An Empirical Testing of Debt Overhang Hypothesis

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ABSTRACT

This research study deals with seeking for the relationship and the sub-sequential effects of economic variables such as external debt (ED), GDP growth (GDP), inflation rate (I), interest rate(R) and trade openness(TO) on the domestic investment (INV) and GDP growth in South East Asian Nations (ASEAN) for example Philippine, Malaysia, Indonesia, and Thailand from 1977 to 2013.

In this thesis, the authors employed the OLS method to be applied for the considered case problems countries to find the relationship and the interactions between the economic influential factors on the INV and GDP growth, moreover for the group of countries panel regression was applied to discover out the interaction between the economic variables.

The final obtained results indicated that the interaction between the R and INV is negative. In addition, the correlation between I and INV is negative; otherwise the GDP growth has a positive effect on the INV. Moreover, the ED in some countries has a positive and in some countries has a negative effect the INV. According to the obtained results, the interaction between I and GDP growth is negative and for the ED, INV and TO in some countries is positive regarding the selected countries is negative.

Keyword: external debt, GDP growth, interest rate, domestic investment, inflation rate, trade openness

ÖZ

İşbu araştırmanın amacı; dış borcu (ED), GSYİH büyümesi (GDP), enflasyon oranı (I), faiz oranı (R), yerli yatırım (INV)'in üzerinde ticaret açıklığı/serbestliği (TO) gibi ekonomik değişkenlerle Filipin, Malezya, Endonezya ve Tayland gibi Güneydoğu Asya ülkeleri arasındaki 1977-2013 yılları arasında olan irtibatı ve akabindeki etkileşimleri bulmaktır.

Bu tez çalışmasında, araştırmacılar söz konusu ülkelerle ilgili yatırım ve GSYİH büyümesi üzerinde etkili olan ekonomik faktörlerin arasındaki irtibatı ve etkileşimleri bulmak için OLS yöntemini kullandılar. Ayrıca, bir grup ülkeler için de ekonomik değişkenlerin arasındaki etkileşimleri bulmak için panel regresyon uygulandı.

Çıkan sonuçlara göre, faiz oranıyla yatırım arasındaki etkileşim olumsuz veya negatiftir. Ayrıca, enflasyon ve yatırım arasındaki ilişki de olumsuzdur. Aksine; GSYİH büyümesi, yatırım üzerinde olumlu bir etki bırakıyor. Aynı zamanda, dış borcu bazı ülkelerde yatırım üzerinde olumsuz bir etkisi olmuştur. Elde edilen sonuçlara göre, enflasyon ve GSYİH büyümesi arasındaki etkileşim de olumsuz olup bazı ülkelerde seçilen ülkeler hariç dış borcu için yatırım ve ticaret açıklığı olumlu olmuştur.

Anahtar Kelimeler: Dış borcu, GSYİH(Gayri Safi Yurtiçi Hâsıla) büyümesi, faiz oranı, yerli yatırım, enflasyon oranı, ticaret açıklığı

To My Lovely Family

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INV	Domestic investment
I	Inflation rate
R	Interest rate
TO	Trade openness
ED	External debt
GDP	GDP growth
EG	Economic growth

Chapter 1

INTRODUCTION

The present study is aimed to investigate a few dependent economic variables, e.g., inflation rate (I), trade openness (TO), external debt (ED), interest rate (R) and GDP growth (GDP). Following, the aforementioned variables' effects on domestic investment (INV) and growth rate are studied in the selected countries of Association of Southeast Asian Nations (ASEAN) i.e., Malaysia, Philippines, Indonesia, and Thailand between the period of 1976 and 2013.

ASEAN union was formed in 1967 including five members, Indonesia, Malaysia, Philippines, Indonesia, and Thailand with the underlying purpose to improve the economic and security of their countries.

In the present research study, two different methods, e.g., individual regression and panel data have been used in order to analyze the economic data. The ordinary least square (OLS) has been used to map the data based on linear interpolation. The proposed economic model for ASEAN countries is assumed to be linear, therefore the OLS method which is based on linear interpolation is the best available technique to be used. In addition, a limited number of dependent variables, namely, external debt, inflation rate, interest rate, GDP growth and trade openness, are considered herewith, thus the OLS technique is able to handle this limited variables efficiently.

The variations in the data values are not excessively large or small, hence the OLS method is applicable in this sense.

1.1 Importance of the subject

It is entirely known that the behavior of dependent variables is entangled with empirical ambiguity. Moreover, the unavoidable uncertainties of dependent variables' effects on domestic investment and GDP growth add to the complexity of the problem. Hence, it is necessary to conduct studies dealing with investigations regarding the relationship between these dependent variables. The effect of dependent variables on the investment and GDP growth might be either significant or insignificant. With respect to the governmental monetary policies, it is necessary to investigate the effect of each single dependent variable in order to find whether its variation is significant or insignificant.

In theoretical backgrounds of economy-related studies, there exist various relationships between dependent variables i.e., the effects of inflation rate, trade openness, external debt, interest rate, and GDP growth on domestic investment and growth rate. However, in real practice, future economic prediction models do not always lead into precise and accurate results, especially due to the unavoidable non-linearity and uncertainties. With respect to these, the importance of the present study lies in the fact that the effects of above-mentioned dependent variables on domestic investment and growth rate would be beneficial to improve the economic prediction models. As the result of such an investigation based on previous records of economy-related data, the magnitude of each dependent variable's impact on the economy is obtained. Furthermore, their impacts are predicted for the upcoming future years within an acceptable level of accuracy.

1.2 Contributions of the thesis

To the extent of the author's knowledge, there is no study conducted hitherto to investigate the effects of dependent variables e.g., inflation rate, trade openness, external debt, interest rate, and GDP growth on the ASEAN countries including Malaysia, Philippines, Indonesia, and Thailand from 1976 to 2013. Additionally, it is investigated that either the outcome of the proposed methodology in estimating the effects of economic parameters is beneficial or not. This thesis aims to develop a model which can identify the effect of each economic variable on the economy with respect to the aforementioned ASEAN countries. With this regards, the governments can adjust their future decisions on the basis of relationships between economic variables to improve their decisions.

1.3 Structure of the thesis

The present thesis has been divided into several chapters which are described as follows: The ASEAN countries and their aims are elaborated in details in the 1st chapter.

Chapter 2 gives a brief description regarding the debt overhang theory followed by the effects of dependent variables, e.g., ED, I, R, TO and INV on GDP growth and domestic investment.

Chapter 3 presents the suggested methodology of economic performance evaluation through elaborating techniques. First, the multiple regression analysis and ordinary least square techniques are elaborated. Following, the hypotheses tests are listed and discussed in this chapter. Lastly, the collected data for the developed economic model is explained.

Chapter 4 tries to set some outlines regarding the obtained results. Moreover, the relationship between economic-related parameters and investment is found and described. According to the expectations, there exists a positive relationship between TO, GDP, and INV function; however, a negative relationship between R, I and INV is expected. Moreover, the results of multi regression and panel data are obtained and discussed. Lastly, the validation of each hypothesis test is discussed in this chapter.

Chapter 5 of this thesis provides the figures and comparison of the economic variables in ASEAN countries from 1976 to 2013. Each figure has been discussed and explained comprehensively in order to provide a transparent overview of each economic parameter's effect on GDP growth and domestic investment.

Last but not least, the remarkable conclusions on the basis of this thesis are discussed in Chapter 6, followed by the influential parameters affecting GDP and INV. Based on the obtained results throughout this thesis, a few recommendations are given for practical purposes.

Chapter 2

LITERATURE REVIEW

2.1 Debt overhang

Stewart C. Myers (1977) is the first researcher who discussed the debt overhang theory. He introduced the context of debt overhang in 1977 followed by his theory of company valuation in corporate finance and the effects of debt financing. Following, the debt overhang occurred in many developing countries and in a study in 1988, Paul Krugman investigated whether debt overhang is desirable in the case of a defaulting developing country or not. Paul krugman (1988) and his teammate were mostly focused on the problem from creditor countries. Krugman explained the debt overhang as 'the presence of an existing, inherited debt, sufficiently large, that creditors do not expect with confidence to be fully repaid'(Krugman, 1988).

The debt overhang can be tracked down in a country where the amount of ED is larger than the country's repayment ability(CA Pattillo, 2002). Based on this proposed hypothesis, if ED is greater in comparison with the country's repayment ability, the expected debt-service expenses would discourage further domestic and foreign investment, which can diversely affect EG parameter in return(CA Pattillo, 2002).

At first, the researchers proposed that there exists a linkage between debt and investment as proposed by Ashwini Deshpande in 1997. She studied 13 severely

indebted countries to investigate how their economies behaved during 1971-1991. Her regression established a negative influence on investment by the presence of a large debt. The first half of the period has strong time influences that exercise a positive influence on investment. In the second half of the period, time effects turn negative too, thus explaining the fall in investment levels observed after 1982(Deshpande, 1997).

Debt overhang adversely affects EG where it threatens the investment and policy of the country. Additionally, the negative relationship between high debt and EG is mainly due to the negative impacts on physical capital accumulation(H poirson, 2004).

In 2005, Erdal Karagol studied a few countries concerning the subject of debt overhang. He concluded that they cannot apply this theory to all countries individually, because each country is unique in its essence of political, economic and social characteristics(Karagol, 2005).

Adegbite, Ayadi and Ayadi studied the influence of huge ED on EG regarding Nigeria economy to estimate this parameter in 2006. They used OLS method to obtain their result on the basis of linear interaction between dependent variables. In the end, they concluded that the external debt has negative effect on the economy of Nigeria(Adegbite, 2008).

2.2 Inflation

The relationship between I and EG has been a major problem in economic-related researches. Typically there are three types of relationships between I and EG, positive, negative and none.

In 1970, many researcher provided that there is no relationship between I and EG(Easrerly, 1998). Subsequently, several studies tried to find the relationship between I and EG.

For instance, Al-Marhubi (1998) found those countries with high I had worse economic performance, and there is a negative relationship between I and EG(Al-Marhubi, 1998).

Furthermore, another researcher M.Bruno (1998) explained that if the rate of R is more than 40%, I has a negative effect on economic(Easrerly, 1998).

However, some researchers found that there is a negative and significant relationship between I and EG(Barro, 1995; Easrerly, 1998; S.Fisher, 1993). Moreover, some recent studies supported that I has a negative effect on EG(Okuyan, 2008).

Paul and Kearney and Chowdhury in 1997, conducted a research to find a relationship between GDP and I in the long run. They collected data from 70 countries including low and high rate of I during a 30-year period. The most important result they proposed is that there is not a specific relationship regarding I and EG. According to their study, approximately one third of the sampled countries does not have a relationship between these two factors and in some other cases this relationship is unclear(Paul, 1997).

