the ADF test show that the first difference between GDP and exchange rates is stationary, and only FDI is stationary at level.

Table 1*Results of the ADF unit root test*

Variable	ADF Test			Results
	t-test	Prob. Value[1]	Critical value at 5%	
lnGDP(**)	-6.0843	0.0000	-3.5085	I(1)
lnFDI(**)	-5.3094	0.0004	-3.5063	I(0)
lnEXCHR(**)	-5.1529	0.0006	-3.5085	I(1)

(**)intercept and trend 1. denotes significant level based on the McKinnon critical value first

4.4. Co-integration

The primary focus of this research is to examine the long-term effects of both FDI and exchange rate on economic growth. Checking for the co-integration of variables is thus an empirical function.This study uses ARDL or bound test method suggested by Pesaran, M. Hashem; Shin (1998) and later in the study of(Pesaran, M. Hashem; Shin, Yongcheol; Smith (2001) to test for the relationships that cointegrate.The process of checking the bounds includes three phases. The first move is to create a relationship that will last long. The first step is to calculate the model for error correction using GDP (Y) as a dependent variable, and the subsequent ECM models are constructed:

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^{n} \beta_1 \Delta GDP_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta FDI_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta EXCHR_{t-i} + \gamma_1 GDP_{t-1} + \gamma_1 FDI_{t-1} + \gamma_1 EXCHR_{t-1} + \varepsilon_t \quad (4)$$

Once the ARDL equation is accessible, we take the second phase of measuring the F-test value to verify the long-term relationship presence.The H_0 for no co-integration amongst the variables in equation four is:

$H_0 = \gamma_1 = 0, \gamma_2 = 0, \gamma_3 = 0$

It is to say that there is no long-term co-integration. The H_1 hypothesis, however, is:

$H_1 = \gamma_1 \neq 0, \gamma_2 \neq 0, \gamma_3 \neq 0$

In the last step, the F-test is to be comparedwhile keeping the upper and lower90, 95, or 99% critical value bounds in consideration. The study of Narayan (2004)discusses the two sets of critical values bound, which are depicted in Table 2. One set assuming that all the regressors are I(1) and other set assuming that they are all I(0). There are three conditions that the result gets a conclusion on it. The first is, if the F-test is higher than the upper limit value (i.e., I(1)), it merely implies a long-run co-integration.Similarly, if the same F-test is less than the lower limit value (i.e., I(0)), then there is no long-run co-integration in the data; it is better to add only the short-run ARDL. Hitherto, if the F-test value lies in the middle of these two bounds, then it is simply concluded that the data is inconcludable and inconsistent. The F-test is shown in Table 2 to be 79.27160, far higher than the upper limit value, which is 3.87, with a 5 percent level of significance. Hence, it depicts that there is a

long-run co-integration in the data while considering the GDP, FDI, and exchange rate of the three inter-correlated variables. Notably adding that the optimal lag-length in Table 3was 1 in AIC.

Table 2*F-tests for co-integration*

F-Statistics	90%		95%		99%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
79.2716	2.63	3.35	3.1	3.87	3.55	4.38

Table 3*Optimal Lag-length Selection*

Lag	LogL	SC[1]	AIC[2]	HQ[3]
0	-67.11607	3.236714	3.116270	3.161170
1	114.0703	-4.054680*	-4.536456*	-4.356855*
2	119.8139	-3.548620	-4.391729	-4.077427
1SC: Schwarz information criterion 2AIC: Akaike information criterion 3HQ: Hannan-Quinn information criterion				

Table 4 shows the results of the estimated long-runcorrelations.The results show a direct link between the FDI in Malaysia and its GDP, whereas the FDI coefficient is significant and is statistically substantial and optimistic. In comparison, the findings further reveal that there is a 0.4972 percent increase in GDP for a one-unit growth in foreign direct investment inflow having a probability LOS lesser than critical 0.05 alpha value. In contrast, Malaysia's exchange rate has no significant effect on GDP, but the partnership is favorable. Consequently, these findings are following both hypotheses and scientific studies, and it is primarily that FDI encourages economic growth in Malaysia.

Table 4*Long-run estimated results*

Variable	Coefficient	Std. Error	t-statistics	Prob.
LNFDI	0.497265	0.091923	5.409589	0.0000
LNEXCHR	0.361126	0.760558	0.474817	0.6373
C	2.087652	0.933636	2.236046	0.0306
EC = LNGDP - (0.4973*LNFDI + 0.3611*LNEXCHR + 2.0877)				

4.5. Error Correction Model

To find out the Error Correction Model, we have the following equation as follows:

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^{n} \beta_1 \Delta GDP_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta FDI_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta EXCHR_{t-i} + \gamma_1 GDP_{t-1} +$$

$\gamma_1 FDI_{t-1} + \gamma_1 EXCHR_{t-1} + \varphi ECT_{t-1} + \varepsilon_t$

……..(5)

The ECM findings are shown in Table 5. Results show that following regulation of other factors, the change to FDI immediately affects GDP. The results also show that the expected negative sign of ECM is not statisticallysignificant.The sign of the error correction term indicates that the model is fit, but not statistically significant for the long-run co-integration.

