

# The Impact of Foreign Direct Investment, Labour Force, and External Debt on Economic Growth in Indonesia and Malaysia

*(Kesan Pelaburan Langsung Asing, Tenaga Kerja dan Hutang Luar Negara ke atas Pertumbuhan Ekonomi di Indonesia dan Malaysia)*

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## ABSTRACT

*The study aims to estimate the impact of Foreign Direct Investment (FDI), labour, and external debt on economic growth in Indonesia and Malaysia over the period 1980-2016. The findings are expected to serve as a reference for macroeconomic policies in Indonesia and Malaysia. Employing an Autoregressive Distributed Lag Model (ARDL) and Error Correction Model (ECM), we find that FDI, labour force and external debt have a significant impact on the economic growth in the long- and short- run in both countries. Statistically, the estimated models are stable. Therefore, it is recommended that the authorities in Indonesia and Malaysia should concentrate on attracting more quality FDI inflows and properly manage external debts as well as high-skilled labour force, which are vital to economic growth.*

*Keywords: economic growth; FDI; labour force; external debt; ARDL-ECM*

## ABSTRAK

*Kajian ini bertujuan untuk menganggarkan kesan pelaburan langsung asing (FDI), tenaga kerja, dan hutang luar negara terhadap pertumbuhan ekonomi di Indonesia dan Malaysia dalam tempoh 1980-2016. Hasil kajian dijangka mampu untuk dijadikan rujukan oleh penggubal dasar makroekonomi di Indonesia dan Malaysia. Menggunakan model autoregresif terdistribusi lat (ARDL) dan model pembetulan ralat (ECM), kami mendapati bahawa FDI, tenaga buruh dan hutang luar negara mempunyai impak yang besar terhadap pertumbuhan ekonomi di kedua-dua negara dalam jangka panjang dan pendek. Secara statistik, model yang dianggarkan adalah stabil. Oleh itu, adalah disyorkan agar pihak pembuat dasar di Indonesia dan Malaysia menumpukan perhatian kepada dasar dan usaha yang boleh menarik lebih banyak aliran masuk FDI yang berkualiti dan mengurus hutang luar negara dengan baik disamping keperluan tenaga buruh berkemahiran tinggi yang penting untuk pertumbuhan ekonomi.*

*Kata kunci: pertumbuhan ekonomi; FDI; tenaga kerja; hutang luar negara; ARDL-ECM*

## INTRODUCTION

Indonesia has endeavoured to encourage FDI inflows as a trigger for improving domestic economy since 1967. This was marked by the enactment of Act No. 1/1967 about foreign investment, and policies on investment liberalisation until now (see policy and publication on Indonesia investment at <https://www5.bkpm.go.id>). The existence of FDI inflows is also important for the Malaysian economy. Department of Statistics of Malaysia has reported that FDI inflows increase every year, especially from Asia region (see <https://www.dosm.gov.my>). Hence, the impact of FDI on economic growth in both countries can be further estimated by scrutinizing the matter through a number of questions raised in this study. First, does FDI impact on economic growth both in the short- and the long-run? So far, some empirical

researches have used FDI as an independent variable in endogenous growth model.

As we know, Indonesia is the country with the largest population in the ASEAN region. According to the World Bank data, the total number of Indonesia labour force in 1980 was 52 million, which increased to 127 million in 2016 (grew by 144%). Meanwhile, the total labour force in Malaysia increased from 5 million in 1980 to 14 million in 2016 (grew by 180%). This situation can be addressed to the domestic economy in both countries in order to calculate the impact of labour force. Thus, the second research question is: Does labour force impact on economic growth both in the short- and the long-run?

In 1967 donor countries for Indonesia have formed IGGI (Inter-Governmental Group on Indonesia) as the starting point for Indonesia's active role in foreign debt contracts. The growth of Indonesian external debt is about

1,411% (1980 to 2016). At present the management and supervision of Indonesian foreign debt have been carried out by the Ministry of Finance and Bank Indonesia. Moreover, the Malaysian economy was also obliged to accumulate debt as a result from budget deficit. According to Daud (2016), the Malaysian government debt was financed from domestic borrowing (about 96.2%) and foreign borrowing (about 3.8%). Thus, this research aims to calculate the impact of total debt to domestic economy in both countries. Thus, the third research question is: Does external debt impact on economic growth both in the short- and the long-run?

Foreign Direct Investment (FDI) and labour play an important role in driving the domestic economy of a country. In addition, the availability of funds in the form of external debt is also important to stimulate economic growth. Studies on the impacts and contribution of these three variables to economic growth have been done by Paudel and Perera (2009), Aljebrin (2012), Ullah et al. (2014), Nordin et al. (2014), and ILO, OECD and the World Bank Group (2015). However, several empirical studies indicate that FDI and external debt have minimum contribution to the domestic economy (Duasa 2007; Wehinger 2011; Aurangzeb & Haq 2012; Mohamed et al. 2014).

According to Duasa (2007), there was no causality between Gross Domestic Products (GDP) and FDI, so the government is encouraged to increase FDI inflow and economic stability. Meanwhile, Paudel and Perera (2009) found that in the long-run, foreign debt and labour

significantly influenced economic growth in Sri Lanka. These two empirical findings show that the long- and the short-run investments do not contribute significantly to the economy. Wehinger (2011) encourages the Organization for Economic Cooperation and Development (OECD) countries to formulate regulations stimulating higher economic investment levels. Moreover, ILO, OECD and the World Bank Group (2015) emphasize the importance of the availability of highly educated and skilled labour. As an important production input, labour force should not be focused only on their quantity but also their quality.

Indonesia is a country in the ASEAN region that is trying to promote its economic growth through the availability of funds from FDI and external debt and seeks to encourage labour absorption. Thus, FDI and external debt are important sources of funding for the domestic economy and the ability of the economy to absorb labour is crucial as well. According to Saliwa (2013), several important aspects that are driving the Indonesian and Malaysian economies include the benefits of the ASEAN economic community to promote economic growth, shared market potential, investment destination countries, and open service sectors. In addition, the two countries have cooperated both in the economic and non-economic sectors to encourage domestic and regional economy.