2.3 Trade openness

The influence of TO on EG is one of the most interesting subjects during recent years. Theoretically, it is expected that the relationship between TO and EG is positive.

Many researchers such as Grossman & Helpman (1991) argue that those countries with the ability to get technologies from other countries might have more potential to increase EG, or in a simpler manner, there is a positive influence on EG.

In 2003, Bouoiyour studied Morocco in order to find the relationship between TO and EG over the period 1960-2000. He provided that in the long-run there is not any exact relationship; however, in short run with a higher rate of TO, a positive effect on EG can be noticed, which directly affects GDP(Bouoiyour, 2003).

In 2011, Zhou and Li conducted a research regarding the impact of TO and EG on INV. They concluded that it has a significant relationship; however it does not have a positive effect on EG(Zhou, 2011).

2.4 Investment

In 2002, Ahmed and Miller studied the influence of investment on EG. They collected data from 93 courtiers within an 8-year period. They provided that in the low and middle-income countries, investment has a positive effect on EG. On the other hand, in the high level income countries this factor does not affect EG(Ahmed, 2002).

2.5 Interest rate

Pettinger (2012) is an eminent professor in the faculty of Oxford University who investigated the impact of increasing R parameter. He stated that I and R have direct relationship. Furthermore, he suggested that there is a reverse relationship between demand and EG with R (Pettinger, 2012).

Greater values of R attracts individuals to save their money rather than spending it. Additionally, when R is increased, the value of their money goes up in return. Thus, most individuals have the tendency to not spend their money in the form of that currency. Although, a higher R has a diverse influence on INV and consumer expenditure. The effect of the aggregate demand is different with R. Greater values of R can lead into depression and extreme unemployment (Desroches & Francis, 2010; Pettinger, 2012).

Chapter 3

DATA, METHODOLOGY, AND HYPOTHESES

3.1 Data

The data are gathered and collected from the Databank of World Bank (databank.worldbank.org).

Four Asian countries: Indonesia, Malaysia, Philippines and Thailand are investigated during the period of 1978-2013 and the whole set of data is recorded annually.

Two governing equations in concern with Debt Overhang Hypothesis are considered. In the regression analysis, the first equation is used in which the independent variable is GDP as yearly-based percentage variation. In the other side of the equation, dependent variables are INV and TO as the percentage of GDP, I in terms of annual percentage and ED as percentage of GDP.

In the second equation, the independent variable is INV as the percentage of GDP. In the other side of the equation, the dependent variables are R and I in terms of annual percentage, GDP in terms of yearly-based percentage variation and ED as percentage of GDP.

3.2 Methodology

In this part, according to the test of hypotheses, the impact of macroeconomic dependent variables, namely, TO, R and I on the investment function is studied.

Regression analysis (Draper, Smith, & Pownell, 1966) is a prominent tool in comparison with other approaches such as high/low graph because of the quality of the overall result. This method is a statistical tool to investigate and analyze the relationship between variables. Based on the obtained results, it is shown that this technique is highly beneficial for researchers to search for the effects of dependent variables on each other.

In this research, the simple linear model and panel regression analysis are used based on the collected data from selected ASEAN countries, namely, Malaysia, Philippines, Indonesia and Thailand. Following this, E-VIEWS software is used to find the best result.

The general equation is as follows:

$Y= \alpha + \beta 1X1 + \beta 2X2 + \beta nXn + \varepsilon$

Y = dependent factor

C = intercept factor

β = Coefficient

X = independent factor

N = number of variable

ε = is called error

3.3 Ordinary least square (OLS)

Ordinary Least Square (OLS) (Leng, Zhang, Kleinman, & Zhu, 2007) is a widely-used tool to conduct the analysis of regression. The hidden rationale of OLS is to find a function which is able to approximate the input data. In overall, the OLS

attempts to map the collected data and the inter-distance of the points ranging from the linear line which is also known as residuals.

In other terms, with the purpose to minimize the distance between the actual data points and the linear line the scientists can employ this method.

3.4 Panel data regression

Panel data (Leng et al., 2007) also being known as the longitudinal approach, is a collection of time-series data and the cross sections. In other terms, several cross-sections along the time unit are considered in this technique. The Panel data is often preferred over the other similar methods, due to its advantages. For instance, by more collection of the results, the reduction in the biased data can be observed (Hurlin, 2010).

3.5 Model

There exist two equations to test the debt over hang hypothesis, in the first one, GDP growth is the independent variable and in the right-hand side of the equation dependent variables are INV, I, TO and ED. In the second equation, the independent variable is INV and the right side R, GDP growth, ED and I are taken as dependent variables.

Accordingly, for each country, the above-mentioned equations are used based on the following assumptions:

GDP growth = f (domestic investment, inflation, trade openness, external debt)

Domestic investment = f (real interest rate, inflation, GDP growth, external debt)

3.6 Hypotheses

As it was discussed earlier in literature review in chapter 2, the external debt, economic growth, inflation, interest rate, trade openness and investment are followed by a few hypotheses as follows:

H1) Increase in the external debt has a negative effect on GDP growth.

H2) Increase in the external debt has a negative effect on investment.

H3) Increase in the inflation has a negative effect on GDP growth.

H4) Increase in the inflation has a negative effect on investment.

H5) Increase in the investment has a positive effect on GDP growth.

H6) Increase in the trade openness has a positive effect on GDP growth.

H7) Increase in the interest rate has a negative effect on investment.

H8) Increase in the GDP growth has a positive effect on investment.

Chapter 4

RESULTS

4.1 Regression Results

A bi-regression analysis for each country has been used which are as follows:

1) GDP growth rate=$\alpha + \beta_1 \left(\frac{\text{Investment}}{\text{GDP}}\right)_t + \beta_2 (Inflation)t + \beta_3$

$(Trade\ opennes)_t + \beta_4 \left(\frac{EXT-DEBT}{GDP}\right)_t$

2) $\left(\frac{Investment}{GDP}\right)_t = \alpha + \beta_1 (real\ interest\ rate)_t + \beta_2 (Inflation)t + \beta_3$

$(GDP\ growth)_t + \beta_4 \left(\frac{EXT-DEBT}{GDP}\right)_t$

For each country, according to the above-mentioned formulas, the aim was to analyze and find the independent variables which have significant influence on dependent variables. Furthermore, an attempt is undertaken to find the sign between the economic-related dependent variables. For a few Asian countries, namely, Malaysia, Indonesia, Thailand and Philippines, in the period of 1978-2013, if the answer is not acceptable for each individual country, the best answer is found by dropping some variables.

The abbreviations used in EViews to run the tests are as following:

GDP = GDP Growth rate (annual % of GDP)

C = Constant term

INV = Domestic investment (% of GDP)

I = Inflation (annual %)

TO = Trade openness (Export + Import % of GDP)

ED = External debt (% of GDP)

R = Real interest rate (%)

For each country, regression equations are obtained as well as the two regression parameters, namely, t-statistics and R-squared.

In order to find the independent variable data, more specifically, whether the variables significantly affect the dependent variable or not, the t-statistics are used. Moreover, two confidence levels are considered herewith. The first one for $\alpha = 95\%$, t=2.064, which means that if the t-statistic is greater than 2.064 or less than 2.064, the variables are deemed to be significant. The next confidence level, $\alpha = 90\%$, with t =1.711, in this case if the t-statistic is greater or less than 1.711 then the variables are significant.

4.1.1 Indonesia

4.1.1.1 Case 1: The effect of INV, I, TO and ED on GDP in Indonesia

GDP = 9.720348 + -0.199411 INV + -0.426632 I + 0.041204 TO + -1.881205 ED

(11.64193) (-1.224526) (-6.028190) [1] (0.570857) (-0.430105) R= 0.840431

This equation shows that by increasing INV by 1%, it leads into a decrease of 0.19% in GDP. As we expected, both signs for I and ED are negative, thus by increasing I and ED by 1%, a decrease of 0.42% and 1.8% in GDP can be achieved, respectively. The sign of trade openness is positive, which means that if it is raised by 1%, then

[1] Significant at 5% level

GDP would be increased by 0.04%. In this equation, only I is significant and rest are insignificant.

4.1.1.2 Further consideration concerning the regression analysis for Indonesia

As observed in the 1st case, ED, TO and INV are insignificant thus the variables were considered individually in order to find the validity of equation.

First, the relationship between ED and GDP were checked.

GDP = 5.189468 + -11.87360 ED

(8.054348) (-4.112423) R = 0.413375

When ED was considered as an independent variable, this parameter was significant; however, in the equation, considering the existence of other parameters it can be changed to insignificant.

The second parameter, INV, was run individually.

GDP = 5.278645 + 0.682273 INV

(8.665815) (4.648564)[2] R = 0.473790

INV when used individually in the equation, it is significant.

The last parameter was TO.

GDP = 5.389117 + -0.164894 TO

(7.199604) (-2.485221) R = 0.204674

[2] significant at 5% level

Additionally, when TO was considered individually, it was significant. All of the parameters in case 1 are insignificant. However, when the parameters were considered individually, the relationship was changed to significant. This means that these parameters do not affect GDP when they are used together. In contrast, it has an influence on GDP, separately.

4.1.2 Malaysia

4.1.2.1 Case 2: The effect of INV, I, TO and ED on GDP in Malaysia

GDP = 6.075028 + 0.626032 INV + -0.021737 I + 0.017558 TO + -14.49229 ED

(13.43344) (5.261160)[3] (-0.074441) (0.427200) (-1.880592)[4] R= 0.721699

As it can be seen, INV and TO have a positive effect on GDP which means that 1% increase in INV, leads into the growth of 0.62% in GDP. Furthermore, 1% increase in TO will lead into an increase of 0.01% in GDP. Both I and ED have negative signs with negative effect on GDP. Additionally, 1% increase in I and ED will result into 0.02% and 14% decrease in GDP, respectively. In this equation, INV and ED are significant. However, I and TO are insignificant.

4.1.2.2 Further notes in concern with regression analysis for Malaysia

According to the estimated equation, I and TO are insignificant, thus it is needed to run each parameter individually.

First the I was considered:

GDP = 6.240649 + 0.046465 I

(7.869541) (0.098063) R = 0.000401

[3] Significant at 5% level
[4] Significant at 5%level

As it can be seen, I is insignificant implying that I does not have any effect on GDP in Malaysia.

The second parameter is TO:

GDP = 6.155795 + 0.054327 TO

(7.789015) (0.789220) R=0.025296

Moreover, in individual equations, TO is insignificant; therefore, this parameter does not have any impact on GDP in Malaysia.

