



# Debt and Economic Growth in Selected Asian Countries

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# Debt and Economic Growth in Selected Asian Countries

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## **DECLARATION**

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Malaysia Sarawak. Except where due acknowledgements have been made, the work is that of the author alone. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any other degree.

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## **ABSTRACT**

Over the past decades, many countries are trapped in unprecedented levels of indebtedness. Consequently, debt threshold as an indicator for utilize high external debt level effects on economic growth in which the truth is still a debate issue. Therefore, this study aims to investigate the outcomes of external debt on economic growths in different views from a sample of 16 Asian countries for the period 1980-2016. The outcomes of dataset analysis by cointegration test and error correction model, in turn, indicated that external debt, and long term external debt are negatively related and have significant impact on economic growth. Meanwhile, short term external debt tends to has positive effect on economic growth. Subsequently, external debt is negatively and significant on country's reserves. The findings of the constructed debt threshold model revealed that external debt is negatively and significant on economic growth when its debt-to-growth ratio is above the optimal level of debt threshold. There are ten countries with debt threshold below 30%, three countries in the range between 30-60%, two countries in the range between 60-90%, and only Thailand exceeded 90% of debt threshold. Furthermore, this finding concludes that debt threshold for upper middle income Asian countries are between the ranges of 85-105%. The impact of external debt on economic growth would implicate the country's fiscal and monetary policy in safeguard the stability of economy in long run. Therefore, well fiscal discipline in utilizing external debt regards to its corresponding debt threshold would generate absolute return for economic growth. In fact, the economies in the Asian countries will continue to move forward in enhance their economies with value- added globally.

**Keywords:** Debt threshold, economic growth, fiscal discipline

## ***Hutang dan Pertumbuhan Ekonomi di Negara-negara Asia Terpilih***

### **ABSTRAK**

*Sepanjang beberapa dekad yang lalu, banyak negara terperangkap dalam tahap hutang ketara yang belum pernah terjadi sebelumnya. Lantaran itu, ambang hutang sebagai petunjuk nilai kesan hutang luar negeri tahap tinggi terhadap pertumbuhan ekonomi kebenarannya masih menjadi isu perdebatan. Sejajar itu, kajian ini bertujuan menyiasat kesan hutang luar negeri ke atas pertumbuhan ekonomi dalam pelbagai perspektif untuk 16 buah negara Asia dalam tempoh 1980-2016. Hasil ujian kointegrasi dan model pembetulan ralat menunjukkan hutang luar negeri dan hutang jangka panjang memberi impak negatif ke atas pertumbuhan ekonomi. Sementara itu, hutang luar negeri jangka pendek cenderung membawa kesan positif ke atas pertumbuhan ekonomi. Hasil model ambang hutang rizab negara mendedahkan hutang luar negeri memberi kesan negatif dan signifikan terhadap rizab negara. Selanjutnya, model ambang hutang menunjukkan hutang luar negeri memberi kesan negatif dan signifikan ke atas pertumbuhan ekonomi apabila nisbahnya melebihi ambang hutang. Terdapat sepuluh buah negara yang mempunyai ambang hutang di bawah 30%, tiga buah negara di antara 30-60%, dua buah negara dalam julat 60-90%, dan hanya Thailand melebihi 90%. Tambahan pula, kajian ini menyimpulkan ambang hutang bagi negara-negara berpendapatan menengah atas adalah dalam julat 85-105%. Kesan hutang luar negeri terhadap pertumbuhan ekonomi akan membabitkan dasar fiskal dan kewangan dalam menjaga kestabilan ekonomi jangka panjang. Oleh itu, pengendalian hutang pinjaman secara disiplin fiskal mampu menghasilkan pulangan mutlak untuk pertumbuhan ekonomi di negara-negara Asia serta meningkatkan nilai tambah ekonomi di dunia.*

**Kata kunci:** *Ambang hutang, pertumbuhan ekonomi, disiplin fiskal*

## **TABLE OF CONTENTS**

|                                | <b>Page</b> |
|--------------------------------|-------------|
| <b>DECLARATION</b>             | i           |
| <b>ACKNOWLEDGEMENT</b>         | ii          |
| <b>ABSTRACT</b>                | iii         |
| <b>ABSTRAK</b>                 | iv          |
| <b>LIST OF TABLES</b>          | x           |
| <b>LIST OF FIGURES</b>         | xiv         |
| <b>CHAPTER 1: INTRODUCTION</b> | 1           |
| 1.1 Introduction               | 1           |
| 1.2 Background of Study        | 6           |
| 1.3 Problem Statement          | 14          |
| 1.4 Objective of the Study     | 18          |
| 1.4.1 General Objectives       | 18          |
| 1.4.2 Specific Objectives      | 19          |
| 1.5 Definition of Key Terms    | 19          |
| 1.6 Significance of Study      | 21          |
| 1.7 Organization of Study      | 24          |

|                                               |           |
|-----------------------------------------------|-----------|
| <b>CHAPTER 2: LITERATURE REVIEW</b>           | <b>25</b> |
| 2.1 Introduction                              | 25        |
| 2.2 Theoretical Studies                       | 26        |
| 2.2.1 Classical Theory                        | 26        |
| 2.2.2 Neoclassical Theory                     | 27        |
| 2.2.3 Ricardian Equivalent Theory             | 28        |
| 2.2.4 Keynesian Economic Theory               | 29        |
| 2.2.5 Laffer Curve Theory                     | 30        |
| 2.2.6 Ponzi Games Theory                      | 31        |
| 2.2.7 Debt Overhang Theory                    | 31        |
| 2.3 Underlying Theory: Debt Overhang          | 32        |
| 2.4 Empirical Studies                         | 38        |
| 2.4.1 External Debt Sustainability            | 38        |
| 2.4.2 Long Term External Debt Sustainability  | 45        |
| 2.4.3 Short Term External Debt Sustainability | 48        |
| 2.4.4 Public External Debt Sustainability     | 49        |
| 2.4.5 Debt Neutrality in Economic Growth      | 59        |
| 2.4.6 Debt Overhang                           | 60        |
| 2.4.7 Growth-Debt Nexus                       | 61        |
| 2.5 Gap of the Literature                     | 75        |