Figure 1 illustrates the development of FDI, labour force, external debt, and economic growth in Indonesia and Malaysia within the period of 1980-2016. Economic growth in both countries tended to fluctuate. The economic crisis of 1997/1998 had a significant impact

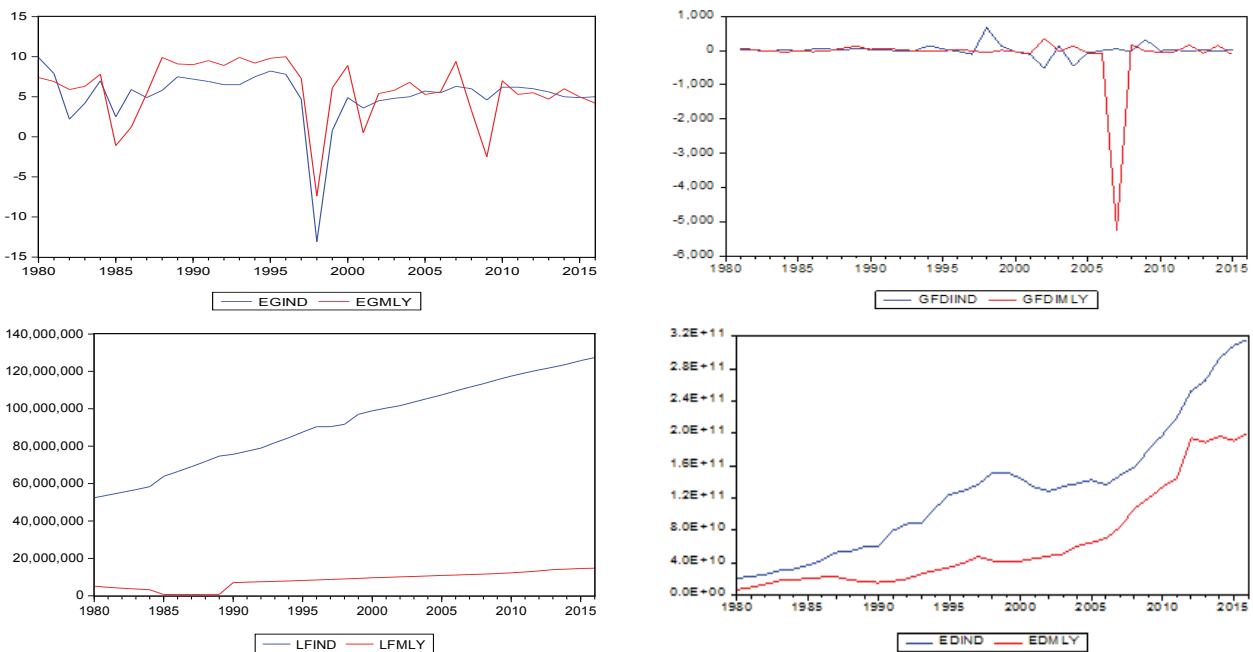


FIGURE 1. The Development of Research Variables, 1980-2016

Source: The World Bank

Note: EGIND = economic growth of Indonesia (%); EGMLY = economic growth of Malaysia (%); GFDIIND = growth of FDI in Indonesia (%); GFDIMLY = growth of FDI in Malaysia (%); LFIND = total labour force in Indonesia (person); LFMLY = total labour force in Malaysia (person); EDIND = total external debt in Indonesia (USD); and EDMLY = total external debt in Malaysia (USD).

on the decline of economic growth in both countries. In addition, the subprime mortgage crisis also resulted in Malaysia's economic downturn in 2008 although not as significant as the previous economic crisis. The development of FDI was relatively stable in both Indonesia and Malaysia, but a gap was seen between FDI inflows and outflows. In 2006-2007, Malaysia's FDI growth tended to be lower as a result of greater FDI inflow compared to FDI outflow. This means that, during that period, there was a significant shift between FDI inflows and outflows in Malaysia.

The number of labour force in Indonesia and Malaysia tends to increase, with Indonesia having a bigger increase. This condition is influenced by the efforts of both countries to increase labour absorption. The number of labour force in Indonesia is much larger because of its larger population. External debt in both countries also tends to increase with a relatively similar value. This means that governments and business actors in both countries are relatively related to overseas donors/institutions. In addition, both countries make external debt an important part of driving the domestic economy. However, both countries need to improve external debt management capabilities and focus the debt on improving the domestic economy.

The important contribution of this research is the impact analysis of long- and short-run relationships between FDI, labour force, and external debt on economic growth. In addition, the relationship can be a reference for the Indonesian and Malaysian governments to increase the attractiveness of FDI inflow, manage external debt, and improve labour force. These three variables will be expected to encourage the economic growth.

This paper is organised into six parts: introduction; literature review; methodology; result and discussion; conclusion, implication, and limitation; and, reference. The data set, and ARDL-ECM model will be discussed in the methodology part. Meanwhile, the result and discussion part will elaborate descriptive statistics, unit root test, bound test, ARDL estimation, ARDL-ECM estimation, and stability test.

## LITERATURE REVIEW

Helbling et al. (2004) explained that the availability of small investment would have an impact on the low capability of economic growth and employment. Buffie et al. (2012) suggested that public investment could be loosened primarily in the long run to boost economic performance. In addition, according to Phetsavong and Ichihashi (2012), FDI policy should be formulated carefully and appropriately to maintain economic growth. These three studies demonstrate the need for sufficient and well-managed investment to promote economic growth. In theory, investment is related to aggregate demand and supply.

Romer (2012) believed that the increase in supply and demand for aggregate output would encourage the availability of capital stock. As such, the economy needs to maintain investment availability as it becomes a funding source to develop industry and grow the economy. This view is supported by Nordin et al. (2014) who confirmed that FDI's important contribution to economic growth is the availability of capital and transfer of technology, and by Suhendra and Anwar (2014) who found that investment has a positive and significant impact on economic growth. These three arguments are the foundations of this research. To clarify the impact of investment on economic growth both in the short- and the long-run, the ARDL method is used. This is done because the period of research data is relatively short.

Poirson (2000) argued that countries capable of reallocating labour from agriculture to industry efficiently tend to generate high economic growth. Such reallocation, which requires increased skill and higher education, increase labour productivity in the industrial sector. ILO, OECD, & World Bank Group (2015) also reported that highly skilled labour can promote economic growth, which was confirmed by Hsu (2017) who mentioned that labour could push the economy through productivity. The labour variable in this research is in the form of total labour force, not the human capital. Labour force becomes a proxy for workers availability as production input that can increase aggregate output and stimulate economic growth. Thus, the labour force is believed to have a positive and significant impact on economic growth.

Pattillo et al. (2004) found that the relatively high debt has a negative and significant effect on economic growth, but the debt on a small scale shows no such effect. Nersisyan and Wray (2010) argued that large or small impact of government debt on macro economy does not necessarily refer to a certain level/percentage but rather than to the consequences of state budget policy and economic performance target. Meanwhile, Wijeweera et al. (2005) stated that external debt affects the economy in the short-run but it is not significant in the long-run. This argument is the reference of this study to prove the difference between the impacts of external debts in the short-run and those in the long-run on economic growth in both Indonesia and Malaysia.