4.1.3 Philippines

4.1.3.1 Case 3: The effect of INV, I, TO and ED on GDP in Philippines

GDP = 6.109018 + -0.470395 INV + -0.306131 I + 0.121758 TO + -11.05910 ED

(9.323223) (-2.572434)[5] (-5.064699)[6] (1.827336) [7] (-1.741596) [8] R = 0.554584

This equation implies that the only positive independent variable is TO. Similarly, 1% increase in TO will lead into an increase of 0.12% in GDP. Other parameters, namely, INV, I and ED have negative effect on GDP. By 1% increase in INV, GDP drops by 0.47%. Furthermore, 1% increase in I and ED will result into 0.30% and 11% decrease in GDP, respectively. In this equation all of the independent variable are significant.

[5] Significant at 5% level
[6] Significant at 5% level
[7] Significant at 10% level
[8] Significant at 10%level

4.1.4 Thailand

4.1.4.1 Case 4: The effect of INV, I, TO and ED on GDP in Thailand

GDP = 5.752123 + 1.004168 INV + -0.075887 I + -0.100097 TO + 4.658165 ED

(10.97982) (6.415217)[9] (-0.422048) (-1.325474) (0.574943) R= 0.613029

As shown by the above equation, INV and ED have positive relationship with GDP and by increasing the INV and ED by 1%, GDP grows by 1% and 4.6%. On the other hand, I and TO have negative sings and also negative effect on GDP. Hence, by increasing I and TO by 1%, decrease of 0.07% and 0.10% in GDP can be noticed, respectively. As it can be seen in this equation, only INV is significant and the rest of independent variables are insignificant.

4.1.4.2 Further notes about the regression analysis for Thailand

According to the last equation, three parameter are insignificant. Therefore, it was needed to run the dependent variables individually in order to find out if they imposes any effect on GDP or not.

The first item is inflation:

GDP = 5.660563 + 0.149269 I

(7.800662) (0.666967) R = 0.012550

I was still insignificant with no effect on GDP.

The second parameter is TO:

GDP = 5.498659 + 0.056462 TO

[9] Significant at 5% level

(7.122833) (0.590135) R = 0.009852

In this equation, TO is insignificant with no corresponding effect on GDP.

The last independent variable is ED:

GDP = 5.761916 + -19.01209 ED

(8.256108) (-1.890607)[10] R = 0.092662

When ED was considered individually, it has significant and also negative impact on GDP. Therefore, it can be stated that ED has negative effect on GDP in Thailand individually.

4.1.5 Indonesia

4.1.5.1 Case 1: The effect of R, I, GDP growth, ED on the INV in Indonesia

INV = 5.578489 + -0.226493 R + -0.408418 I + 0.008198 GDP + -2.867901 ED

(2.275905) (-2.456852)[11] (-3.452780)[12] (0.033363) (-0.431094) R = 0.749394

As shown by the equation, only GDP has a positive effect on INV and other independent variable have negative effects. Hence, by an increase of 1% in GDP, INV increases by 0.008%. On the other hand, by an increase of 1% in R, I and ED, INV is decreased by 0.2%, 0.4% and 2.8%, respectively. As it can be seen R and I significant; however, GDP and ED are insignificant.

[10] Significant at 10% level
[11] Significant at 5% level
[12] Significant at 5% level

4.1.5.2 Further considerations regarding the regression analysis for Indonesia

As it was mentioned and discussed earlier, two parameters are insignificant. Hence, in order to find the relationships, each parameter was considered individually.

The first independent variable is GDP:

INV = -0.626388 + 0.141857 GDP

(-0.455221) (0.695615) R = 0.019763

As can be seen GDP has no effect on INV in Indonesia.

The next independent variable is ED:

INV = -0.030389 + -10.77350 ED

(-0.043888) (-3.472161) R = 0.334367

Also ED has no effect on INV in the Indonesia.

4.1.6 Malaysia

4.1.6.1 Case 2: The effect of R, I, GDP, ED on the INV in Malaysia

INV = -2.000010 + -0.159939 R + -1.140171 I + 0.961400 GDP + 5.967785 ED

(-1.322799) (-1.212295) (-3.116860)[13] (6.786369) [14] (0.740095) R = 0.771690

This equation states that the effect of R and I is negative; therefore, an increase of 1% in R, leads into a decrease of 0.15% in INV. Moreover, increasing I by 1% will result into a decrease of 1.1% in INV. On the other hand, the signs of GDP and ED

[13] Significant at 5% level
[14] Significant at 5% level

are positive, thus by increasing GDP by 1%, an increase of 0.9% in INV will be observed. Moreover, if ED is increased by 1 %, INV is increased by 5.9%. Although, I and GDP are significant, R and ED are insignificant.

4.1.6.2 Further considerations regarding the regression analysis for Malaysia

As can be seen, two insignificant independent variables in that equation was considered.

The first one is R:

INV = 0.789798 + -0.153506 R

(0.616830) (-0.627888) R = 0.016161

When R was considered individually, it is insignificant, therefore R has no effect on INV in Malaysia.

The next independent variable is ED:

INV = 0.170567 + -26.82733 ED

(0.215795) (-2.377043)[15] R = 0.190566

In the individual equation, ED is significant, hence ED affects INV in Malaysia.

4.1.7 Philippines

4.1.7.1 Case 3: The effect of R, I, GDP, ED on the INV in Philippines

INV = 0.215857 + -0.063295 R + -0.155514 I + 0.234885 GDP + 4.177521 ED

(0.185572) (-1.098171) (-2.401562)[16] (1.375783) (0.674344) R = 0.447557

[15] Significant at 5%level

As it can be understood from the estimated equation, R and I have negative effect on INV. Thus, by an increase of 1% in R, a decrease of 0.06% would be occurred in INV and by an increase of 1% in I, INV drops by 0.15%. GDP and ED have positive effect on INV. As a result, by an increase of 1% in GDP, INV will be increased by 0.23%. By an increase of 1% in ED, INV will be increased by 4.17%. In this equation, three insignificant parameters, R, GDP and ED are insignificant independent variables and only I rate is significant.

4.1.7.2 Further notes regarding the regression analysis for Philippines

For Philippines, three insignificant parameters are considered. Similar to previous methodology, each parameter is run individually. The first parameter is R:

INV = -0.356555 + -0.011541 R

(-0.772995) (-0.169444) R = 0.000820

It is obtained that when R was considered individually, it is insignificant with no effect on INV.

The 2nd parameter is GDP:

INV = -2.098851 + 0.481474 GDP

(-3.758084) (4.216696) [17] R= 0.336877

As it can be noticed, GDP has a significant effect on INV with significant effect on INV in the Philippines.

The last independent variable is ED:

[16] Significant at 5% level
[17] Significant at 5%level

INV = -0.380961 + -6.893257 ED

(-0.835519) (-0.977608) R = 0.026580

Furthermore, when ED was considered individually, it is insignificant. Thus, ED does not have any effect on INV in Philippines.

4.1.8 Thailand

4.1.8.1 Case 4: The effect of R, I, GDP, ED on the INV in Thailand

INV = -1.614648 + -0.217643 R + -0.206450 I + 0.313903 GDP + -26.19197 ED

(-1.756054) (-0.940645) (-0.986730) (2.431866)[18] (-3.255894)[19] R = 0.351559

This equation states that only GDP has a positive impact on INV. Thus, by an increase of 1% in GDP, INV is increased by 0.31%. The other dependent variables are negative, thus, by increasing R by 1%, I drops by 0.21%. Moreover, if an increase of 1% in I is happened, INV is decreased by 0.20%. By an increase of 1% in ED, INV is decreased by 26.1%. R and I are insignificant and GDP and ED are significant.

4.1.8.2 Further notes regarding the regression analysis for Thailand

The first item is R:

INV = 0.067198 + -0.118277 R

(0.104404) (-0.543746) R= 0.008621

In addition, when R is considered individually, it is insignificant with no effect on INV.

[18] Significant at 5% level
[19] Significant at 5% level

The next one is I:

INV = 0.061895 + -0.107845 I

(0.096173) (-0.550326) R = 0.008829

I is insignificant.

4.1.9 Panel Regression

In order to find the relationship of economic-related parameters in the group of selected ASEAN countries, panel regression is used. There are 24 periods and four countries as follows: Malaysia, Indonesia, Philippine and Thailand. More specifically, there exist 104 observations totally.

4.1.9.1 Case 1: The effect of INV, I, TO and ED on GDP in Malaysia, Indonesia, Philippines and Thailand

GDP = 6.582407 + 0.37562 INV + -0.212150 I + -0.043932 TO + 5.598380 ED

(15.65425) (4.445624)[20] (-3.602798) [21] (-1.350258) (1.774544)[22]

R = 0.818580

According to the estimated equation, I and TO have negative effect on GDP in the panel regression. By a growth of 1% in I, GDP is decreased by 0.21%, subsequently. Furthermore, if TO is increased by 1%, GDP is decreased by 0.04%. In contrast, the influences of INV and ED are positive. Therefore, if INV is increased by 1%, GDP is increased by 0.37%, accordingly. By an increase of 1% in ED, GDP is increased by 5.5%. In panel regression all independent variables are significant expect for TO.

[20] Significant at 5% level
[21] Significant at 5% level
[22] Significant at 10% level

4.1.9.2 Case 2: The effect of R, I, GDP, ED on the INV in Malaysia, Indonesia, Philippines and Thailand

INV = -1.154342 + -0.188169 R + -0.066053 I + 0.489943 GDP + -4.313372 ED

(-0.753044) (-1.652133) (-0.681215) (3.534645)[23] (-1.160195) R = 0.695575

According to the above equation, all-independent variables expect GDP, have negative impact on INV, thus when R is increased by 1%, INV is decreased by 0.18%. Furthermore, when I is increased by 1%, INV drops by 0.06%. Moreover, 1% increase in ED results into a decrease of 4.3% in INV. On the other hand, when GDP is increased by 1%, INV is increased by 0.48%. In the panel data, the GDP is significant; however, R, I and ED are insignificant.

4.2 Hypotheses results

In this part, the validity of each previously considered hypothesis is investigated to determine either it was accepted or rejected.

1) H1 is accepted in Malaysia and Philippines.
2) H2 is accepted in Thailand.
3) H3 is accepted in Indonesia and Philippines.
4) H4 is accepted in Indonesia, Malaysia and Philippines.
5) H5 is accepted in Malaysia and Philippines.
6) H6 is accepted in Philippines.
7) H7 is accepted in Indonesia.
8) H8 is accepted in Malaysia and Thailand.

[23] Significant at 5% level

Chapter 5

DISCUSSION

In this chapter, the previously discussed economic parameters are investigated for the 4 case problems countries, e.g., Indonesia, Malaysia, Thailand and Philippine. The underlying methodologies of calculating these economic parameters are presented in chapter 3. The following parts present the inflation rate, GDP growth, interest rate, external debt and domestic investment for each country.