|                                    |                                                      |     |
|------------------------------------|------------------------------------------------------|-----|
| 2.6                                | A Remark                                             | 78  |
| <b>CHAPTER 3: RESEARCH METHODS</b> |                                                      | 80  |
| 3.1                                | Introduction                                         | 80  |
| 3.2                                | Description of Variables                             | 81  |
| 3.3                                | Conceptual Framework                                 | 89  |
| 3.4                                | Hypotheses Development                               | 96  |
| 3.4.1                              | External Debt on Economic Growth                     | 96  |
| 3.4.2                              | Long Term External Debt on Economic Growth           | 98  |
| 3.4.3                              | Short Term External Debt on Country Reserves         | 99  |
| 3.4.4                              | Debt Sustainable based on Debt Reserve Threshold     | 102 |
| 3.4.5                              | Debt Threshold Level on Economic Growth              | 104 |
| 3.5                                | Data Collection                                      | 106 |
| 3.6                                | Techniques of Econometric Estimation                 | 107 |
| 3.6.1                              | Unit Root Test                                       | 108 |
| 3.6.1.1                            | Augmented Dickey-Fuller Test (ADF)                   | 109 |
| 3.6.1.2                            | Kwiatkowski, Phillips, Schmidt and Shin Test (KPSS)  | 110 |
| 3.6.2                              | Empirical Approach                                   | 111 |
| 3.6.2.1                            | Johansen Co-integration Techniques                   | 124 |
| 3.6.2.2                            | Error Correction Model (ECM) and ECM Diagnostic Test | 127 |
| 3.7                                | A Remark                                             | 128 |

|                                                                                                                                     |            |
|-------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>CHAPTER 4: RESULTS AND DISCUSSIONS</b>                                                                                           | <b>129</b> |
| 4.1 Introduction                                                                                                                    | 129        |
| 4.2 Descriptive Statistics of the Variables                                                                                         | 129        |
| 4.3 Unit Root Test                                                                                                                  | 133        |
| 4.3.1 Augmented Dickey-Fuller Test (ADF)                                                                                            | 133        |
| 4.3.2 Kwiatkowski, Phillips, Schmidt and Shin Test (KPSS)                                                                           | 139        |
| 4.4 Cointegration Tests of Model                                                                                                    | 146        |
| 4.5 Error Correction Model (ECM) and ECM Diagnostic Test                                                                            | 151        |
| 4.5.1 Error Correction Model                                                                                                        | 152        |
| 4.5.1.1 Model 1: Economic Growth and External Debt                                                                                  | 152        |
| 4.5.1.2 Model 2: Economic Growth and Long Term External Debt                                                                        | 156        |
| 4.5.1.3 Model 3: Economic Growth and Short Term External Debt                                                                       | 159        |
| 4.5.1.4 Model 4: Related External Debt Reserve Threshold and External Debt-<br>Country Reserve ratio in Examine Debt Sustainability | 163        |
| 4.5.1.5 Model 5: Economic Growth and External Debt in Compute Debt<br>Threshold                                                     | 177        |
| 4.5.2 ECM Diagnostic Test                                                                                                           | 193        |
| 4.6 Discussions                                                                                                                     | 197        |
| 4.6.1 Economic Growth and External Debt                                                                                             | 197        |
| 4.6.2 Economic Growth and Long Term External Debt                                                                                   | 198        |

|                              |                                              |     |
|------------------------------|----------------------------------------------|-----|
| 4.6.3                        | Economic Growth and Short Term External Debt | 200 |
| 4.6.4                        | Economic Growth and Sustainable Debt         | 201 |
| 4.6.5                        | Economic Growth and Debt Threshold           | 202 |
| 4.7                          | A Remark                                     | 203 |
| <b>CHAPTER 5: CONCLUSION</b> |                                              | 205 |
| 5.1                          | Introduction                                 | 205 |
| 5.2                          | Summary of the Main Findings                 | 206 |
| 5.2.1                        | Economic Growth and External Debt            | 206 |
| 5.2.2                        | Economic Growth and Long Term External Debt  | 207 |
| 5.2.3                        | Economic Growth and Short Term External Debt | 207 |
| 5.2.4                        | Economic Growth and Sustainable Debt         | 208 |
| 5.2.5                        | Economic Growth and Debt Threshold.          | 209 |
| 5.3                          | Policy Implication and Recommendation        | 210 |
| 5.3.1                        | Implication on Policy                        | 210 |
| 5.3.2                        | Recommendation                               | 215 |
| 5.4                          | Research Limitation and Suggestion           | 221 |
| 5.5                          | A Remark                                     | 222 |
| <b>REFERENCES</b>            |                                              | 224 |
| <b>APPENDICES</b>            |                                              | 247 |

## LIST OF TABLES

|                                                                                                                                                 | <b>Page</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Table 1.1 Government Debt against GDP Exceeded 60% of Selected Ten Asian Countries in 2016                                                      | 8           |
| Table 1.2 GDP at Gross National Income from 2012 to 2016 for Asian Countries                                                                    | 10          |
| Table 1.3 The Five Years Statistic of External Debt Stocks from 2012 to 2016 for Asian Countries                                                | 12          |
| Table 2.1 The Relationship between External Debt and Economic Growth                                                                            | 44          |
| Table 2.2 The Relationship between Public Debt and Economic Growth                                                                              | 51          |
| Table 2.3 The Debt Threshold and Economic Growth                                                                                                | 53          |
| Table 4.1 Mean and Maximum of GDP Per-Capita Amount for 16 selected Asian Countries from 1980 to 2016                                           | 130         |
| Table 4.2 Mean and Maximum of External Debt Amount for 16 Selected Asian Countries from 1980 to 2016                                            | 131         |
| Table 4.3 Mean Amount of Long Term External Debt, Short Term External Debt and Debt Services for 16 Selected Asian Countries from 1980 to 2016. | 132         |
| Table 4.4 Average And Maximum Amount of Country Reserve for 16 Selected Asian Countries in 1980-2016                                            | 133         |
| Table 4.5 Augmented Dickey-Fuller Test for Tested GDP of 16 Selected Asian Countries from 1980 to 2016                                          | 134         |
| Table 4.6 Augmented Dickey-Fuller Test for Tested External Debt of 16 Selected Asian Countries from 1980 to 2016                                | 135         |
| Table 4.7 Augmented Dickey-Fuller Test for Tested Long Term External Debt of 16 Selected Asian Countries from 1980 to 2016                      | 136         |