Emeka and Mojekwu (2011) noted that external debt has a significant impact on GDP but foreign capital inflow has no effect. In addition, Umaru et al. (2013) pointed out that external debt has a negative effect on economic growth so the government needs to focus on increasing investment, rather than external debt. However, Mengus (2014) maintained that the Ricardian-based economy could utilize the availability of debt (external-domestic) appropriately to economic development. These three arguments have shown that FDI and external debt remain important in promoting economic growth in both Indonesia and Malaysia.

There are several theories of economic growth that can be used as a research reference, namely, the structuralist growth model, the classical theory of growth and distribution, evolutionary growth theory, the post-Keynesian theories of growth and distribution, the Harrodian and Kaleckian models of accumulation and income distribution, Kaldor and the Kaldorians, and the paths of transformational growth (Setterfield 2010). The structuralist growth model emphasizes that the economic output is formed due to economic structure factors, where investment does not necessarily have a direct effect on the economy (Gibson 2010 in Setterfield 2010). In this condition, price and income can be well distributed. Foley and Michl (2010) in Setterfield (2010) suggested that the classical theory of growth and distribution identifies several factors that shape economic growth, namely: investment, employment, population, and savings. In addition, the resource distribution factor in the production process can improve output added-value. Evolutionary growth theory describes that knowledge, population, and investment play an important role in the evolution of economic growth (Metcalfé & Foster 2010 in Setterfield 2010). According to Kurz and Salvadori (2010) in Setterfield (2010), the post-Keynesian theories of growth and distribution emphasize the linkage between wages, profits, technology, and economic growth.

In Indonesia, empirical research on the contribution of FDI, labour force, and external debt to economic growth has been done by Hafild et al. (2000), Rininta (2013), Tarmidi et al. (2014), Allen (2016), Feriyanto and Sriyana (2016), Sjöholm (2016), Giap and Amri (2016), Gopalan et al. (2016), Kentjana (2017), and Mahadika et al. (2017). In general, FDI has a significant impact on economic growth. This condition is relevant to the governments' efforts to increase investment sources to stimulate economic development. The availability of labour also contributes to the economic growth. However, the contribution of labour has not been maximized to achieve higher levels of economic growth. On the other hand, external debt tends to be a burden on the state budget and has less significant impact on economic growth.

In Malaysia, empirical research on the impact of FDI, labour force, and external debt on economic growth has been carried out by among others: Mun et al. (2008); Bakar and Hassan (2008); Aw and Tang (2009); Hooi and Wah (2010); Loganathan et al. (2010); Yusof (2010); Hassan and Masron (2011); Wye and Ismail (2012); Haseeb et al. (2014); Sieng and Yussof (2014); Solomon et al. (2015); Rafik (2015); and, Munir et al. (2016). In general, FDI inflows have a significant impact on Malaysia's domestic economy, as it can absorb labour. Therefore, the government is encouraged to utilize FDI optimally. Labour plays an important role in Malaysia's economic growth, but workers are treated differently by gender. It has also been shown that external debt holds a significant impact on the Malaysian economy.

As Malaysia's external debt tends to increase, the government is expected to manage it carefully so as not to become the burden of domestic economy.

This study will examine the significant impact of FDI, labour force, and external debt on economic growth of Indonesia and Malaysia in both the short- and the long-run. The three variables, which are all independent, were chosen as a comparison with previous empirical researches that tend to focus on one or two independent variables in the estimation model. The result of the study is expected to be a significant contribution in the form of empirical contribution. In addition, this research uses macroeconomic variables. Several previous empirical researches tend to focus on combining macroeconomic and microeconomic (industry level) variables. Thus, previous empirical studies do not link these three independent variables on economic growth in one model of estimation directly.

As FDI has a significantly positive impact on economic growth in Indonesia and Malaysia, the two countries need to create a favourable investment climate and make deals for special projects, such as infrastructure, energy, electricity, and manufacture accordingly. Meanwhile, the external debt can be used to stimulate skilled labour, technology adoption for SMEs, innovation and technology project for education, and subsidy for manufacture. Furthermore, the two countries should design risk management of external debt in order to control the risk of volatility value of external debt on domestic economic growth. Moreover, the external debt in growth model can extend the traditional growth model. Given the traditional growth model which is just constituted by capital and labour, then some researchers conducted empirical studies to investigate the impact and optimal level of debt on the domestic economy.

## METHODOLOGY

### DATA SET

This research uses annual secondary data from 1980-2016 published by the World Bank ([www.worldbank.org](http://www.worldbank.org)). In addition, it also focuses on two countries, i.e., Indonesia and Malaysia as the research objects. The initial period of research refers to empirical studies conducted by Hakim and Giovani (2012) and Drabble (2000). Hakim and Giovani (2012) explained that Indonesia's economic growth has been growing rapidly since 1980 as a result of economic stabilization, availability of investment, and foreign debt cooperation. Meanwhile, Drabble (2000) points out that in the 1980s Malaysia's manufacturing developments improved in favour of improving domestic economic conditions. Furthermore, the end period of this research is 2016, which is based on the availability of latest data published by the World Bank.



The research variables include Foreign Direct Investment (FDI), labour force, external debt, and economic growth. The FDI uses net FDI inflows in US\$. Labour force data is the number of worker in person. External debt data is total private and public debt in US\$. All data will be converted into logarithms for the ARDL-ECM estimation model. Meanwhile, economic growth data represents annual GDP growth in %.

Research data in ARDL-ECM estimation use several symbols. Symbol of Indonesia and Malaysia are IND and MLY respectively. In addition, the symbol of economic growth uses EG. Meanwhile, the symbol of FDI, labour force and external debt are FDI, LF, and ED respectively. Thereby, the symbols of ARDL-ECM variables in Indonesia are EGIND, logFDIIND, logLFIND, dan logEDIND. Furthermore, the symbols of ARDL-ECM variables in Malaysia are EGMLY, logFDIMLY, logLFMLY, and logEDMLY respectively.

METHOD

Some empirical studies are employed to examine the impact of FDI, labour force, and external debt on economic growth in Indonesia dan Malaysia in the short- and the long-run. Those empirical researches are conducted by Mun et al. (2008), Hooi and Wah (2010), Tarmidi et al. (2014), Sieng and Yussof (2014), and Mahadika et al. (2017). Generally, the output is determined by capital and labour (see Cobb-Douglas Production Function). In this research, however, the output is defined by GDP growth (economic growth) while capital is defined by Foreign Direct Investment (FDI) inflows. The investment of this research is calculated using q-Theory (see Wickens 2008). In addition, the labour uses labour force data. The relationship between labour and economic growth refers to Endogenous Growth Model (see Romer 2012). Furthermore, external debt, which is used as independent variable in this study, becomes source of growing domestic economy. The impact of debt on economic growth uses Endogenous Growth Model (see Greiner and Fincke 2015, 81-101). The total external debt from foreign investors or countries was the one obtained by public and private sectors.