5.1 Inflation rate

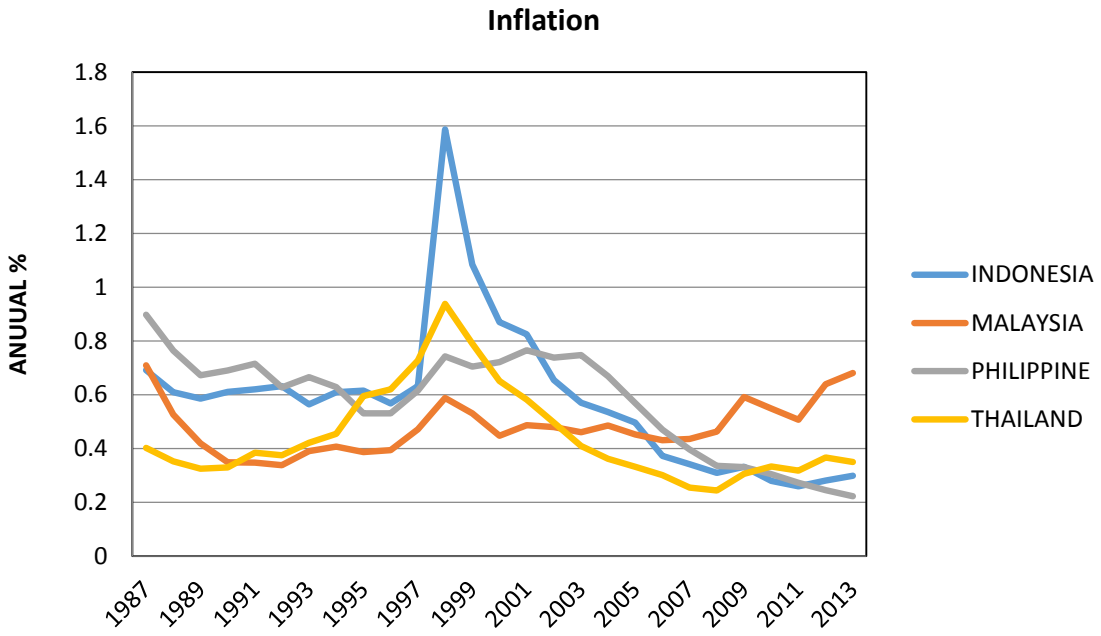

Figure 1. Inflation rate between 1987 and 2013 (% annual)

As it can be noticed in Figure 1, the fluctuation of inflation rate between 1987 and 2013 has been investigated and plotted. The inflation rate remained static for the

whole period and the rate of inflation rate fluctuates between 0.4% and 1%, but only in Indonesia in 1998 the inflation rate was 1.5% because in 1997 Asian financial crisis happened which led into growth in the inflation rate in Indonesia.

5.2 External debt

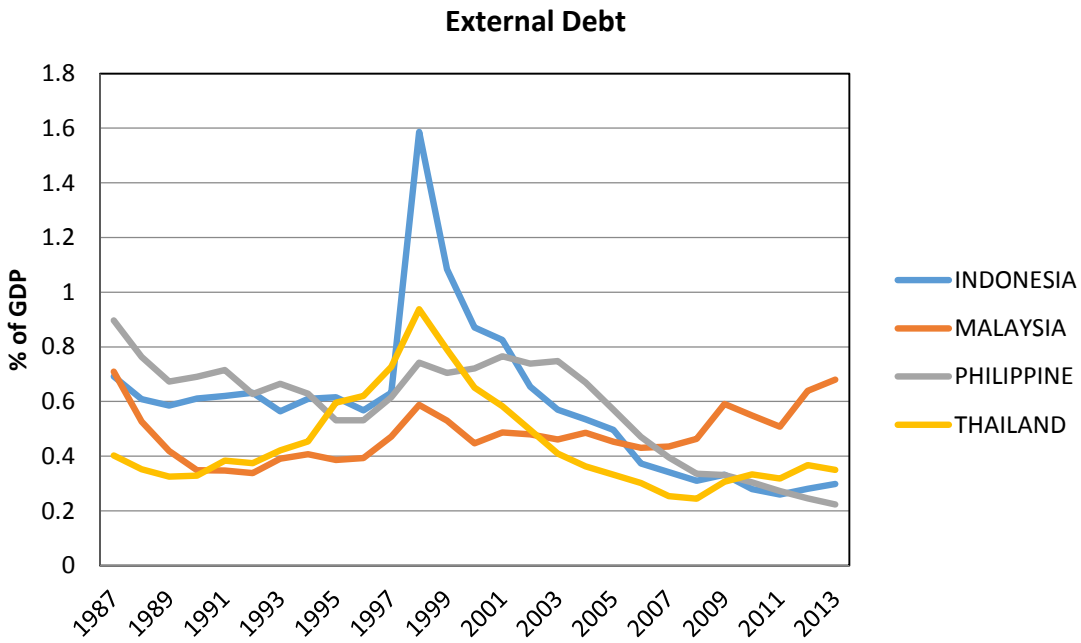

Figure 2. External debt between 1987 and 2013 (% of GDP)

Figure 2 illustrates the amount of external debt between 1987 and 2013. As it can be seen the amont of external debt fluctuates between 0.2% and 1.6%. In Indonesia and Thailand the maximum rate of external debt can be tracked down in 1998. In Indonesia the amount of external debt increased sharply from 0.6% to1.6% and for Thailand the value escalated from 0.7% to 0.93%. The main reason is due to the Asian finincial crisis in 1997. Subsequently, due to this economic crisis the amount of external debt decreased rapidly for these countries.

5.3 Domestic investment

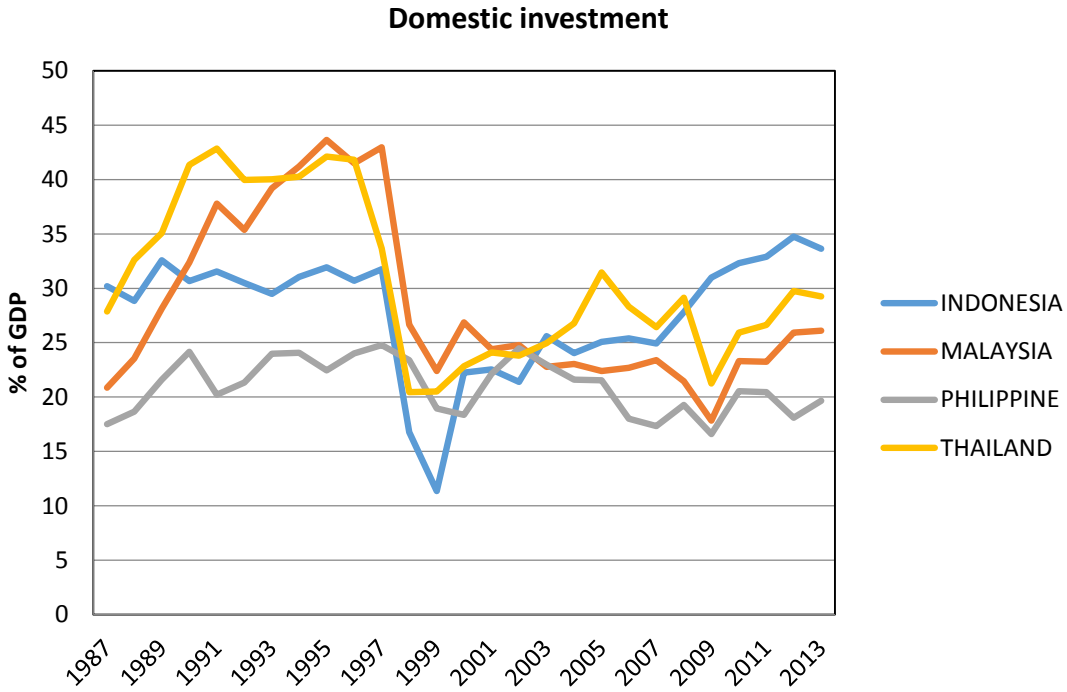

Figure 3. Domestic investment between 1987 and 2013 (% of GDP)

In all four Asian countries domestic investment increased remarkably from 1987 until 1997, but in 1998, it decreased sharply in domestic investment. For instance, in Malaysia, the domestic investment from 42.97% decreased to 22% and for Thailand it was decreased to 20% according to Figure 3. After 1998, the rate of domestic investment increased slightly in all countries. However, in 2008, the finical crisis happened and the rate of domestic investment decreased.

5.4 Trade openness

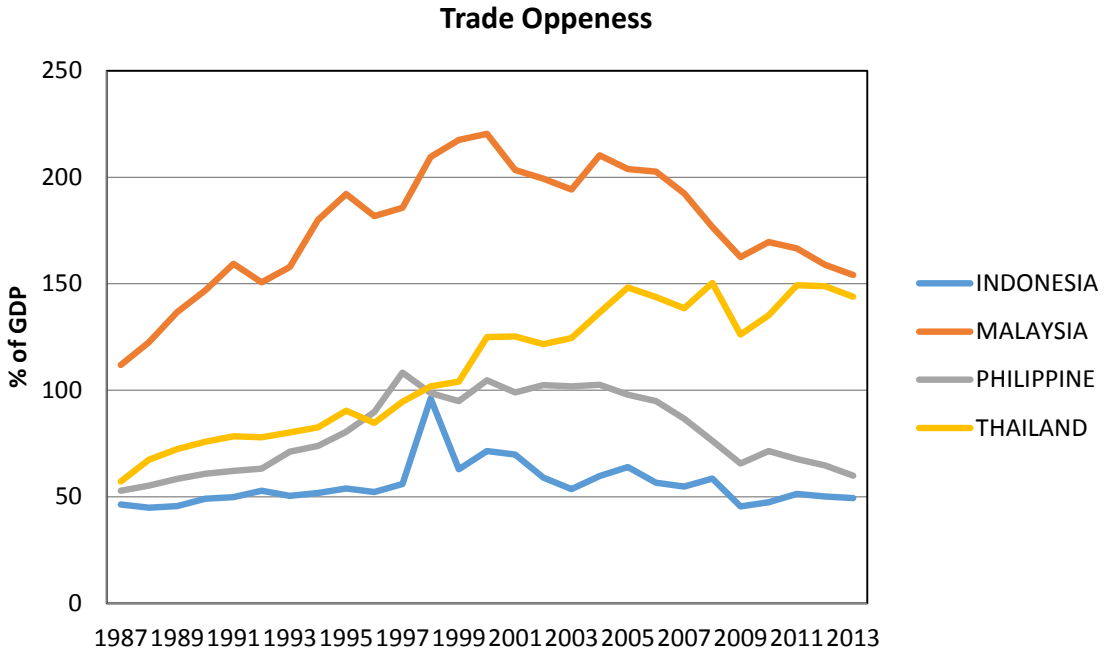

Figure 4. Trade openness between 1987 and 2013 (% of GDP)

As it can be understood from Figure 4 the rate of trade openness increased remarkably from 1987 until 2013, in Thailand. On the other hand, in Malaysia and Philippines, trade openness increased until 1999. However, it decreased slightly until 2013.