|            |                                                                                                                             |     |
|------------|-----------------------------------------------------------------------------------------------------------------------------|-----|
| Table 4.8  | Augmented Dickey-Fuller Test for Tested Short Term External Debt of 16 Selected Asian Countries from 1980 to 2016           | 137 |
| Table 4.9  | Augmented Dickey-Fuller Test for Tested Country Reserve of 16 Selected Asian Countries from 1980 to 2016                    | 138 |
| Table 4.10 | Summaries of Augmented Dickey-Fuller Test for Other Tested Variables of 16 Selected Asian Countries from 1980 to 2016       | 139 |
| Table 4.11 | KPSS Test for GDP of 16 Selected Asian Countries from 1980 to 2016                                                          | 140 |
| Table 4.12 | KPSS Test for External Debt of 16 Selected Asian Countries from 1980 to 2016                                                | 141 |
| Table 4.13 | KPSS Test for Long Term External Debt of 16 Selected Asian Countries from 1980 to 2016                                      | 142 |
| Table 4.14 | KPSS Test for Short Term External Debt of 16 Selected Asian Countries from 1980 to 2016                                     | 143 |
| Table 4.15 | KPSS Test for Country Reserve of 16 Selected Asian Countries from 1980 to 2016                                              | 144 |
| Table 4.16 | Summaries of KPSS Unit Root Test for Other Tested Variables of 16 Selected Asian Countries from 1980 to 2016                | 145 |
| Table 4.17 | Cointegration Test of Model 1: Economic Growth on External Debt of 16 Selected Asian Countries from 1980 to 2016            | 146 |
| Table 4.18 | Cointegration Test of Model 2: Economic Growth on Long Term External Debt of 16 Selected Asian Countries from 1980 to 2016  | 147 |
| Table 4.19 | Cointegration Test of Model 3: Economic Growth on Short Term External Debt of 16 Selected Asian Countries from 1980 to 2016 | 148 |
| Table 4.20 | Cointegration Test of Model 4: External Debt on Country Reserve of                                                          | 149 |

## 16 Selected Asian Countries from 1980 to 2016

|            |                                                                                                                                                  |     |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Table 4.21 | Cointegration Test of Model 5: Economic Growth on External Debt<br>Threshold of 16 Selected Asian Countries from 1980 to 2016                    | 150 |
| Table 4.22 | Model 1 of Estimated Coefficient and ECT Values of GDP on External<br>Debt for 16 Selected Asian Countries                                       | 153 |
| Table 4.23 | Model 1 of Estimated Coefficient of Control Variables on External<br>Debt for 16 Selected Asian Countries                                        | 155 |
| Table 4.24 | Model 2 of Estimated Coefficient Values of GDP on Long Term<br>External Debt for 16 Selected Asian Countries                                     | 157 |
| Table 4.25 | Model 2 of Estimated Coefficient of Control Variables on GDP for 16<br>Selected Asian Countries                                                  | 159 |
| Table 4.26 | Model 3 of Estimated Coefficient Values of GDP on Short Term<br>External Debt for 16 Selected Asian Countries                                    | 160 |
| Table 4.27 | Model 3 of Estimated Coefficient of Control Variables on GDP for 16<br>Selected Asian Countries                                                  | 162 |
| Table 4.28 | Model 4 of Estimated Coefficient Values of External Debt on Country<br>Reserve for 16 Selected Asian Countries                                   | 163 |
| Table 4.29 | Model 4 of Debt Sustainable of External Debt on Country Reserves for<br>16 Selected Asian Countries                                              | 165 |
| Table 4.30 | Model 4 of Estimated Coefficient of Control Variables on GDP for 16<br>Selected Asian Countries                                                  | 176 |
| Table 4.31 | Model 5 of Estimated Coefficient Values of External Debt-GDP for<br>Model in Normalizing Cointegration Vector for 16 Selected Asian<br>Countries | 177 |

|            |                                                                                                                                                                      |     |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Table 4.32 | Model 5 of Estimated Coefficient Values of Debt Threshold for 16<br>Selected Asian Countries                                                                         | 178 |
| Table 4.33 | Summarizes of External Debt-Reserve Threshold and Debt-GDP<br>Threshold Status in Period 2007-2016 of Selected Asian Countries<br>(from Figure 4.1 to Figure 4.32)   | 191 |
| Table 4.34 | Model 5 of Estimated Coefficient of Control Variables on GDP for 16<br>Selected Asian Countries                                                                      | 192 |
| Table 4.35 | VECM Diagnostic Checking for Lagrange-Multiplier Test and Jarque-<br>Bera Test of 16 Asian Countries of Model 1: Economic Growth to<br>External Debt                 | 193 |
| Table 4.36 | VECM Diagnostic Checking for Lagrange-Multiplier Test and Jarque-<br>Bera Test of 16 Asian Countries of Model 2: Economic Growth to<br>Long Term External Debt       | 194 |
| Table 4.37 | VECM Diagnostic Checking for Lagrange-Multiplier Test and Jarque-<br>Bera Test of Sixteen Asian Countries of Model 3: Economic Growth to<br>Short Term External Debt | 195 |
| Table 4.38 | VECM Diagnostic Checking for Lagrange-Multiplier Test and Jarque-<br>Bera Test of Sixteen Asian Countries of Model 4: External Debt to<br>Country Reserve            | 196 |
| Table 4.39 | VECM Diagnostic Checking for Lagrange-Multiplier Test and Jarque-<br>Bera Test of Sixteen Asian Countries of Model 5: Economic Growth<br>on External Debt Threshold  | 197 |