The ARDL model was used to investigate the impact of FDI, labour force, and external debt on economic growth in Indonesia and Malaysia in the long-run. The basic model of ARDL in this research refers to the one constructed by Pesaran and Shin (1995), which is formulated as follows (see Equation 1):

$$\Delta EG_t = \alpha + \sum_{i=1}^n b_i \Delta EG_{t-i} + \sum_{i=1}^n c_i \Delta FDI_{t-i} + \sum_{i=1}^n d_i \Delta LF_{t-i} + \sum_{i=1}^n e_i \Delta ED_{t-i} + \beta_1 EG_{t-1} + \beta_2 FDI_{t-1} + \beta_3 LF_{t-1} + \beta_4 ED_{t-1} + \varepsilon_t \quad (1)$$

$\Delta EG$  is change of economic growth (%).  $\Delta FDI$  is change of foreign direct investment (US\$).  $\Delta LF$  is change of labour force (person).  $\Delta ED$  is change of external debt (US\$).  $\alpha$  is constant or intercept of ARDL estimation.

Meanwhile,  $b$ ;  $c$ ;  $d$ ;  $e$ ; and  $\beta$  are parameters of independent variables. Those parameters will explain the impact of FDI, labour force, and external debt on economic growth both in the long- and the short-run.

Equation 1 was converted to logarithms. Therefore, Equation 2 could be written as follows:

$$\Delta EG_t = \alpha + \sum_{i=1}^n b_i \Delta EG_{t-i} + \sum_{i=1}^n c_i \Delta \text{Log} FDI_{t-i} + \sum_{i=1}^n d_i \Delta \text{Log} LF_{t-i} + \sum_{i=1}^n e_i \Delta \text{Log} ED_{t-i} + \beta_1 EG_{t-1} + \beta_2 \text{Log} FDI_{t-1} + \beta_3 \text{Log} LF_{t-1} + \beta_4 \text{Log} ED_{t-1} + \varepsilon_t \quad (2)$$

Based on Equation 2, the ARDL model to be employed is as follows (Equation 3):

$$EG_t = \alpha + \sum_{i=1}^n b_i EG_{t-i} + \sum_{i=1}^n c_i \text{Log} FDI_{t-i} + \sum_{i=1}^n d_i \text{Log} LF_{t-i} + \sum_{i=1}^n e_i \text{Log} ED_{t-i} + \varepsilon_t \quad (3)$$

Equation 3 explains the long-run impact of FDI, labour force, and external debt on economic growth.

In order to examine the short-run impact of FDI, labour force, and external debt, the ECM model is employed as follows (Equation 4):

$$\Delta EG_t = \alpha + \sum_{i=1}^n \gamma_{1i} \Delta EG_{t-i} + \sum_{i=1}^n \gamma_{2i} \Delta \text{Log} FDI_{t-i} + \sum_{i=1}^n \gamma_{3i} \Delta \text{Log} LF_{t-i} + \sum_{i=1}^n \gamma_{4i} \text{Log} ED_{t-i} + \gamma_{5i} ECT_{t-1} + e_t \quad (5)$$

ECT is an error correction term that reflects ECM Model in the short-run. Meanwhile,  $\gamma$  is parameter of ECM estimation.

The unit root test of all research variables uses Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) test. The basic procedure of ADF and PP test refers to Maddala and Kim (2004). In addition, the unit root test will use level and first difference (intercept, and intercept and trend). Furthermore, the final step of research analysis is stability test. It uses recursive estimation with CUSUM and CUSUM Sum of Square (CUSUMSQ) for getting a constancy of parameter in the model (Pesaran & Pesaran 1997 in Alimi 2014).

RESULT AND DISCUSSION

DESCRIPTIVE STATISTICS

Table 1 (Indonesia) and Table 2 (Malaysia) provide information on the descriptive statistics of research variables. Table 1 indicates that Economic Growth (EGIND) and log FDI (logFDIIND) tend to be abnormally distributed. This can be observed from the Skewness value that tends to be negative and kurtosis value that is very high. Both produce a relatively high Jarque-Bera value, which means that the probability value is significant. Meanwhile, the Skewness value of the log labour force (logLFIND) and the external debt log (logEDIND) tends to be close to 0 while the Kurtosis value of these variables is below 3, resulting in a Jarque-Bera value of nearly 3. This indicates that the

TABLE 1. Descriptive Statistics of Variables in Indonesia

Variables	EGIND	LOGFDIIND	LOGLFIND	LOGEDIND
Mean	5.1514	9.7576	7.9489	11.0075
Median	5.7000	10.1614	7.9621	11.1229
Maximum	9.9000	10.3128	8.1052	11.5003
Minimum	-13.1000	0.0000	7.7195	10.3209
Std. Dev.	3.5384	1.6800	0.1172	0.3317
Skewness	-3.8011	-5.5098	-0.4864	-0.5617
Kurtosis	20.4464	32.4947	2.0639	2.3495
Jarque-Bera	558.3487	1528.3600	2.8096	2.5979
Probability	0.0000	0.0000	0.2454	0.2728
Observations	37	37	37	37

Source: Secondary data (processed)

Note: EGIND = economic growth of Indonesia (%), LOGFDIIND = logarithm of Indonesia FDI, LOGEDIND = logarithm of Indonesia external debt

two variables tend to be normally distributed and their probability value is not significant.

As shown in Table 2, economic growth of Malaysia (EGMLY) and log labour force (logLFMLY) appear to be abnormally distributed. This can be observed from the skewness value that tends to be closer to 1 and from the kurtosis value that is higher than 4. Both produce a relatively high Jarque-Bera value and a significant probability value. Meanwhile, the skewness value of the log FDI (logFDIMLY) and the log external debt (logEDMLY) tend to be close to 0 while the kurtosis value of these variables is below 3, resulting in a relatively low Jarque-Bera value and insignificant probability value. All these values indicate the two variables that are likely to be normally distributed.

#### UNIT ROOT TESTS

Unit Root Test is applied to time series data to get data stationarity (Maddala and Kim 2004). The data may indicate that they are normally distributed. This test

is performed on FDI, labour force, external debt, and economic growth data in Indonesia and Malaysia. The tests used were Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP), which were determined at level and at first difference. The tests also employed intercept and intercept and trend.

Table 3 presents the results of Unit Root Test in which economic growth of Indonesia (EGIND) and log labour force (logLFIND) are stationary at level in the ADF (intercept, intercept and trend) and PP (intercept, and intercept and trend). Meanwhile, FDI log variables (logFDIIND) and the external debt log (logEDIND) are stationary at first difference in ADF (intercept) and PP (intercept, and intercept and trend).