5.5 GDP growth

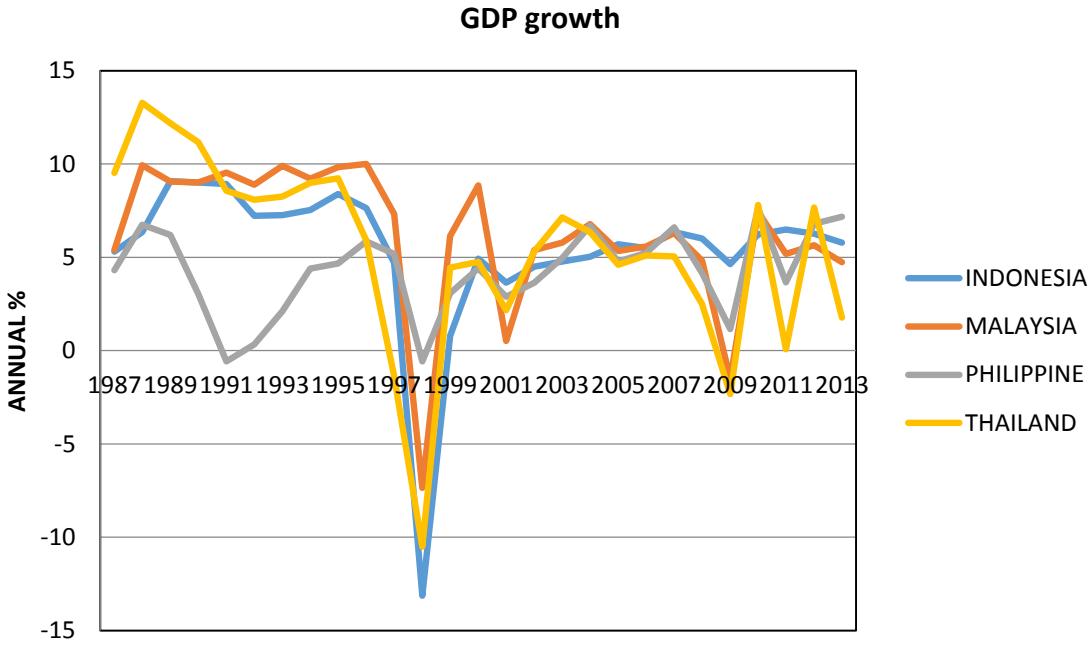

Figure 5. GDP growth between 1987 and 2013 (% annual)

The rate of GDP growth in this period was extremely erratic. As it can be seen from Figure 5 the low point of GDP growth occurred in 1998, and after that the amount of GDP growth increased.

5.6 Interest rate

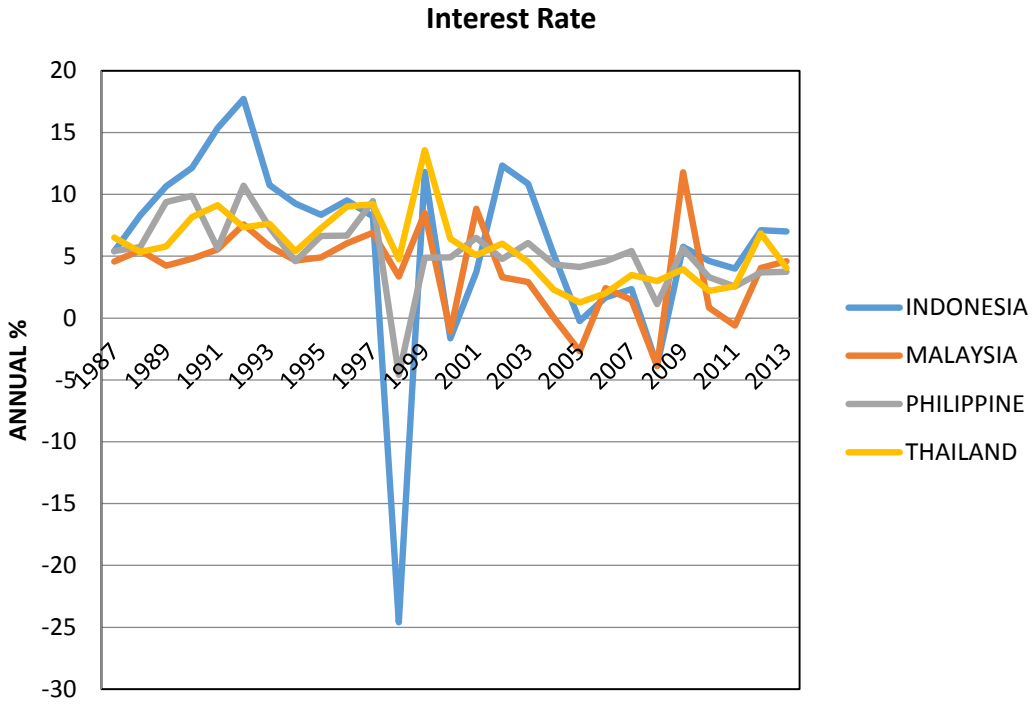

Figure 6. Interest rate between 1987 and 2013 (% of GDP)

The interest rate was fluctuated during this period Figure 6. For instance, in Indonesia, in 1997, the rate of interest rate was 10%, however, it is decreased sharply and reached 24%.

In brief, in most tables between 1997 and 1998, huge difference in all the parameters exists. The reason of this fluctuation is Asian financial crisis. In 1997, those Asian countries faced a huge crisis which was started from Thailand when the currency of that country (Thai baht) was hit by great speculative attacks and led into loss of its value against the U.S dollar. Subsequently, Indonesia, Malaysia and Philippines were affected by the crisis. Due to the crisis, inflation rate and external debt were increased sharply; however, the domestic investment, GDP growth and interest rate were decreased extremely.

Chapter 6

CONCLUSION

Two types of equations were used for each country in this thesis; the first one was GDP growth rate while the latter equation was domestic investment. In the following subsections, the dependent variables, namely, external debt, inflation rate, interest rate, trade openness, investment and GDP growth, are investigated for each selected country, separately.

6.1 Indonesia

According to the individual regression results, in the case of Indonesia, for the first independent variable, INV, both R and I are significant with corresponding negative effect on INV. Nevertheless, GDP and ED are insignificant. Moreover, according to the obtained results, GDP is not significant but ED is significant when analyzed individually. In Indonesia, in the case of GDP, only I is significant and the other variables are insignificant. When each parameter was run individually, each previously insignificant variable was found to be significant. In addition, ED, I and INV were followed by negative signs in contrast with TO which had a positive effect on GDP.

6.2 Malaysia

In the case Malaysia, the results of INV revealed that I and GDP are significant and both of them have negative effects on INV. On the other hand, R and ED are insignificant. Nevertheless, when R was analyzed individually, it was remained

insignificant; however, ED was changed to be significant in this sense. Moreover, for the independent variable, GDP, both ED and INV are significant. Furthermore, ED has a negative effect on GDP. Although, INV has a positive impact on GDP in Malaysia, I and TO are insignificant in the GDP. Considering each variable separately, the results are not changed, and I and TO are insignificant as well.

6.3 Philippines

For analyzing INV in Philippines, the results showed that only I is significant in this model and the other parameters are insignificant. Moreover, I has a negative impact on INV in Philippines. In the individual model, only GDP is significant which implies that GDP, as a single parameter, affects INV. Moreover, regarding GDP in Philippines, all of the parameters are significant. INV, ED and I have negative signs which means that they impose a negative effect on GDP, whilst TO has a positive effect on GDP.

6.4 Thailand

In Thailand, regarding the INV model, GDP and ED are significant. GDP has a positive effect on INV although ED has a negative effect on INV. R and I are insignificant in this model. As the variables were considered separately, it was found that both of the variables are insignificant. In GDP model the INV is significant with positive effect on GDP. Moreover, I, TO and ED are insignificant in this model, therefore the model was run individually. The individual analysis showed that TO as a single parameter, is significant in this model and I and ED are insignificant as well.

6.5 Panel

According the obtained results in the panel data for GDP, INV, ED and I are significant and also INV and ED are followed by positive effect on GDP. In contrast, I has a negative effect on GDP. Furthermore, TO is insignificant in the panel model.

Moreover, for INV equation, GDP rate is significant with positive effect on INV, meanwhile R, ED and I are insignificant.

6.6 Implications and policies

Analyzing the economic variables with respect to the selected ASEAN countries, different policies can be suggested for each country. To the extent of the author's knowledge a few policies can be outlined which are mentioned in the following paragraphs.

A few common guidelines can be enumerated as general implications for the ASEAN countries. In each country, the inflation was found to have a negative effect on GDP growth. Therefore, the government should try to decrease the amount of inflation in order to improve the economic growth. According to the obtained results, external debt has a negative effect, therefore the government should decrease the amount of borrowing from another countries. With regards to the trade openness parameter, if the selected ASEAN countries try to increase the amount of export and import, they can improve the economic growth in return. As we discussed earlier, interest rate has a negative effect on the investment due to the cost of borrowing. Thus, if the government can control and decrease the amount of interest rate, the amount of investment can be increased. Regarding the GDP growth, if the government can improve the economic growth, they are able to increase the amount of investment.

On the other hand, several recommendations and implications for each specific country can be mentioned. According to the investigations and the obtained results from EViews software, the variation in inflation rate regarding both Indonesia and

Philippines, showed that this economic parameter had negative impact on GDP growth. This dependent variable was found to be significant. The aforementioned results of EViews software imply that the uncertainty in future investment regarding both Indonesia and Philippines can diversely affect GDP growth. It is recommended that these countries try to reduce the uncertainty for future investment in order to boost the GDP growth, which subsequently leads into improvement of economic growth.

In both Malaysia and Philippines, external debt was found to be significant with a negative effect on GDP growth. The underlying reason is due to high monetary debt of these countries without having adequate capability to reimburse their debts. Thus, it is suggested that these countries avoid huge amount of debt and try to repay their debts in order to improve the GDP growth in their countries.

Furthermore, in Malaysia, Philippines and Indonesia, the investment was found to be significant. This implies the fact that any variation in the investment affects the GDP growth. Hence, as it was mentioned earlier in the literature review, the technology improvement in these countries can increase the GDP growth. Therefore, it is suggested that these countries try to better their technology-related applications in order to improve the GDP growth.