Table 5*Error correctionmodel ECM*

Variable	Coefficient	Std. Error	t-statistics	Prob.
C	0.010097	0.028732	0.351420	0.7270
D(LNGDP(-1))	0.833974	0.460719	1.810156	0.0774
D(LNFDI(-1))	-0.003592	0.005285	-0.679655	0.5005
D(LNEXCHR(-1))	-0.091859	0.085767	-1.071032	0.2903
ECT(-1)	-0.819339	0.456613	-1.794384	0.0800

4.6. Diagnostic and Stability Tests

Three of the diagnostic tests are listed in Table 5, and all the diagnostic tests other than the Normality test validate the pattern's reliability and significance.The series association LM test shows that the chi-square results of 0.3091 with a confidence value of 0.5812 demonstrates we do not deny the null hypothesis.Similarly, the tests of the heteroscedasticity check reveal that in the data structures, there is no autoregressive conditional heteroscedasticity with a probability value of 0,5279 and a probability value of 0,6655, respectively.The J-B check statistical rating of 34.9253 shows the evidence is anomalous, and the null hypothesis is denied.Meanwhile, for the data stability, the Ramsey RESET test is applied to check if there is any model stability in the data. The result confirms that the data is structurally normal and has no sign of lag breaking.

Table 6*Results of diagnostic and stability tests*

Test	H_0	Statistics	p-value	Decision
SC*	There is no serial correlation in the residual	0.3091	0.5812	Retain the H_0
HE**	There is no autoregressive conditional heteroscedasticity.	0.5279	0.6655	Retain the H_0
NO***	Normal distribution	34.9253	0.0000	Reject the H_0
RR****	Absence of model misspecification	0.9353	0.3390	Retain the H_0
*Serial Correlation **Heteroscedasticity ***Normal distribution ***Ramsey RESET				

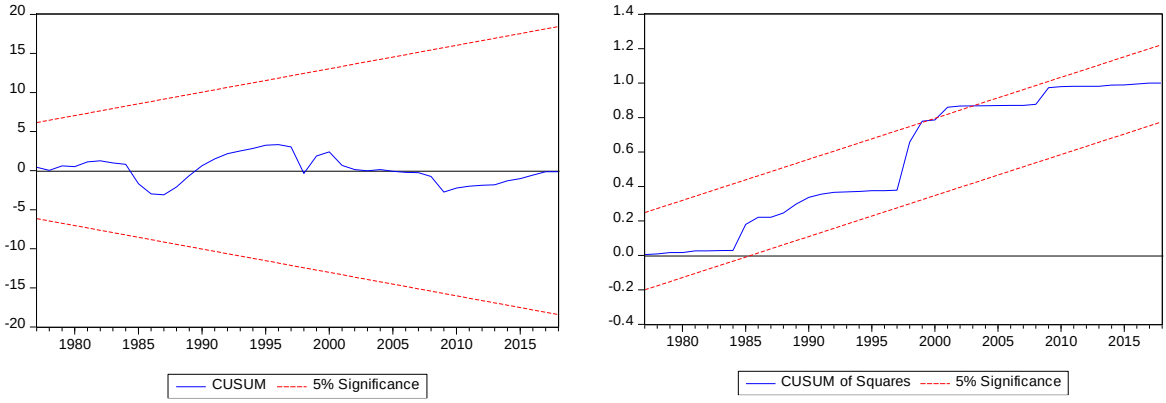


Figure 2*Plots of CUSUM and CUSUMSQ Plots at 5% L.O.S.*

Figures 2, respectively, display the CUSUM and CUSUMSQ plots for long-term stability tests and short-term transfers of the ARDL Error Corrections pattern. If plot estimates of CUSUM and CUSUMSQ stay within critical 5 percent of the point of significance of the crucial limits, the null hypothesis is compatible and not dismissed for all coefficients of regression. The null hypothesis can, therefore, be retained. For more study, the readers can refer to Tanizaki (1995) study on CUSUM and CUSUMSQ. A review of Figures 2 reveals that estimates from CUSUM are so far below the level of confidence of 5%, which indicates a robust coefficient in both long and short runs in the ARDL error correction model. However, in the case of CUSUMSQ, it lies above the 5% level of significance during the year 2003, which is structurally facing instability in that particular period.

4.7. Structural Break Analysis

4.7.1. Chow Breakpoint Test

The traditional structural change method is ascribed that undertakes the structural breaks and identifies the breaks in the structural model. This is a well-known econometric method splitting the sample into two subperiods, determining parameters for each subperiod, and then checking whether the two substrates are identical with F statistics (Hansen, 2001). The recursive plots in figure 2 indicates that the CUSUMSQT plot has a structural break in the year 2001. Consequently, the null hypothesis of no structural breakpoints seen is rejected and tested.In this case, the Chow breakpoint test is performed and the result of table 7 indicates no structural breaks in the results and the null hypothesis persists with an odds value of 0.5802, which exceeds the significance level (i.e. Alpha= 0.05). The year 2001 thus, vividly indicates that such break is not a strucutual break and the plots of CUSUM demonstrate an accurate version of displaying the data in terms of its stability and strcutruability.

Table 7*Chow Breakpoint Test*

Test	Critical Value	Prob. Value
F – Statistics	0.76608	0.5802

Wald Statistics	3.8304	0.5741

5.CONCLUSION

This study is primarily concerned with examining Malaysia 's underlying complex relation with its macroeconomic variables, Findings showed that after the first difference, the time series for two models attained stationarity.These findings were obtained by using root unit tests from ADF.TheARDL co-integration test also reveals that Malaysia's growth output has a strong correlation with the FDI. As some theories suggest, FDI, contrary to the exchange rates, has had a definite link to GDP growth. The policy should, therefore, aim to reach attractive growth rates. FDI is, therefore, seen in Malaysia as a vehicle for national development and advancement. Finally, the inflows of capital into the economy is influenced by the FDI. Malaysia should, therefore, focus specifically on FDI, which will boost the country's economic well-being, and establish consistent monetary policies aimed at stabilizing the exchange rate on its results.

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