As shown in Table 4, the economic growth of Malaysia (EGMLY) is stationary at level in the ADF (intercept, intercept and trend) and PP (intercept, and intercept and trend). Meanwhile, log FDI (logFDIMLY), log labour force (logLFMLY) and the external debt log (logEDMLY) are stationary at first difference in ADF (intercept) and PP (intercept, and intercept and trend).

TABLE 2. Descriptive Statistics of Variables in Malaysia

Variables	EGMLY	LOGFDIMLY	LOGLFMLY	LOGEDMLY
Mean	5.8730	9.8636	6.7976	10.6340
Median	6.1000	9.8699	6.9538	10.6230
Maximum	10.0000	10.2175	7.1673	11.3018
Minimum	-7.4000	9.5207	5.8056	9.8202
Std. Dev.	3.7641	0.1871	0.4195	0.4080
Skewness	-1.5944	-0.0433	-1.5667	0.1526
Kurtosis	5.9137	2.6718	4.1164	2.0905
Jarque-Bera	28.7648	0.1729	17.0577	1.4188
Probability	0.0000	0.9172	0.0002	0.4919
Observations	37	37	37	37

Source: Secondary data (processed)

Note: EGMLY = economic growth of Malaysia (%), LOGFDIMLY = logarithm of Malaysia FDI, LOGEDMLY = logarithm of Malaysia external debt

TABLE 3. Unit Root Test Results of Variables in Indonesia

Variables	Augmented Dickey-Fuller (ADF) test				Phillips-Perron (PP) test			
	Level		First Difference		Level		First Difference	
	Intercept	Intercept and Trend	Intercept	Intercept and Trend	Intercept	Intercept and Trend	Intercept	Intercept and Trend
EGIND	-4.53115 <sup>a</sup>	-4.446526 <sup>b</sup>	-	-	-4.543694 <sup>a</sup>	-4.460387 <sup>b</sup>	-	-
LOGFDIIND	-0.587891	-2.542309	-2.796641 <sup>c</sup>	-3.034973	0.492332	-1.043521	-11.45623 <sup>a</sup>	-13.0893 <sup>a</sup>
LOGLFIND	-5.742505 <sup>a</sup>	-4.506987 <sup>b</sup>	-	-	-7.536914 <sup>a</sup>	-0.669384	-	-
LOGEDIND	-2.23708	-1.718838	-4.466286 <sup>a</sup>	-4.762234 <sup>b</sup>	-1.980998	-1.779084	-4.535197 <sup>a</sup>	-4.779564 <sup>b</sup>

Source: Secondary Data (processed)

Note: 1. MacKinnon (1996) a = 1%; b = 5%; and c = 10%  
 2. Max. lag is 9 based on Schwarz information criterion

TABLE 4. Unit Root Test Results of Variables in Malaysia

Variables	Augmented Dickey-Fuller test				Phillips-Perron test			
	Level		First Difference		Level		First Difference	
	Intercept	Intercept and Trend	Intercept	Intercept and Trend	Intercept	Intercept and Trend	Intercept	Intercept and Trend
EGMLY	-4.812069 <sup>a</sup>	-4.872854 <sup>b</sup>	-	-	-4.827285 <sup>a</sup>	-4.872854 <sup>a</sup>	-	-
LOGFDIMLY	-1.646518	-1.936499	-6.078486 <sup>a</sup>	-5.930288 <sup>a</sup>	-1.596293	-1.936499	-6.08372 <sup>a</sup>	-5.938728 <sup>a</sup>
LOGLFMLY	-16.34209 <sup>a</sup>	-2.392052	-5.525874 <sup>a</sup>	-5.456593 <sup>a</sup>	-1.454045	-2.544352	-5.525091 <sup>a</sup>	-5.45602 <sup>a</sup>
LOGEDMLY	-1.280515	-3.479225 <sup>c</sup>	-3.556843 <sup>b</sup>	-3.464627 <sup>c</sup>	-1.19079	-2.750203	-3.429959 <sup>b</sup>	-3.246765 <sup>c</sup>

Source: Secondary Data (processed)

Note: 1. MacKinnon (1996) a = 1%; b = 5%; and c = 10%  
 2. Max. lag is 9 based on Schwarz information criterion

ARDL BOUND TEST

All the research variables employed in ARDL-ECM estimation both in Indonesia and Malaysia have different root units. There are some variables that have stationary at the level and others have stationary at first difference. The further testing step is cointegration using ARDL Bound Test. The result of cointegration of ARDL Bound Test can be seen at Table 5. The basic test of bound test refers to the one conducted by Pesaran et al. (2001).

Table 5 shows the value of F-statistics of ARDL Bound Test in Indonesia and Malaysia. The value F-statistics is higher than critical value bounds. This indicates that all

TABLE 5. ARDL Bound Test of Indonesia and Malaysia

	Indonesia		Malaysia	
	F-Statistic	K	F-Statistic	K
	32.28238	3	8.767975	3
Critical Value Bounds				
	Significance	I(0) Bound	I(1) Bound	
	10%	2.72	3.77	
	5%	3.23	4.35	
	2.50%	3.69	4.89	
	1%	4.29	5.61	

Source: Secondary Data (Processed)

research variables have been integrated in the long-run. In addition, the results of the Bound Test can support the ARDL estimation result that FDI, labour force, and external debt have a significant impact on economic growth both in Indonesia and Malaysia.

ARDL ESTIMATION RESULTS

The ARDL estimation in this research focuses on the impact of FDI, labour force, and external debt on economic growth in Indonesia and Malaysia. Table 6 shows the results of ARDL estimation in Indonesia. It can be seen in Table 6 that the Indonesian ARDL model is ARDL (3, 6, 6, 6). Economic growth (-1) and economic growth (-3) have a negative and significant impact on the economic growth of Indonesia while economic growth (-2) has a positive and significant impact. This indicates that the lagged economic growth can be a determinant of the economic growth.

FDI and FDI (-1) have a negative impact on Indonesia's economic growth. This indicates that FDI has an influence on economic growth. Meanwhile, FDI (-2) and FDI (-6) have a positive and significant impact on economic growth. Thus, the FDI inflow in the domestic economy needs to be managed properly to ensure the utilization of FDI that can promote economic growth.