The trade openness was found to be significant with a positive effect on GDP growth in Philippines. On this basis, the governments can increase their export and reduce the import in order to increase the GDP growth. In general, the ASEAN countries should try to increase their export in order to boost their economic growth. The GDP growth was significant and had positive effect on the investment in both Malaysia

and Thailand. In these two countries, any increase in the GDP growth leads into an increase of domestic investment which results into investment growth.

REFERENCES

Adegbite, E., Ayadi, O. F. (2008). The impact of Nigerias external debt on economic growth. *International Journal of Emerging Market*, 285-301.

Ahmed, H. M. (2002). The level of Development and Dererminants of Productivity Growth. *Applied Economics*, 35-38.

Al-Marhubi, F. (1998). Cross-country Evidence on the link between inflation Volatility and growth. *Applied Economics*, 30-34.

Barro, R. J. (1995). Inflation and economic growth. *NBER*, 55.

Bouoiyour, J. (2003). Trade and GDP Growth in Moocco. *Brazilian Journal of Business and Economics, 3*, 14-21.

CA Pattillo, H. P. (2002). External debt and Growth. 32-35.

Deshpande, A. (1997). The debt overhang and the disincentive to invest. *Journal of development economics*, 169-187.

Easrerly, M. (1998). Inflation Crisis and Long Run Growth. *Journal of Monetary Economics*, 141-163.

Poirson, C., Ricci, A. (2004). What are the channels through which external debt affects growth, *IMF*, 32-37.

Karagol, E. (2005). A Critical Review of External Debt and Economic Growth Relationship a lesson for Indebtedness of Countries. *journal of economic*, 69-78.

Krugman, R. (1988). Financing versus forgiving a debt overhang. *Journal of development Economics* 253-268.

Okuyan, E. (2008). Does inflation Dress Economic growth, Evidence from Turkey. *International Research Journal of Finance Economics*, 40-48.

Paul, S., Chowdury, C., Kabir, E. (1997). Inflation and Economic Growth. *Applied Economics*, 1387-1401.

Fisher, S. (1993). The Role of Macro Economics Factors in Growth. *Journal of Monetary Economics*, 485-512.

Zhou, X., Kui-WAI, R. (2011). The Impact of Openness and Domestic Performance on Growth Using Nonparametric Estimation. *Applied Economic Letters*, 1065-1070.

APPENDICES

Appendix A: Individual Regression Results-Indonesia

Table 1. The effect of external debt, inflation rate, domestic investment, trade openness on GDP growth.

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.720348	0.834943	11.64193	0.0000
ED	-1.881205	4.373830	-0.430105	0.6715
I	-0.426632	0.070773	-6.028190	0.0000
INV	-0.199411	0.162847	-1.224526	0.2343
TO	0.041204	0.072180	0.570857	0.5742
R-squared	0.840431	Mean dependent var		5.369138
Adjusted R-squared	0.810037	S.D. dependent var		4.193086
S.E. of regression	1.827546	Akaike info criterion		4.214866
Sum squared resid	70.13840	Schwarz criterion		4.456808
Log likelihood	-49.79326	Hannan-Quinn criter.		4.284537
F-statistic	27.65115	Durbin-Watson stat		0.974655
Prob(F-statistic)	0.000000			

Table 2. The effect of external debt on GDP growth

Dependent Variable: GDP Growth
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.189468	0.644306	8.054348	0.0000
ED	-11.87360	2.887252	-4.112423	0.0004
R-squared	0.413375	Mean dependent var		5.369138
Adjusted R-squared	0.388933	S.D. dependent var		4.193086
S.E. of regression	3.277769	Akaike info criterion		5.286006
Sum squared resid	257.8505	Schwarz criterion		5.382783
Log likelihood	-66.71808	Hannan-Quinn criter.		5.313875
F-statistic	16.91202	Durbin-Watson stat		0.601672
Prob(F-statistic)	0.000396			

Table 3. The effect of domestic investment on GDP growth

Dependent Variable: GDP Growth
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.278645	0.609134	8.665815	0.0000
INV	0.682273	0.146771	4.648564	0.0001
R-squared	0.473790	Mean dependent var		5.369138
Adjusted R-squared	0.451864	S.D. dependent var		4.193086
S.E. of regression	3.104401	Akaike info criterion		5.177322
Sum squared resid	231.2953	Schwarz criterion		5.274099
Log likelihood	-65.30519	Hannan-Quinn criter.		5.205190
F-statistic	21.60915	Durbin-Watson stat		1.237593
Prob(F-statistic)	0.000101			

Table 4. The effect of trade openness on GDP growth

Dependent Variable: GDP Growth
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.389117	0.748530	7.199604	0.0000
TO	-0.164894	0.066350	-2.485221	0.0203
R-squared	0.204674	Mean dependent var		5.369138
Adjusted R-squared	0.171536	S.D. dependent var		4.193086
S.E. of regression	3.816547	Akaike info criterion		5.590373
Sum squared resid	349.5848	Schwarz criterion		5.687149
Log likelihood	-70.67485	Hannan-Quinn criter.		5.618241
F-statistic	6.176322	Durbin-Watson stat		0.980881
Prob(F-statistic)	0.020311			

Table 5. The effect of interest rate, inflation, GDP growth, external debt on domestic investment.

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.578489	2.451108	2.275905	0.0334
R	-0.226493	0.092188	-2.456852	0.0228
I	-0.408418	0.118287	-3.452780	0.0024
GDP	0.008198	0.245706	0.033363	0.9737
ED	-2.867901	6.652616	-0.431094	0.6708
R-squared	0.749394	Mean dependent var		0.132635
Adjusted R-squared	0.701660	S.D. dependent var		4.230276
S.E. of regression	2.310599	Akaike info criterion		4.683932
Sum squared resid	112.1162	Schwarz criterion		4.925873
Log likelihood	-55.89111	Hannan-Quinn criter.		4.753602
F-statistic	15.69924	Durbin-Watson stat		2.426661
Prob(F-statistic)	0.000004			

Table 6. The effect of GDP growth on domestic investment

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.626388	1.376009	-0.455221	0.6530
GDP	0.141857	0.203930	0.695615	0.4934
R-squared	0.019763	Mean dependent var		0.132635
Adjusted R-squared	-0.021080	S.D. dependent var		4.230276
S.E. of regression	4.274631	Akaike info criterion		5.817076
Sum squared resid	438.5392	Schwarz criterion		5.913853
Log likelihood	-73.62199	Hannan-Quinn criter.		5.844944
F-statistic	0.483881	Durbin-Watson stat		2.060819
Prob(F-statistic)	0.493351			

Table 7. The effect of external debt on domestic investment

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.030389	0.692412	-0.043888	0.9654
ED	-10.77350	3.102823	-3.472161	0.0020
R-squared	0.334367	Mean dependent var		0.132635
Adjusted R-squared	0.306632	S.D. dependent var		4.230276
S.E. of regression	3.522496	Akaike info criterion		5.430020
Sum squared resid	297.7915	Schwarz criterion		5.526797
Log likelihood	-68.59026	Hannan-Quinn criter.		5.457889
F-statistic	12.05590	Durbin-Watson stat		2.522368
Prob(F-statistic)	0.001974			

MALYSIA

Table 8. The effect of external debt, inflation rate, domestic investment, trade openness on GDP growth

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.075028	0.452232	13.43344	0.0000
ED	-14.49229	7.706238	-1.880592	0.0740
I	-0.021737	0.292007	-0.074441	0.9414
INV	0.626032	0.118991	5.261160	0.0000
TO	0.017558	0.041100	0.427200	0.6736
R-squared	0.721699	Mean dependent var		6.243893
Adjusted R-squared	0.668689	S.D. dependent var		3.959237
S.E. of regression	2.278920	Akaike info criterion		4.656322
Sum squared resid	109.0630	Schwarz criterion		4.898264
Log likelihood	-55.53219	Hannan-Quinn criter.		4.725992
F-statistic	13.61448	Durbin-Watson stat		1.179134
Prob(F-statistic)	0.000013			

Table 9. The effect of inflation rate on GDP growth

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.240649	0.793013	7.869541	0.0000
I	0.046465	0.473833	0.098063	0.9227
R-squared	0.000401	Mean dependent var		6.243893
Adjusted R-squared	-0.041249	S.D. dependent var		3.959237
S.E. of regression	4.040070	Akaike info criterion		5.704205
Sum squared resid	391.74320	Schwarz criterion		5.800981
Log likelihood	-72.15466	Hannan-Quinn criter.		5.732073
F-statistic	0.009616	Durbin-Watson stat		1.644585
Prob(F-statistic)	0.922697			

Table 10. The effect of trade openness on GDP growth

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.155793	0.790317	7.789015	0.0000
TO	0.054327	0.068836	0.789220	0.4377
R-squared	0.025296	Mean dependent var		6.243893
Adjusted R-squared	-0.015316	S.D. dependent var		3.959237
S.E. of regression	3.989443	Akaike info criterion		5.678984
Sum squared resid	381.9756	Schwarz criterion		5.775760
Log likelihood	-71.82679	Hannan-Quinn criter.		5.706852
F-statistic	0.622868	Durbin-Watson stat		1.733670
Prob(F-statistic)	0.437711			

Table 11. The effect of interest rate, inflation, GDP growth, external debt on domestic investment.

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-2.000010	1.511953	-1.322799	0.2001
R	-0.159939	0.131930	-1.212295	0.2389
I	-1.140171	0.365808	-3.116860	0.0052
GDP	0.961400	0.141666	6.786369	0.0000
ED	5.967785	8.063537	0.740095	0.4674
R-squared	0.771690	Mean dependent var		0.200689
Adjusted R-squared	0.728202	S.D. dependent var		4.388631
S.E. of regression	2.287979	Akaike info criterion		4.664256
Sum squared resid	109.9318	Schwarz criterion		4.906198
Log likelihood	-55.63533	Hannan-Quinn criter.		4.733926
F-statistic	17.74504	Durbin-Watson stat		1.587463
Prob(F-statistic)	0.000002			

Table 12. The effect of interest rate on domestic investment.

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.789798	1.280414	0.616830	0.5432
R	-0.153506	0.244480	-0.627888	0.5360
R-squared	0.016161	Mean dependent var		0.200689
Adjusted R-squared	-0.024832	S.D. dependent var		4.388631
S.E. of regression	4.442786	Akaike info criterion		5.894244
Sum squared resid	473.7203	Schwarz criterion		5.991020
Log likelihood	-74.62517	Hannan-Quinn criter.		5.922112
F-statistic	0.394243	Durbin-Watson stat		1.805690
Prob(F-statistic)	0.536007			

Table 13. The effect of external debt on domestic investment.