## LIST OF FIGURES

|                                                                                                    | <b>Page</b> |
|----------------------------------------------------------------------------------------------------|-------------|
| Figure 2.1      Theoretical Framework of Debt Overhang.                                            | 33          |
| Figure 3.1      Analytical Framework of the Impact of Utilize External Debt on<br>Economic Growth. | 90          |

|            |                                                                                                    |     |
|------------|----------------------------------------------------------------------------------------------------|-----|
| Figure 3.2 | Empirical Framework of External Debt on Economic Growth.                                           | 97  |
| Figure 3.3 | Empirical Framework of Long Term External Debt on Economic Growth.                                 | 99  |
| Figure 3.4 | Empirical Framework of Short Term External Debt on Economic Growth.                                | 100 |
| Figure 3.5 | Empirical Framework of Debt Sustainable of Asian Countries.                                        | 103 |
| Figure 3.6 | Empirical Framework of Debt Threshold of Asian Countries.                                          | 105 |
| Figure 4.1 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Bangladesh from 1980 to 2016. | 167 |
| Figure 4.2 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Bhutan from 1980 to 2016.     | 167 |
| Figure 4.3 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold of China from 1980 to 2016.      | 168 |
| Figure 4.4 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold of India from 1980 to 2016.      | 168 |
| Figure 4.5 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Indonesia from 1980 to 2016.  | 169 |
| Figure 4.6 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Jordan from 1980 to 2016.     | 169 |
| Figure 4.7 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Lao PDR from 1980 to 2016.    | 170 |
| Figure 4.8 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Myanmar from 1980 to 2016.    | 171 |
| Figure 4.9 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold                                  | 171 |

|             |                                                                                                        |     |
|-------------|--------------------------------------------------------------------------------------------------------|-----|
|             | of Malaysia from 1980 to 2016.                                                                         |     |
| Figure 4.10 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold<br>of Nepal from 1980 to 2016.       | 172 |
| Figure 4.11 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold<br>of Pakistan from 1980 to 2016.    | 172 |
| Figure 4.12 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold<br>of Philippines from 1980 to 2016. | 173 |
| Figure 4.13 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold<br>of Sri Lanka from 1980 to 2016.   | 173 |
| Figure 4.14 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold<br>of Thailand from 1980 to 2016.    | 174 |
| Figure 4.15 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold<br>of Turkey from 1980 to 2016.      | 174 |
| Figure 4.16 | External Debt to Country Reserve Ratio and Debt-Reserve Threshold<br>of Vietnam from 1980 to 2016.     | 175 |
| Figure 4.17 | External Debt to GDP Ratio and Debt Threshold of Bangladesh from<br>1980 to 2016.                      | 180 |
| Figure 4.18 | External Debt to GDP Ratio and Debt Threshold of Bhutan from<br>1980 to 2016.                          | 181 |
| Figure 4.19 | External Debt to GDP Ratio and Debt Threshold of China from 1980<br>to 2016.                           | 181 |
| Figure 4.20 | External Debt to GDP Ratio and Debt Threshold of India from 1980<br>to 2016.                           | 182 |
| Figure 4.21 | External Debt to GDP Ratio and Debt Threshold of Indonesia from                                        | 182 |

|             |                                                                                 |     |
|-------------|---------------------------------------------------------------------------------|-----|
|             | 1980 to 2016.                                                                   |     |
| Figure 4.22 | External Debt to GDP Ratio and Debt Threshold of Jordan from 1980 to 2016.      | 183 |
| Figure 4.23 | External Debt to GDP Ratio and Debt Threshold of Lao PDR from 1980 to 2016.     | 184 |
| Figure 4.24 | External Debt to GDP Ratio and Debt Threshold of Myanmar from 1980 to 2016.     | 184 |
| Figure 4.25 | External Debt to GDP Ratio and Debt Threshold of Malaysia from 1980 to 2016.    | 185 |
| Figure 4.26 | External Debt to GDP Ratio and Debt Threshold of Nepal from 1980 to 2016.       | 186 |
| Figure 4.27 | External Debt to GDP Ratio and Debt Threshold of Pakistan from 1980 to 2016.    | 186 |
| Figure 4.28 | External Debt to GDP Ratio and Debt Threshold of Philippines from 1980 to 2016. | 187 |
| Figure 4.29 | External Debt to GDP Ratio and Debt Threshold of Sri Lanka from 1980 to 2016.   | 187 |
| Figure 4.30 | External Debt to GDP Ratio and Debt Threshold of Thailand from 1980 to 2016.    | 188 |
| Figure 4.31 | External Debt to GDP Ratio and Debt Threshold of Turkey from 1980 to 2016.      | 189 |
| Figure 4.32 | External Debt to GDP Ratio and Debt Threshold of Vietnam from 1980 to 2016.     | 189 |

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

External debt levels have increased significantly over the past few decades around the globe, especially in the developing countries. Consequently, Reinhart and Rogoff (2010) with firm efforts in proposing debt threshold at 90% as benchmark for debt utilization in order to ensure sustainable economic growth. The findings of their study on debt threshold issue have attracted attention and influenced numerous researchers in the open debate on soaring high debt impact on economic growth. Hence, researchers are keen on seeking the optimum long run debt threshold in the future particularly in developing countries.

In economic diminishing returns basic, utilization on debt in the optimal level will yield absolute return in any economy, therefore, debts can be manageable through fiscal consolidation. If the debts can be managed properly, it will generate positive outcomes. However, if the debts are utilized in unproductive activities by the government, the harmful effect in return is that debts have become a burden to the country. It means that the well-organized debt especially through government's expenditures should have positive link to the levels of economic growth. As stated by Freeman and Webber (2009), the government's spending should focus on certain reasonable type of expenditures to generate productive economic activities in an active path. Umaru et al. (2013) emphasized that a better performance on an economy may be influenced by the level of internal debt instead of external debt in the country. Subsequently, they argued that the government should rely

more on properly managed internal debt effectively by channeling it to productive economic activities, thus, in return, enhance output in the economy.