TABLE 6. ARDL Estimation of Indonesia

Variables	Coefficient	Std. Error	t-Statistic
C	458.2548	103.5903	4.423725**
EGIND(-1)	-0.459002	0.117876	-3.893931***
EGIND(-2)	0.937913	0.107188	8.750134*
EGIND(-3)	-0.761487	0.095227	-7.996552*
LOGFDIIND	-11.49302	1.80024	-6.38416*
LOGFDIIND(-1)	-8.538739	1.9002	-4.493601**
LOGFDIIND(-2)	9.12498	2.550697	3.577446***
LOGFDIIND(-3)	-2.972268	2.957718	-1.004919
LOGFDIIND(-4)	1.435768	2.919044	0.491862
LOGFDIIND(-5)	-4.062556	2.696932	-1.506362
LOGFDIIND(-6)	4.088329	0.324419	12.60202*
LOGLFIND	-303.7155	95.33903	-3.185637**
LOGLFIND(-1)	1268.406	153.9289	8.240208*
LOGLFIND(-2)	-1478.246	116.3267	-12.70771*
LOGLFIND(-3)	77.26203	57.26496	1.349203
LOGLFIND(-4)	338.0907	54.38343	6.216796*
LOGLFIND(-5)	-121.5177	47.95321	-2.534089**
LOGLFIND(-6)	233.7127	43.02793	5.431652*
LOGEDIND	3.056491	10.25702	0.29799
LOGEDIND(-1)	-47.90605	10.46601	-4.577301**
LOGEDIND(-2)	-6.301948	9.416678	-0.669233
LOGEDIND(-3)	-35.28133	11.02938	-3.198849**
LOGEDIND(-4)	71.90261	11.22309	6.406666*
LOGEDIND(-5)	-5.694189	10.30928	-0.552336
LOGEDIND(-6)	-18.55391	9.233149	-2.009489***
R-squared	0.98681		
Adjusted R-squared	0.93405		
F-statistic	18.70364		
Prob(F-statistic)	0.000749		

Source: Secondary Data (processed)

Note: a. Dependent variable = EGIND

b. \*  $\alpha=1\%$ ; \*\*  $\alpha=5\%$ ; \*\*\*  $\alpha=10\%$

Labour force, labour force (-2), and labour force (-5) also have a negative and significant impact on Indonesia's economic growth. This confirms that the variables cannot support economic growth. Meanwhile, labour force (-1), labour force (-4), and labour force

(-6) have a positive and significant impact on economic growth. This indicates that the increase in the labour force of previous periode will increase economic growth. Thus, the Indonesian government should stimulate the improvement of labour force in terms of skill and productivity to support economic growth.

External debt and external debt (-4) have a positive and significant impact on Indonesia's economic growth. This proves that external debt can promote economic growth. Meanwhile, external debt lag 1, lag 2, lag 3, lag 5 and lag 6 have a negative and significant impact on economic growth. External debt by both the government and the private sector need to be properly managed to be used as a driving force of economic growth rather than the burden of the state or company budget.

The adjusted R-squared value of the Indonesian ARDL estimation is 0.93405. This indicates that the variation of dependent variables is explained by the independent variable variation by 93.405%. In addition, this value is also a goodness of fit indicator of the relatively good estimation of Indonesia's ARDL. Furthermore, the Indonesian ARDL estimation of F-statistic value is significant, which indicates that all the independent variables simultaneously have a significant effect on the dependent variables.

The impacts of FDI and external debt on Indonesia's economic growth were significant in the long-run (Table 7). Meanwhile, the labour force does not affect economic growth significantly, which means that the Indonesia economy still needs capital from foreign countries.

Table 8 illustrates the results of Malaysia's ARDL estimation of the impact of FDI, labour force, and external debt on economic growth. The Malaysian ARDL estimation model is ARDL (4, 4, 3, 3). It can be seen that economic growth (-2) has a negative and significant impact on Malaysia's economic growth, indicating the need for Malaysian government to investigate the economic growth achieved from the previous period in more depth.

FDI has a negative and significant effect on Malaysia's economic growth. This indicates that FDI inflow tends to inhibit domestic economic growth. Thus, the Malaysian government should stimulate FDI

TABLE 7. Long-Run Coefficient of Indonesia's ARDL Estimation

Variable	Coefficient	Std. Error	t-Statistic	Probability
LOGFDIIND	-5.340858	1.087873	-4.90945*	0.0027
LOGLFIND	-5.157389	8.151397	-0.6327	0.5503
LOGEDIND	-52.018307	4.505976	-11.544292*	0.0000
C	-24.163252	52.865937	-0.457067	0.6637

Source: Secondary Data (Processed)

Note: a. Dependent variable is EGIND

b. \*  $\alpha=1\%$ ; \*\*  $\alpha=5\%$ ; \*\*\*  $\alpha=10\%$



TABLE 8. ARDL Estimation of Malaysia

Variables	Coefficient	Std. Error	t-Statistic
C	184.3048	54.38218	3.389067**
EGMLY(-1)	0.073254	0.154292	0.474778
EGMLY(-2)	-0.840633	0.20181	-4.165465*
EGMLY(-3)	-0.215221	0.163193	-1.318817
EGMLY(-4)	-0.338195	0.18395	-1.838519
LOGFDIMLY	-23.54173	5.305878	-4.436916*
LOGFDIMLY(-1)	12.13089	6.797632	1.784576
LOGFDIMLY(-2)	-5.091556	8.736273	-0.582806
LOGFDIMLY(-3)	-17.97491	9.549091	-1.882369
LOGFDIMLY(-4)	14.07569	7.507563	1.874868
LOGLFMLY	10.15103	2.679683	3.788146**
LOGLFMLY(-1)	-8.56981	3.238977	-2.645838**
LOGLFMLY(-2)	-1.266837	3.172963	-0.39926
LOGLFMLY(-3)	-7.404035	3.953671	-1.872699
LOGEDMLY	63.71001	16.41523	3.881152*
LOGEDMLY(-1)	-73.83877	20.55924	-3.591513**
LOGEDMLY(-2)	68.2752	22.177	3.078649**
LOGEDMLY(-3)	-51.1308	15.40067	-3.320037**
R-squared	0.849737		
Adjusted R-squared	0.667274		
F-statistic	4.657047		
Prob(F-statistic)	0.002871		

Source: Secondary Data (processed)

Note: a. Dependent variable = EGMLY

b. \*  $\alpha=1\%$ ; \*\*  $\alpha=5\%$ ; \*\*\*  $\alpha=10\%$

to achieve targeted economic growth. Furthermore, labour force has a positive and significant effect on economic growth while labour force (-1) has negative and significant effect. Therefore, the Malaysian government needs to encourage the improvement of labour force (in terms of skill and productivity) to achieve domestic economic growth.

External debt used by Malaysian government and industry has a positive and significant impact on domestic economic growth. In addition, external debt (-2) also has a positive and significant effect, indicating that external

debt is used carefully and properly to stimulate economic growth. However, external debt (-1) and external debt (-3) have a negative and significant impact on Malaysia's economic growth. Therefore, the Malaysian government needs to improve the governance and utilization of external debt.