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.170567	0.790412	0.215795	0.8310
ED	-26.82733	11.28601	-2.377043	0.0258
R-squared	0.190566	Mean dependent var		0.200689
Adjusted R-squared	0.156839	S.D. dependent var		4.388631
S.E. of regression	4.029807	Akaike info criterion		5.699118
Sum squared resid	389.7443	Schwarz criterion		5.795894
Log likelihood	-72.08853	Hannan-Quinn criter.		5.726986
F-statistic	5.650333	Durbin-Watson stat		2.018166
Prob(F-statistic)	0.025771			

PHILIPIINES

Table 14. The effect of external debt, inflation rate, domestic investment, trade openness on GDP_growth.

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.109018	0.655247	9.323223	0.0000
ED	-0.470395	0.182860	-2.572434	0.0151
I	-11.05910	6.349980	-1.741596	0.0915
INV	-0.306131	0.060444	-5.064699	0.0000
TO	0.121758	0.066631	1.827336	0.0773
R-squared	0.554584	Mean dependent var		3.563365
Adjusted R-squared	0.497111	S.D. dependent var		3.366572
S.E. of regression	2.387394	Akaike info criterion		4.706528
Sum squared resid	176.6892	Schwarz criterion		4.926461
Log likelihood	-79.71751	Hannan-Quinn criter.		4.783291
F-statistic	9.649451	Durbin-Watson stat		1.447495
Prob(F-statistic)	0.000035			

Table 15. The effect of interest rate, inflation, GDP growth, external debt on domestic investment.

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.215857	1.163199	0.185572	0.8540
R	-0.063295	0.057636	-1.098171	0.2803
I	-0.155514	0.064756	-2.401562	0.0223
GDP	0.234885	0.170729	1.375783	0.1784
ED	4.177521	6.194945	0.674344	0.5049
R-squared	0.447557	Mean dependent var		-0.356655
Adjusted R-squared	0.378502	S.D. dependent var		2.767646
S.E. of regression	2.181878	Akaike info criterion		4.523338
Sum squared resid	152.3390	Schwarz criterion		4.741029
Log likelihood	-78.68175	Hannan-Quinn criter.		4.600084
F-statistic	6.481132	Durbin-Watson stat		1.717066
Prob(F-statistic)	0.000614			

Table 16. The effect of interest rate on domestic investment.

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.356555	0.461264	-0.772995	0.4447
R	-0.011541	0.068113	-0.169444	0.8664
R-squared	0.000820	Mean dependent var		-0.356655
Adjusted R-squared	-0.027728	S.D. dependent var		2.767646
S.E. of regression	2.805755	Akaike info criterion		4.953761
Sum squared resid	275.5291	Schwarz criterion		5.040837
Log likelihood	-89.64457	Hannan-Quinn criter.		4.984459
F-statistic	0.028711	Durbin-Watson stat		1.765108
Prob(F-statistic)	0.866423			

Table 17. The effect of external debt on domestic investment.

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.240649	0.793013	7.869541	0.0000
I	0.046465	0.473833	0.098063	0.9227
R-squared	0.000401	Mean dependent var		6.243893
Adjusted R-squared	-0.041249	S.D. dependent var		3.959237
S.E. of regression	4.040070	Akaike info criterion		5.704205
Sum squared resid	391.74320	Schwarz criterion		5.800981
Log likelihood	-72.15466	Hannan-Quinn criter.		5.732073
F-statistic	0.009616	Durbin-Watson stat		1.644585
Prob(F-statistic)	0.922697			

Table 18. The effect of GDP on domestic investment.

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.240649	0.793013	7.869541	0.0000
I	0.046465	0.473833	0.098063	0.9227
R-squared	0.000401	Mean dependent var		6.243893
Adjusted R-squared	-0.041249	S.D. dependent var		3.959237
S.E. of regression	4.040070	Akaike info criterion		5.704205
Sum squared resid	391.74320	Schwarz criterion		5.800981
Log likelihood	-72.15466	Hannan-Quinn criter.		5.732073
F-statistic	0.009616	Durbin-Watson stat		1.644585
Prob(F-statistic)	0.922697			

THAILAND

Table 19. The effect of external debt, inflation rate, domestic investment, trade openness on GDP growth

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.752123	0.523881	10.97982	0.0000
ED	4.658165	8.101960	0.574943	0.5694
I	-0.075887	0.179807	-0.422048	0.6758
INV	1.004168	0.156529	6.415217	0.0000
TO	-0.100097	0.075518	-1.325474	0.1944
R-squared	0.613029	Mean dependent var		5.652638
Adjusted R-squared	0.564658	S.D. dependent var		4.379214
S.E. of regression	2.889426	Akaike info criterion		5.085081
Sum squared resid	267.1610	Schwarz criterion		5.302773
Log likelihood	-89.07400	Hannan-Quinn criter.		5.161828
F-statistic	12.67339	Durbin-Watson stat		1.211591
Prob(F-statistic)	0.000003			

Table 20. The effect of inflation on GDP growth.

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.240649	0.793013	7.869541	0.0000
I	0.046465	0.473833	0.098063	0.9227
R-squared	0.000401	Mean dependent var		6.243893
Adjusted R-squared	-0.041249	S.D. dependent var		3.959237
S.E. of regression	4.040070	Akaike info criterion		5.704205
Sum squared resid	391.74320	Schwarz criterion		5.800981
Log likelihood	-72.15466	Hannan-Quinn criter.		5.732073
F-statistic	0.009616	Durbin-Watson stat		1.644585
Prob(F-statistic)	0.922697			

Table 21. The effect of trade openness on GDP growth.

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.240649	0.793013	7.869541	0.0000
I	0.046465	0.473833	0.098063	0.9227
R-squared	0.000401	Mean dependent var		6.243893
Adjusted R-squared	-0.041249	S.D. dependent var		3.959237
S.E. of regression	4.040070	Akaike info criterion		5.704205
Sum squared resid	391.74320	Schwarz criterion		5.800981
Log likelihood	-72.15466	Hannan-Quinn criter.		5.732073
F-statistic	0.009616	Durbin-Watson stat		1.644585
Prob(F-statistic)	0.922697			

Table 22. The effect of external debt on GDP growth.

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.240649	0.793013	7.869541	0.0000
I	0.046465	0.473833	0.098063	0.9227
R-squared	0.000401	Mean dependent var		6.243893
Adjusted R-squared	-0.041249	S.D. dependent var		3.959237
S.E. of regression	4.040070	Akaike info criterion		5.704205
Sum squared resid	391.74320	Schwarz criterion		5.800981
Log likelihood	-72.15466	Hannan-Quinn criter.		5.732073
F-statistic	0.009616	Durbin-Watson stat		1.644585
Prob(F-statistic)	0.922697			

Table 23. The effect of interest rate, inflation, GDP growth, external debt on domestic investment.

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.614648	0.919475	-1.756054	0.0890
R	-0.217643	0.231376	-0.940645	0.3542
I	-0.206450	0.209227	-0.986730	0.3314
GDP	0.313903	0.129079	2.431866	0.0210
ED	-26.19197	8.044480	-3.255894	0.0027
R-squared	0.351559	Mean dependent var		0.065294
Adjusted R-squared	0.267889	S.D. dependent var		3.822674
S.E. of regression	3.270813	Akaike info criterion		5.336200
Sum squared resid	331.6447	Schwarz criterion		5.556133
Log likelihood	-91.05160	Hannan-Quinn criter.		5.412963
F-statistic	4.201740	Durbin-Watson stat		2.320371
Prob(F-statistic)	0.007825			

Table 24. The effect of interest rate on domestic investment.

Dependent Variable: domestic investment
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.614648	0.919475	-1.756054	0.0890
R	-0.217643	0.231376	-0.940645	0.3542
I	-0.206450	0.209227	-0.986730	0.3314
GDP	0.313903	0.129079	2.431866	0.0210
ED	-26.19197	8.044480	-3.255894	0.0027
R-squared	0.351559	Mean dependent var		0.065294
Adjusted R-squared	0.267889	S.D. dependent var		3.822674
S.E. of regression	3.270813	Akaike info criterion		5.336200
Sum squared resid	331.6447	Schwarz criterion		5.556133
Log likelihood	-91.05160	Hannan-Quinn criter.		5.412963
F-statistic	4.201740	Durbin-Watson stat		2.320371
Prob(F-statistic)	0.007825			

Table 25. The effect of inflation on domestic investment.

Dependent Variable: GDP GROWTH
Method: Least Squares
Sample (adjusted): 1988 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.240649	0.793013	7.869541	0.0000
I	0.046465	0.473833	0.098063	0.9227
R-squared	0.000401	Mean dependent var		6.243893
Adjusted R-squared	-0.041249	S.D. dependent var		3.959237
S.E. of regression	4.040070	Akaike info criterion		5.704205
Sum squared resid	391.74320	Schwarz criterion		5.800981
Log likelihood	-72.15466	Hannan-Quinn criter.		5.732073
F-statistic	0.009616	Durbin-Watson stat		1.644585
Prob(F-statistic)	0.922697			

Appendix B: Panel Regression Results

Table 26. The effect of domestic investment, inflation rate, trade openness and external debt on GDP growth in Malaysia, Indonesia, Philippine and Thailand.

Dependent Variable: GDP growth
Method: Panel Least Squares
Sample (adjusted): 1988 2013
Periods included: 26
Cross-sections included: 4
Total panel (balanced) observations: 104

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.582407	0.420487	15.65425	0.0000
INV	0.375652	0.084499	4.445624	0.0000
I	-0.212150	0.058885	-3.602798	0.0006
TO	-0.043932	0.032536	-1.350258	0.1812
ED	5.598380	3.154827	1.774544	0.0803

R-squared	0.818580	Mean dependent var	5.273184
Adjusted R-squared	0.736813	S.D. dependent var	4.001576
S.E. of regression	2.052881	Akaike info criterion	4.529269
Sum squared resid	299.2166	Schwarz criterion	5.368355
Log likelihood	-202.5220	Hannan-Quinn criter.	4.869208
F-statistic	10.01113	Durbin-Watson stat	1.104719
Prob(F-statistic)	0.000000		

Table 27. The effect of interest rate, inflation rate, GDP growth, external debt on the domestic investment in Malaysia, Indonesia, Philippines and Thailand.