Consequently, debt becomes a source of funds to meet the continuity of economic sectors in expenditures during the deterioration of an economy in a country to activate productive economic activities to generate positive output. This positive impact from debt on growth is able to strengthen the development and welfare of the economy. However, there is also a view that rising consumption of debt is incurred due to implementation of fiscal deficit spending as in research of Kontopoulos and Perotti (1999) defined that government implement fiscal deficit consolation in order to increase nation's expenditures, but simultaneously increase debt expenses indirectly which might bring negative impact on growth as a whole. Nonetheless, debts are usually formed up by previous accumulation of sharp deficits spending, such as spending incurred by a drastic expansion in a country through its fiscal stimulus packages. In recent decade, many countries in the world are facing accumulation of debts which need to be addressed promptly to avoid running into a critical debt that would depreciates the country's finances. If this matter of debts is being under control of which the utilization of debt is solely for productive economic activities, then it must be able to have the potentially on debts bailout initiative of a country. However, if the loan borrowed is not being managed prudently by a country, such as spending unproductively, thus, definitely the economic growth will decrease significantly over time. Therefore, this phenomenon becomes an essential inspiration and as an important motivation fact for this study to assess the effectiveness of debt on economic growth, particularly the impact of long term debt on growth. Debt crisis has been a serious issue for concern in many countries especially in the developing countries in which they used to react and in preventing from harmful effects of debts, as lessons of disillusion from Asian Financial Crisis in 1997 and Global Financial Crisis in 2008.

In the past, there were studies conducted to explore the relationship between external debt and economic growths. However, most of the past studies identified that many debtor countries' economy performances have been restricted by huge debt accumulations. According to Kumar and Woo (2010) the influence of high levels or indebtedness levels in public debt on economic growth is crucial, and it is mainly related to decline in investment and reducing labor productivity's growth rate. Subsequently, in line with financial factors that utilizes high debt level also associated with negative impact on productivity's growth rate. For instances, Kirchner et al. (2010) pointed that high debt level may rise up extra risk premiums, in which these risks will add-up to the existing financing costs which consequently, lead to instability on debt finances in overall effects.

Based on study by Cecchetti et al. (2010), they identified that a huge expanding, especially the existence of high level in debt will incur unfavorable effects such as economic instability, which will eventually slow down the nation's economic growth. These views were supported by Reinhart and Rogoff (2010) such that high level of debt brought negative impact on economic development. This phenomenon is similar to the basic economic theoretical assumption that positive growth is related to a low level of debt. Meanwhile, high level or the levels above the debt turning point onwards will invert an adverse growth to prevail (Mencinger et al., 2015). Notwithstanding, Pescatori et al. (2014) found that there were some evidences showed that utilization of a higher debt is linked to a higher level of output due to the fact that this kind of higher debt is sharply channeled into productive business activities. Thereby, they concluded that the debt trajectory can be as benchmark awareness for those policymakers in forecasting the future economic growth prospects.

The issue is not only unique for the poor and developing countries but also the developed countries. According to Fiscal Monitor IMF (2018), countries with debt-growth

domestic product ratio that exceeded 100% were United States (107.8%), Italy (131.5%) and Japan (236.4%) in year 2017. As in the Asian region, Japan's debt had increased steadily and until recently. Apparently, Japan's debts are reaching more than 200% of their GDP. Perhaps, these Japanese government debts had crowded out investment, and its nominal returns. Consequently, Japan suffered none growth rate for last twenty years (Taylor, 2011). Another example would be the evident from debt incurred which resulted from the effects of global financial crisis of the European Sovereign Crisis. Particularly, countries in the European region are experiencing high levels of debt which forced governments to implement their fiscal deficits expenses and in some they were on the default route on sovereign debt.

The main cause of the prevailed uncertainty of sovereign risk was created by excessive debts on unfavorable budget deficit levels practiced from year to year, which was in accumulated high levels of government debt, and perhaps suffering in debt overhang circumstances. Therefore, Furth (2013) suggested that policymakers should be concerned about the debt drag effect in the future when planning similar new deficit expenses in order to prevent debt overhang issues. For example, Greek is one of the European countries which suffered in the European Sovereign Crisis acts as a lesson of awareness for other regions of the world, especially for the Asian countries. The effects of this Euro sovereign crisis will affect the world economy in terms of trade operating in inefficiency, such as crowding-out investment, low level of consumer consumption demand, shortages of production in supply, and others. Subsequently, the global economic growth will be slowed down, and many economists have forecasted that the sovereign crisis impact will generally be carried forward continuously for at least five years in the near future starting from the year sovereign crisis occurred. According to the World Trade Organization (2014), the average of annual global growth rate declined by 0.65%, and

simultaneously the average annual global trade growth declined by 1.14% as the side effects of the European Sovereign Crisis 2010.

In the Asian region, China, as the bigger economy controller of Asian countries also suffered seriously by European Sovereign Crisis. Consequently, economic growth of China decreased by 0.37% during 2012. Other than that, many countries especially in the Asian region attempted to carry out various fiscal packages to strengthen and boost their existing national economy. Generally, the impact of any debt sovereign crisis will influence international trade and global economic growth. Its passive impact on the economy causes the affected country to take various efforts in order to overcome the problems that are being faced.

Often, indebtedness in developing countries is related to global financial crisis. For instance, the impacts of Asian Financial Crisis in 1997 and Global Economic Financial Crisis in 2008 were either directly or indirectly linked to some of the Asian countries indebtedness. However, those countries with strong international reserves may have the ability to settle their financial crisis attack and running their economy as usual. Furthermore, there were some of the Asian countries who had previous experience in addressing the impact of these financial crises which involved finance restructuring programs and macroeconomic stimulates, especially in implementation of expansionary fiscal policy. These expansionary fiscal policies were budgeted in deficit to spur economic growth through increased fiscal expenses. For instance, Marcelino and Hakobyan (2013) found that the impact of debt bailout programs such as restructured macroeconomic activities and structural designed by IMF and World Bank to assist Heavily Indebted Poor Countries (HIPC). They found that there were some evidences of positive effects of the HIPC Initiative to spur economic growth. However, in reality, in order to solve this critical

debt matter, the outcomes of government effort are either often full of uncertainties, or their impacts are not significant.

Asian developing countries are unable to solve its debt matters due to constraint of practices in budget deficit in continuing years in lead to a high debt level in which without emphasis on proper economic reforms could trigger adverse reactions in the financial markets (Adams et al., 2010). In general, these practices of continuing budget deficits every year are unhealthy whereby the deficit spending effect involves major portion of payback on the loan principle and interest payment. This will accumulate debt to a higher level, which, in returns, will indirectly expose the economy to the risk of insolvency. Therefore, Asian developing countries should serious concern issue of deficit spending as it becomes the main factor which contributes to the national debt and eventually it would reduce economic growth (Ullah, 2016). In these related issues, most of the Asian developing countries ought to practice expenditures in deficit in order to spur up their current economy circumstances. For this reason, the question that arises is that whether Asian countries are on the path of debt insolvency, and this would be an interest, or an inspiration to conduct possible empirical research related to sustainable debt on economic growth.