The adjusted R-squared value of Malaysia's ARDL estimation is 0.667274, which means that the variation of dependent variables is explained by the variation of independent variables by 66.7274%. Furthermore, the Malaysia's ARDL estimation is categorized as a good model. The Malaysian ARDL estimation F-statistic value is 4.657074, meaning that all independent variables simultaneously affect the dependent variables.

Table 9 confirms that in the long-run FDI and labour force effect on economic growth in Malaysia. Meanwhile, the external debt does not impact on economic growth. This means that Malaysia's economy tends depends on foreign capital inflow. Furthermore, Malaysia has labour force who need to be improved in form of skill and productivity.

#### ECM ESTIMATION RESULTS

Table 10 shows the results of ECM estimation in Indonesia in which the D (change) of economic growth lag 1 and lag 2 have a positive and significant impact on economic growth in the short-run. This indicates that the economic growth achieved in the current period is determined by the achievement in the previous period. In addition, change values of FDI lag 1, lag 4, and lag 5 have a negative and significant effect on economic growth while the change value of FDI lag 3 has a positive effect in the short-run. This means that FDI contributes significantly to the achievement of economic growth in Indonesia.

In the short-run, change value of external debt has no effect on economic growth. This means that the amount of labour does not reflect the achieved economic growth rate. Thus, the Indonesian government needs to formulate an employment policy that can stimulate increased domestic economic growth. Meanwhile, change value of external debt lag 1 to lag 5 have a positive and significant effect on economic growth in the short-run. This shows that external debt by the

TABLE 9. Long-Run Coefficient of Malaysian ARDL Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGFDIMLY	-8.79079	2.358592	-3.727134*	0.0023
LOGLFMLY	-3.054838	1.532499	-1.99337***	0.0661
LOGEDMLY	3.02295	1.876033	1.611352	0.1294
C	79.414545	15.158019	5.239111*	0.0001

Source: Secondary Data (Processed)

Note: a. Dependent variable is EGMLY

b. \*  $\alpha=1\%$ ; \*\*  $\alpha=5\%$ ; \*\*\*  $\alpha=10\%$

TABLE 10. ECM Estimation of Indonesia

Variables	Coefficient	Std. Error	t-Statistic
D(EGIND(-1))	1.055854	0.107803	9.794302*
D(EGIND(-2))	0.215221	0.095227	2.260089***
D(LOGFDIIND)	-0.338195	1.80024	-0.187861
D(LOGFDIIND(-1))	-12.130894	2.550697	-4.755914**
D(LOGFDIIND(-2))	5.091556	2.957718	1.721448
D(LOGFDIIND(-3))	17.974911	2.919044	6.157807*
D(LOGFDIIND(-4))	-14.075691	2.696932	-5.219149*
D(LOGFDIIND(-5))	-10.151029	0.324419	-31.289911*
D(LOGLFIND)	-8.56981	95.339029	-0.089888
D(LOGLFIND(-1))	7.404035	116.326728	0.063649
D(LOGLFIND(-2))	-63.710015	57.264964	-1.112548
D(LOGLFIND(-3))	73.83877	54.383431	1.357744
D(LOGLFIND(-4))	-68.275201	47.953211	-1.423788
D(LOGLFIND(-5))	51.130801	43.027929	1.188317
D(LOGEDIND)	184.304847	10.257023	17.968649*
D(LOGEDIND(-1))	47.906054	9.416678	5.087362*
D(LOGEDIND(-2))	47.906054	11.029381	4.343494*
D(LOGEDIND(-3))	47.906054	11.223093	4.268525*
D(LOGEDIND(-4))	47.906054	10.309279	4.646887*
D(LOGEDIND(-5))	47.906054	9.233149	5.188485*
CointEq(-1)	-1.9826	0.13869	-14.29521*

Source: Secondary Data (processed)

Note: a. Dependent variable = EGIND

b. Cointeq = EGIND - (-5.3409\*LOGFDIIND - 5.1574\*LOGLFIND - 52.0183\*LOGEDIND - 24.1633) = ECT(-1)

c. \*  $\alpha=1\%$ ; \*\*  $\alpha=5\%$ ; \*\*\*  $\alpha=10\%$

government and private sector can drive economic growth in Indonesia.

One of the variables for measuring ECM estimation is ECT(-1). The value of ECT (-1) is negative and significant reflected by CointEq (-1). This means that the ARDL-ECM estimation is appropriate to prove the impact of FDI, external debt, and labour force on Indonesia's economic growth in the short-run.

Table 11 illustrates the results of ECM estimation in Malaysia. Variables D (change) of economic growth lag 1 and lag 2 have a positive and significant impact on domestic economic growth in the short-run. These results reveal that the economic growth achieved in Malaysia is closely related to the achievements of economic growth in the previous period. Thus, the Malaysian government needs to stimulate economic growth to achieve established growth targets.

In the short-run, change value of FDI in Malaysia has a negative and significant effect on economic growth, indicating that FDI tends to hamper economic growth. To that end, the Malaysian government needs to manage and direct FDI to boost domestic economic growth.

Change value in labour force have a positive and significant effect on economic growth. This means that

the number of labour forces can be used to stimulate economic growth. Thus, the Malaysian government can stimulate labour force (with increased skill and productivity) to achieve domestic economic growth. In addition, change value in external debts (external debt and external debt lag 2) has a positive and significant effect on economic growth in the short-run, while change value of external debt lag 1 has a negative and significant effect. This shows that external debt can be utilized to achieve domestic economic growth, but the Malaysian government needs to direct its utilization properly.

The ECT (-1) value of Malaysia's ECM estimation is negative and significant reflected by CointEq (-1). This means that ECM estimation is appropriate to prove the impact of FDI, external debt, and labour force on the Malaysian economic growth in the short-run.

#### STABILITY TEST RESULTS

Stability tests with CUSUM (Cumulative Sum of Recursive Residuals) and CUSUMSQ (Cumulative Sum of Squares) were conducted to analyze the stability of ARDL estimates in Indonesia and Malaysia. The results of this test can also

TABLE 11. ECM Estimation of Malaysia

Variables	Coefficient	Std. Error	t-Statistic
D(EGMLY(-1))	1.394049	0.349939	3.983687*
D(EGMLY(-2))	0.553416	0.215551	2.567446**
D(EGMLY(-3))	0.338195	0.18395	1.838519
D(LOGFDIMLY)	-23.541735	5.305878	-4.436916*
D(LOGFDIMLY(-1))	5.091556	8.736273	0.582806
D(LOGFDIMLY(-2))	17.974911	9.549091	1.882369
D(LOGFDIMLY(-3))	-14.075691	7.507563	-1.874868
D(LOGLFMY)	10.151029	2.679683	3.788146*
D(LOGLFMY(-1))	1.266837	3.172963	0.39926
D(LOGLFMY(-2))	7.404035	3.953671	1.872699
D(LOGEDMLY)	63.710015	16.415235	3.881152*
D(LOGEDMLY(-1))	-68.275201	22.177	-3.078649*
D(LOGEDMLY(-2))	51.130801	15.400674	3.320037*
CointEq(-1)	-2.320795	0.410287	-5.656509*