Dependent Variable: domestic investment
Method: Panel Least Squares
Sample (adjusted): 1988 2013
Periods included: 26
Cross-sections included: 4
Total panel (balanced) observations: 104

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.154342	1.532900	-0.753044	0.4539
R	-0.188169	0.113895	-1.652133	0.1029
I	-0.066053	0.096963	-0.681215	0.4980
GDP	0.489943	0.138612	3.534645	0.0007
ED	-4.313372	3.717800	-1.160195	0.2499

R-squared	0.695575	Mean dependent var	0.117259
Adjusted R-squared	0.558370	S.D. dependent var	3.866606
S.E. of regression	2.569563	Akaike info criterion	4.978253
Sum squared resid	468.7884	Schwarz criterion	5.817339
Log likelihood	-225.8692	Hannan-Quinn criter.	5.318191
F-statistic	5.069589	Durbin-Watson stat	2.314752
Prob(F-statistic)	0.000000		

Appendix C: Data

Table 28. The inflation rate

INFLATION			
INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
9.27549096	0.29000791	3.79066876	2.46646113
8.04316609	2.55651945	8.76217597	3.86273075
6.41766078	2.8132009	10.585155	5.35546508
7.8126774	2.61780105	12.6799203	5.86399474
9.41613145	4.35833333	18.4923	5.7098526
7.52573572	4.7672283	8.59448695	4.13914575
9.68778551	3.53658537	6.88157514	3.31219168
8.51849724	3.72497055	8.36192884	5.04774898
9.43205459	3.4505751	6.70553936	5.81818182
7.96848017	3.48855946	7.5136612	5.80510555
6.22989617	2.6625146	5.59085133	5.62579747
58.3870872	5.270342	9.26594465	7.99472875
20.4891175	2.7445613	5.94713656	0.28472646
3.72002401	1.53474024	3.95010395	1.59196917
11.5020925	1.41678473	5.34550196	1.62690887
11.8787564	1.80787246	2.72277228	0.69730898
6.58571919	0.99281621	2.28915663	1.80434995
6.24352093	1.5185422	4.82921084	2.75914926
10.4519566	2.96086509	6.51685393	4.5403692
13.1094153	3.60923564	5.48523207	4.63747436
6.40744846	2.02735318	2.9	2.24154095
9.7765852	5.44078221	8.26044704	5.4684895
4.81352433	0.58330841	4.21903052	-0.8457161
5.1327549	1.71003717	3.78983635	3.27222001
5.3574996	3.2	4.6473029	3.80879058
4.27951196	1.65536176	3.17208565	3.0148995
6.41338678	2.10501231	2.99769408	2.18488619

Table 29. The external debt.

EXTERNAL DEBT				
Year	INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
1987	0.69177676	0.70977127	0.89724003	0.40229237
1988	0.60879958	0.52646286	0.76367389	0.35204543
1989	0.58528443	0.41905879	0.6729933	0.32510253
1990	0.61042241	0.34821685	0.69010937	0.32919404
1991	0.62045932	0.34763401	0.7154365	0.38380523
1992	0.63241049	0.3384212	0.62705388	0.37490265
1993	0.56419672	0.39089151	0.6647706	0.4210682
1994	0.6094615	0.40729579	0.62817925	0.45412017
1995	0.61538331	0.38659927	0.53128417	0.59540178
1996	0.56730835	0.3933834	0.53110618	0.62016524
1997	0.63185719	0.47148632	0.61577773	0.72700479
1998	1.58694467	0.58758415	0.74242369	0.93793563
1999	1.08419378	0.53035155	0.70462836	0.79006827
2000	0.87052641	0.44723705	0.7214435	0.65047912
2001	0.82486647	0.48670004	0.76576639	0.58247532
2002	0.65478147	0.47938317	0.73827485	0.49593042
2003	0.56982654	0.46072698	0.74799035	0.40979351
2004	0.53531183	0.4850551	0.66923172	0.36207253
2005	0.49610238	0.45223951	0.56946745	0.33229037
2006	0.37293038	0.43057298	0.47043832	0.30160598
2007	0.34208408	0.43510373	0.39579118	0.25403484
2008	0.30947209	0.46277628	0.33528578	0.24426993
2009	0.33247063	0.59139943	0.33095835	0.30634497
2010	0.27956993	0.54861076	0.30449956	0.33339759
2011	0.25961845	0.50733648	0.27224859	0.31795922
2012	0.28038769	0.63900051	0.24532321	0.36676216
2013	0.29834752	0.68057797	0.2227712	0.34958961

Table 30. The investment rate.

Investment rate			
INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
30.1935078	20.8729345	17.4988722	27.8747123
28.8445285	23.5431619	18.6682132	32.5908901
32.5639919	28.1468921	21.6004426	35.0661168
30.6682469	32.3605979	24.1511385	41.3537631
31.5539621	37.7907536	20.2183314	42.8413785
30.4778873	35.3623169	21.3383951	39.963946
29.4784233	39.183939	23.9813708	40.0097678
31.0572934	41.2020812	24.0628094	40.2535075
31.9281391	43.6400985	22.4505247	42.094335
30.6914984	41.4791985	24.0158256	41.816217
31.7512618	42.9730833	24.7757591	33.6635403
16.7749638	26.674881	23.386363	20.4470733
11.3674011	22.3820749	18.9582173	20.5000825
22.2456969	26.8675645	18.3675986	22.8361858
22.5392663	24.39822	22.1414292	24.0983251
21.4040702	24.7773431	24.4704655	23.8014854
25.5984989	22.7633851	22.980489	24.9684446
24.0563656	23.049516	21.6115958	26.790915
25.0814099	22.3966018	21.550406	31.4422761
25.4002173	22.7034327	18.0090523	28.297301
24.9202838	23.4094199	17.3373446	26.433876
27.8162446	21.4583785	19.2880583	29.1241
30.9851924	17.8355547	16.59156	21.2408911
32.3159051	23.2963389	20.5407243	25.9350759
32.9018137	23.2413536	20.4662456	26.6265021
34.7434739	25.9252614	18.0932884	29.7409073
33.6420141	26.0908473	19.6617774	29.2402874

Table 31. The trade openness.

TO			
INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
46.3317058	111.919595	52.8635077	57.2279855
44.8662522	122.624225	55.3318268	67.413469
45.693606	136.689064	58.3805179	72.406932
49.0618932	146.889486	60.8002696	75.782364
49.8993459	159.312626	62.1849487	78.4711344
52.8497483	150.610221	63.1579531	77.9546475
50.523339	157.94138	71.1664701	80.1582303
51.8771012	179.904943	73.9595566	82.5865375
53.9585895	192.114064	80.5385343	90.4294417
52.2647437	181.766982	89.799956	84.777901
55.9938963	185.665111	108.250317	94.6039084
96.1861942	209.491463	98.6622442	101.867808
62.943913	217.571643	94.9094563	104.023593
71.436876	220.407407	104.72986	124.922304
69.7932057	203.364636	98.9089411	125.222976
59.0794636	199.356233	102.43508	121.697
53.616494	194.195129	101.849333	124.579657
59.7612922	210.373822	102.642521	136.537696
63.9879359	203.854461	97.8785492	148.254781
56.6571268	202.577993	94.9408259	143.803872
54.82925	192.466397	86.6194089	138.460953
58.5613996	176.667866	76.2822666	150.326063
45.5121214	162.55897	65.5903846	126.157315
47.4851004	169.662134	71.4194913	135.141543
51.3114355	166.619604	67.6979166	149.350492
50.1489753	158.93678	64.6618914	148.825632
49.4819561	154.082918	59.8872562	143.848089

Table 32. The GDP growth.

GR			
INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
5.30000314	5.38864526	4.31163482	9.51894445
6.35567875	9.93772423	6.75254448	13.2881127
9.08471434	9.05848104	6.20531112	12.1905104
9.00157322	9.00964927	3.03696629	11.1671585
8.92779615	9.54546488	-0.5783347	8.55826059
7.2205016	8.8851159	0.33760303	8.08339321
7.25407541	9.89494684	2.11630718	8.25103845
7.54006668	9.2120428	4.38762334	8.98718187
8.39635804	9.82908212	4.67869222	9.23748825
7.64278628	10.0027011	5.84587347	5.90134812
4.69987254	7.32274295	5.18536228	-1.3713816
-13.126724	-7.3594154	-0.5767222	-10.509969
0.79112984	6.13760988	3.08192676	4.4476342
4.9200646	8.8588681	4.41121251	4.75007039
3.64346645	0.51767532	2.89399241	2.16726427
4.49947539	5.39098832	3.64589814	5.31757375
4.78036912	5.78849928	4.97036373	7.13997532
5.03087395	6.78343774	6.69763643	6.3440735
5.6925713	5.33213914	4.77766346	4.60469895
5.50095179	5.58484707	5.24295304	5.09289871
6.34502223	6.29878593	6.6166685	5.04431615
6.0137036	4.8317699	4.15275715	2.4843004
4.62887118	-1.5136851	1.14833041	-2.3298486
6.22385418	7.4259705	7.63226392	7.81051239
6.48563284	5.18725089	3.65975514	0.07708689
6.26367051	5.64460723	6.80133064	7.6671738
5.78122418	4.73391982	7.18112186	1.7663536

Table 33. The interest rate

Real interest rate			
INDONESIA	MALAYSIA	PHILIPPINES	THAILAND
5.39583892	4.57853298	5.43239328	6.51092658
8.29493451	5.48153964	5.72228072	5.34839616
10.6424806	4.24367535	9.38853112	5.77973008
12.1617284	4.79737494	9.86693426	8.17171165
15.3505022	5.56326351	5.61819165	9.12494283
17.7185387	7.56327984	10.6978047	7.34633416
10.7517908	5.81345401	7.34852877	7.6289613
9.26327501	4.64337626	4.60538067	5.40642137
8.33921289	4.91836143	6.63062643	7.25473638
9.52096168	6.04064622	6.66788311	9.02366936
8.21363024	6.90551086	9.46238221	9.20807622
-24.600218	3.35031652	-4.5793654	4.74108834
11.8265298	8.51475239	4.87047368	13.5651772
-1.6542145	-1.0857904	4.91671543	6.40100491
3.71998596	8.84820748	6.49184217	5.07549253
12.3224125	3.29631238	4.77742287	6.00905688
10.8520733	2.90603239	6.07582317	4.54911183
5.13440475	0.03426778	4.32360148	2.30215285
-0.2457323	-2.6729688	4.11695878	1.2485647
1.65815142	2.40934418	4.60188733	2.00609296
2.33967409	1.45654782	5.43318967	3.47713059
-3.852245	-3.903776	1.11765152	2.99271106
5.7479521	11.7825058	5.63660305	3.93917311
4.61351906	0.84735974	3.3104958	2.19152795
4.00676222	-0.6135738	2.53940268	2.57756909
7.10093573	4.04761752	3.69230082	6.84250178
7.00176465	4.59216107	3.73357369	4.0599686