## **1.2 Background of the Study**

In attempt to deal with debt problems, policymaker of a nation around the world is considerable concerning about the nation's economic circumstances, either in sustainable economic growth or interrupted by sovereign debt. For instance, Less Developed Countries and High Indebtedness Poor Countries in Asian facing scarcity of nation expenditures resources due to low levels of domestic saving and also lack of investment from abroad (Bua, Pradelli & Presbitero, 2014). Therefore, foreign borrowing as bridges to

fulfil the gap between domestic demand and supply of finance, and the foreign capital compliments for cover up scarcity of domestic savings (Kapingura et al., 2015). In contrast, developed countries with potential having adequate financial resources support via strong domestic saving and the ability in gaining crowd-in capital from abroad in local investment by increased their cooperation with one another to spur economic growth (Gurtner, 2010). These circumstances reflected that developed countries are able and possible to conduct its debt in sustainable economic growth as compared to developing countries, or high indebtedness countries in Asian. Excessive debt is not sustainable occur in developing countries due to the contract of large sum of debt, especially external debt which was opined by accumulated debt service payments and debt's principal, and developing countries to default is associated with global imbalance, that is, the way they borrow (Holland, 2007). Therefore, the indebtedness countries might attempt to solve the debt payments obligations especially through productive sectors by running economic stimulus packages and reduces fiscal expenses. However, these efforts usually failed due to unwise and mismanagement of debt that was borrowed and would result in national's debt burden and economy instability. Consequently, it eventually limited the spur of economic growth and national's development. While people are questioning about global debt elsewhere, they are worried about the "third wave crisis" coming over in sooner or later.

As to focus superficial on debt matter, Asian apparently as amongst the world which is carried out much massive amount of debts. According to the research of World Economic Outlook Database (IMF, 2017) associated with the debt to GDP, it reflects the seriousness of the impact of massive debt. Table 1.1 reflects the Asian countries that have debt-to-GDP more than 60% in 2016. Japan is among the 10 countries that have a high level of indebtedness. The debt-to-GDP is the highest, which is as high as 239.3%. This is followed by Lebanon (148.7%), Singapore (111.6%) and Bhutan (110.3%). All these

countries with the debt-to-GDP exceeding 60% are said to be at risk and as long as the debts are not paid off, these will lead to facing possible insolvency. If many countries are heading with the ratio exceeding 60%, then, these circumstances will probably lead to the enactment of the new wave of Asian Financial Crisis.

Thus, based on ideal debt threshold 90% proposed by Reinhart and Rogoff (2010), it means that these countries have already been using debt over the optimum debt threshold, so debt reduction measures need to be taken into account so that such countries are not involved in debt overhang. Therefore, further studies on debt threshold for Asian countries to be vigilant and to be alert-based if debt-to-GDP<sup>1</sup> ratio reaches beyond 90%.

**Table 1.1:** Government Debt against Gross Domestic Product Exceeded 60% in Asian Countries in 2016

| No. | Asian Countries | Debt-GDP<br>Per cent (%) |
|-----|-----------------|--------------------------|
| 1   | Japan           | 239.3                    |
| 2   | Lebanon         | 148.7                    |
| 3   | Singapore       | 111.6                    |
| 4   | Bhutan          | 110.3                    |
| 5   | Yemen           | 85.4                     |
| 6   | Sri Lanka       | 79.3                     |
| 7   | India           | 69.6                     |
| 8   | Pakistan        | 67.6                     |
| 9   | Maldives        | 65.6                     |
| 10  | Vietnam         | 60.7                     |

Source: International Monetary Fund (2018).

Even though China remains as the strong economy in the Asian region, its pace of expansion in the economy does not exactly grow accordingly. According to Eckart (2016), China's total debt is the highest in the Asian countries and is greater than United States

<sup>1</sup> Reinhart, Reinhart and Rogoff (2012) stated that government debt above 90 per cent of GDP led to negative effects. Meanwhile, Kumar and Woo (2010) noted that these negative effects might build steadily from 30% to 90%.

which has amounted to US\$28 trillion in 2014. According to Taplin (2018), this massive debt happened in China might be mainly due to many of the Chinese companies' profit earnings are mostly over-taken by debt interest payments. Thus, it directly increased their liabilities from the time onwards. Consequently, many of these Chinese companies are defaulting on their debts which eventually resulted in a less efficient economy.

The use of debt prudently will definitely increase the country's revenue in term of purchasing power parity. Utilization of debt will have an impact in terms of value added during a period in the economy. For instance, Table 1.2 shows GDP at purchasing power parity from 2012 to 2016 for Asian countries which covered Central and West Asia, East Asia, South Asia, South East Asia and Developed Asian countries.

Central and West Asia show an increase in GDP within five years of statistics, i.e. Pakistan as the highest in this region (USD 301,569 million), followed by Kazakhstan (USD 121,180 million), and Uzbekistan (USD 68,547 million) in 2016. Meanwhile, GDP in the Kyrgyz Republic is amongst the lowest (USD 6,228 million) and is followed by Tajikistan (USD 8,165 million) in the same year.

In the East Asia region, the trend in GDP shows an overall increase from 2012 to 2016. China was the top in GDP in this region with USD 11,172,428 million in 2016. The International Monetary Fund year 2016 estimated that China will be achieving 6.7% of GDP growth in end of 2016, and the activities of businesses in China will lead and stimulate global economic growth simultaneously (Morrison, 2016).

However, Korea also gained a relatively good GDP which amounted to USD 25,492.0 million and followed by Taipei (USD 15,754 million) in the same year. In the South Asia region, India achieved the highest GDP (USD 2,235,258 million) in 2016, followed by Bangladesh (USD 234,169 million) and Sri Lanka (USD 79,036 million). The GDP trends in this area also reflect an increase in GDP in the five years statistics.

Meanwhile, Bhutan shows relatively slow growth in GDP, which is at USD 2,063 million. Nonetheless, the growth rate is quite good, i.e. by 11.6% in 2016 compared with 2015.