Source: Secondary Data (processed)

Note: a. Dependent variable = EGMLY

b. Cointeq = EGMLY - (-8.7908\*LOGFDIMLY - 3.0548\*LOGLFMY + 3.0229\*LOGEDMLY + 79.4145) = ECT(-1)

c. \* α=1%; \*\* α=5%; \*\*\* α=10%

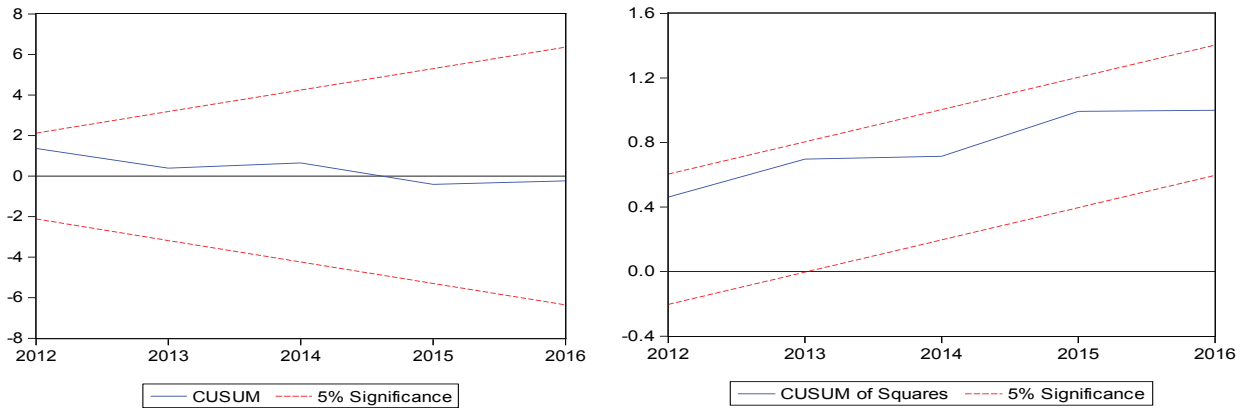


FIGURE 2. CUSUM and CUSUMSQ of ARDL Estimation in Indonesia

Source: Secondary Data (Processed)

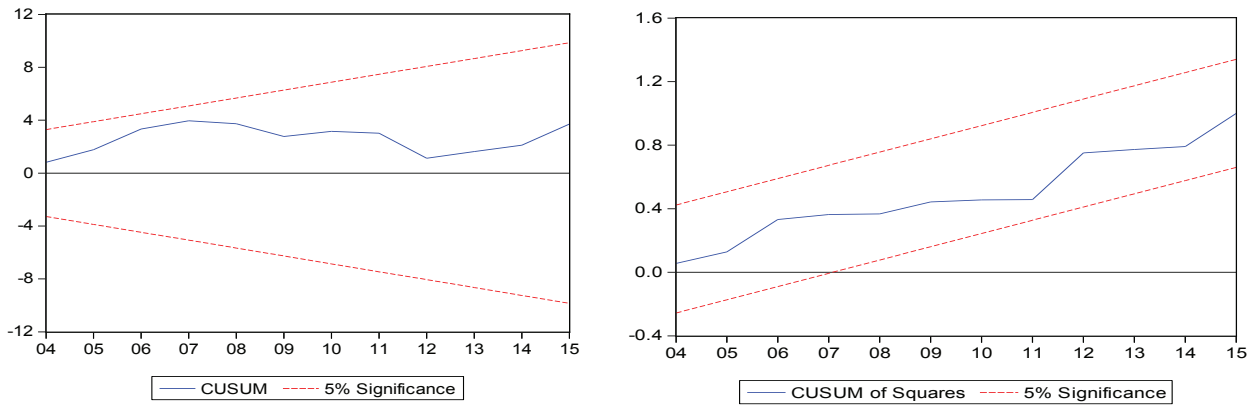


FIGURE 3. CUSUM and CUSUMSQ of ARDL Estimation in Malaysia

Source: Secondary Data (Processed)

be used to determine the robustness of ARDL estimates in Indonesia and Malaysia.

As shown in Figures 2 and 3, the CUSUM and CUSUMSQ results of ARDL Indonesia and Malaysia are stable. Thus, ARDL estimation models for both countries seem to be appropriate.

#### CONCLUSION AND IMPLICATION

The result of ARDL estimation has shown the existing long-run relationship between FDI, labour force, and external debt and economic growth for both countries, whereas their short-run relationship has been identified by the ARDL-ECM estimation results. In general, both estimation results indicate the impact of FDI, labour force, and external debt on economic growth in both countries. Meanwhile, the CUSUM and CUSUMSQ results confirm that ARDL estimation models for both Indonesia and Malaysia are stable.

The long-run relationship between FDI, labour force, and external debt with economic growth in Indonesia and Malaysia serves as a reference for the governments of both countries to manage, promote, and improve these variables in the future. This means that macroeconomic policies in both countries need to be directed to stimulate FDI and external debt to achieve economic growth targets. In addition, labour force policy should not only be oriented towards increasing labour force quantity in the labour market, but also on their quality that includes skill and productivity.

The result of short-run relationship between FDI, labour force, and external debt on economic growth in Indonesia and Malaysia can be a stimulus for domestic economic policy. This will encourage the government and the private sector to synergize their policy formulation and implementation in achieving their economic growth target in the short-run. Industries play an important role in managing FDI and external debt carefully and appropriately to promote increased productivity and business expansion. In addition, private sector can also prioritize the absorption of skilled and productive workers.

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## APPENDIX

TABLE A. Description of Research Variables

Variables	Description	Measurement
Economic Growth	Annual economic growth of Indonesia (IND) and Malaysia (MLY) from the years of 1980-2016.	Data are in %. It is symbolized by EGIND and EGMLY.
FDI	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This series shows total net FDI. In BPM6, financial account balances are calculated as the change in assets minus the change in liabilities. Net FDI outflows are assets and net FDI inflows are liabilities.	Data are in current U.S. dollars. It was converted into log. The symbols of variables are logFDIIND and logFDIMLY.
Labour Force	Total labour force both in Indonesia (IND) and Malaysia (MLY) from the years of 1980-2016.	Data are in person. It was converted into log. The symbols of variables are logLFIND and logLFMLY.
External Debt	Total external debt is debt owed to nonresidents repayable in foreign currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt.	Data are in current U.S. dollars. It was converted into log. The symbols of variables are logEDIND and logEDMLY.

Source: The World Bank and Author Data Set