**Table 1.2:** GDP at Gross National Income from 2012 to 2016 for Asian Countries

| Regional Member       | 2012                          | 2013      | 2014       | 2015       | 2016       |
|-----------------------|-------------------------------|-----------|------------|------------|------------|
| Developing Economies  | (current US dollars, million) |           |            |            |            |
| Central and West Asia |                               |           |            |            |            |
| Afghanistan           | 21,572                        | 21,517    | 20,722     | 19,786     | 19,690     |
| Armenia               | 11,042                        | 11,661    | 12,200     | 10,975     | 10,769     |
| Azerbaijan            | 63,181                        | 69,440    | 72,617     | 51,241     | 35,375     |
| Georgia               | 15,700                        | 15,835    | 16,358     | 13,582     | 13,549     |
| Kazakhstan            | 187,763                       | 218,608   | 204,769    | 172,845    | 121,180    |
| Kyrgyz Republic       | 6,436                         | 7,045     | 7,240      | 6,330      | 6,288      |
| Pakistan              | 236,253                       | 243,148   | 257,256    | 286,512    | 301,569    |
| Tajikistan            | 8,456                         | 7,581     | 9,380      | 11,420     | 8,165      |
| Turkmenistan          | 31,835.2                      | 35,894.5  | 40,144.6   | 35,663.7   | 34,426     |
| Uzbekistan            | 52,596                        | 59,137    | 65,386     | 67,959     | 68,547     |
| East Asia             |                               |           |            |            |            |
| China                 | 8,441,806                     | 9,412,780 | 10,320,724 | 10,807,242 | 11,172,428 |
| Hong Kong             | 2,210.8                       | 2,279.4   | 2,342.4    | 2,398.4    | 2455.7     |
| Korea, Rep. of        | 23354.9                       | 23851.4   | 24399.0    | 24939.5    | 25492.0    |
| Mongolia              | 11,343                        | 11,872    | 11,233     | 10,680     | 10,308     |
| Taipei                | 14,607.6                      | 14,929.3  | 15,529.6   | 15,641.4   | 15,754.0   |
| South Asia            |                               |           |            |            |            |
| Bangladesh            | 144,642                       | 162,054   | 184,407    | 207,743    | 234,169    |
| Bhutan                | 1,682                         | 1,682     | 1,824      | 1,848      | 2,063      |
| India                 | 1,803,547                     | 1,840,087 | 2,018,326  | 2,049,502  | 2,235,258  |
| Maldives              | 2,242.3                       | 2,430.7   | 2,693.2    | 2,813.9    | 3,257      |
| Nepal                 | 19,003                        | 19,393    | 19,971     | 21,217     | 21,557     |
| Sri Lanka             | 67,221                        | 72,543    | 78,215     | 80,467     | 79,036     |
| South East Asia       |                               |           |            |            |            |
| Brunei                |                               |           |            |            |            |
| Darussalam            | 81,982.0                      | 78,975.8  | 75,929.7   | 74,661.4   | 74,885.3   |
| Cambodia              | 13,325                        | 14,575    | 15,826     | 17,062     | 18,788     |
| Indonesia             | 891,242                       | 885,469   | 860,795    | 833,906    | 900,693    |
| Lao PDR               | 8,751                         | 10,550    | 11,132     | 11,690     | 15,212     |
| Malaysia              | 302,839                       | 312,561   | 326,700    | 287,975    | 287,983    |
| Philippines           | 301,388                       | 330,990   | 345,248    | 352,993    | 367,014    |
| Singapore             | 355.7                         | 373.5     | 386.8      | 394.3      | 401.9      |
| Thailand              | 381,197                       | 396,751   | 382,492    | 368,807    | 386,547    |
| Viet Nam              | 149,569                       | 163,885   | 177,110    | 182,855    | 190,864    |
| Developed Economies   |                               |           |            |            |            |
| Japan                 | 1,341,966                     | 1,380,833 | 1,426,973  | 1,466,788  | 1,514,367  |

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Source: Asian Development Bank (2018).

For Southeast Asia region in 2014, all countries showed an increase in GDP, except countries such as Indonesia and Malaysia showed a decrease in GDP, -3.1%, and -11.9%, (2014 compares to 2015) respectively. This real GDP decline reflected in these two countries were influenced by the price of global commodities, especially the prices of global crude oil. Moreover, the main sources of GDP in these two countries are strongly dependent on the exports of crude oil.

In terms of GDP in 2016, Indonesia has dominated the regional economy (USD 900,693 million), followed by relatively is Thailand (USD 386,547 million), Philippines (USD 367,014 million), and Malaysia (USD 287,983 million), with the GDP growth rate of 8.01%, 4.01%, 3.97%, and 0.00% respectively. The possibility of a relatively deficit and low growth rates might be related to these countries having massive debts which had constrained its economic performance. In contrast, Japan is the only developed country among the Asian countries that had acquired a solid GDP, with its turnover GDP in 2016 amounted to USD 1,514,367 million.

In the overall GDP, it reflected improvements in positive trends of GDP in Asian countries, particularly the excellent economic growth in some Asian countries such as Uzbekistan, China, India, Indonesia, Philippines and Vietnam. Perhaps these excellent economic growths can inspire the leaders in Asian countries to form regional economic cooperation. The efforts in economic cooperation might help the Asian Countries to dominate in the global economy and in some days having the possibility in leading the global economy ahead the Europe regions.

However, most countries around the world especially the developing countries, suffered from the lack of states funding in terms of external stock for their country's

economic survival. Therefore, these countries might need certain loans and funds, which operate as the country's debt, particularly in external debt. Generally, these external debts accumulated increasingly from year to year in which these scenarios may be applied to the Asian countries. Meanwhile, Table 1.3 shows the five years statistics of external debt stocks from 2012 to 2016 for Asian countries.

**Table 1.3:** The Five Years Statistic of External Debt Stocks from 2012 to 2016 for Asian Countries

| Regional Member       | 2012                          | 2013    | 2014    | 2015    | 2016    | % in change<br>2015-2016 |
|-----------------------|-------------------------------|---------|---------|---------|---------|--------------------------|
| Developing Economies  | (current US dollars, million) |         |         |         |         |                          |
| Central and West Asia |                               |         |         |         |         |                          |
| Afghanistan           | 2,719                         | 2,577   | 2,580   | 2,489   | 2,404   | -3.42                    |
| Armenia               | 7,637                         | 8,678   | 8,551   | 8,925   | 9,953   | 11.52                    |
| Azerbaijan            | 10,331                        | 11,788  | 10,065  | 13,215  | 14,085  | 6.58                     |
| Georgia               | 12,398                        | 13,467  | 14,035  | 14,854  | 15,987  | 7.63                     |
| Kazakhstan            | 135,498                       | 149,653 | 157,651 | 154,288 | 163,758 | 6.14                     |
| Kyrgyz Republic       | 6,026                         | 6,804   | 7,257   | 7,504   | 7,876   | 4.96                     |
| Pakistan              | 62,144                        | 60,057  | 62,262  | 65,482  | 72,698  | 11.02                    |
| Tajikistan            | 4,621                         | 4,868   | 5,178   | 5,100   | 4,877   | -4.37                    |
| Turkmenistan          | 503.9                         | 506.9   | 411.2   | 402.9   | 509     | 26.33                    |
| Uzbekistan            | 9,119                         | 10,675  | 13,308  | 14,838  | 16,283  | 9.74                     |
| East Asia             |                               |         |         |         |         |                          |
| China                 | 1138,247                      | 1471618 | 1770543 | 1418291 | 1429468 | 0.79                     |
| Mongolia              | 15,385                        | 18,893  | 20,826  | 21,542  | 23,912  | 11.00                    |
| South Asia            |                               |         |         |         |         |                          |
| Bangladesh            | 28,559                        | 33,997  | 35,665  | 38,640  | 41,126  | 6.43                     |
| Bhutan                | 1,450                         | 1,603   | 1,836   | 1,956   | 2,348   | 20.04                    |
| India                 | 392,625                       | 427,296 | 457,553 | 479,559 | 456,140 | -4.88                    |
| Maldives              | 890.0                         | 900.5   | 1,054.1 | 943.0   | 1,155   | 22.48                    |
| Nepal                 | 3,888                         | 4,088   | 4,010   | 4,155   | 4,251   | 2.31                     |
| Sri Lanka             | 35,694                        | 39,211  | 42,264  | 43,920  | 46,608  | 6.12                     |
| Southeast Asia        |                               |         |         |         |         |                          |
| Cambodia              | 6,283                         | 7,132   | 7,916   | 9,319   | 10,230  | 9.76                     |
| Indonesia             | 252,555                       | 265,453 | 292,969 | 308,540 | 316,431 | 2.56                     |
| Lao PDR               | 8,181                         | 9,425   | 10,188  | 11,645  | 14,160  | 21.60                    |
| Malaysia              | 193,880                       | 188,795 | 196,587 | 190,951 | 200,364 | 4.93                     |
| Myanmar               | 7,840                         | 7,251   | 6,266   | 6,401   | 6,453   | 0.81                     |
| Philippines           | 69,372                        | 66,202  | 77,104  | 77,725  | 77,319  | -0.52                    |
| Thailand              | 134,257                       | 137,353 | 135,292 | 129,654 | 121,497 | -6.29                    |

|         |        |        |        |        |        |       |
|---------|--------|--------|--------|--------|--------|-------|
| Vietnam | 61,577 | 65,452 | 72,423 | 77,798 | 86,953 | 11.77 |
|---------|--------|--------|--------|--------|--------|-------|

Source: International Debt Statistic 2018, World Bank, Washington DC.

In the Central and West Asia region, the countries in the region have shown an increase in external debt, except Afghanistan, Kazakhstan, which had shown a decline in external debt in 2016 when compared with 2015 by -3.42%, and -4.37%, respectively. In the meantime, Turkmenistan showed the most significant increase in external debt stock, accounted for 26.33%, followed by Armenia, at the 11.52%.

In the East Asia region, China has shown an increase in external debt stocks for three years continuously since 2012, nonetheless, it has decreased by 19.9% in 2015 as compared to 2014. In spite of that, it increased 0.17% in 2016 as compared to 2015. Meanwhile, Mongolia showed an increase in external debt stock for these five years in which the debt stock in 2016 increased 11.00% as compared to 2015.

For the South Asia region, only Maldives showed a decrease in its external debt stock, which was a decline of 10.54% in 2015. However, its external debt stock increased to 20.04% in 2016 as compared to 2015. Similarly, countries such as Bangladesh and Bhutan showed a forward increase in their external debt stock, by 6.43% and 20.04%, respectively.

Meanwhile, countries in Southeast Asia are in not immune from the increases in their external debt in five years continuously. In 2016, i.e. Lao PDR showed a high level external debt in the region, which is as high as 21.60%. However, countries such as Thailand and Philippines had already taken initiatives in attempts to reduce their external debt, whereby in 2016 it showed a decrease of 6.29% and 0.52% respectively as compared to 2015.

In general, the trends for five years statistics of external debt in Asian countries have shown a generally increase in external debt stock, although a few numbers of countries in the region had a decline of external debt stock. These increases in external debt stock statistics indicates that Asian countries carried huge external debt to sustain their countries' development. In spite of that, Jonathan et al (2015) found that there are also some countries that had attempted to reduce the current debt accumulated by years in which includes expansionary fiscal policy conducted by the government such as the lowering of income tax rate which stimulates aggregate demand. Hence, the authors emphasized that governments of Asian countries must ensure that the prudent debt financing will always being followed.

Moreover, the increase in debt from abroad is on a temporary status and some efficient measures are taken by the government such that the accumulated debt could turn back to its prevailing norm. These necessary consolidation efforts taken by the government such as be responsible, concerning, reacting in transparency on debt policy are to ensure that debt-to-growth ratio is below the suggested debt threshold. It is of utmost important for a government to intervene and to manage the debt stock wisely because changes of the external debt stock would surely incur direct impacts which are linked to the economic performance and growth of a country.

### **1.3 Problem Statement**

A country success in attracting new investment largely depends on the level of external debt owed by the country. For instance, Pegkas (2018) emphasized that investors would perceive high government debt as being extremely risky and creating difficulties for local investment. Therefore, a high level of external debt in a country would undoubtedly reduce the confidence of foreign investors in making local investments. Meanwhile, Ruther

and Cecherita (2010) defined beyond such a point debt overhang of external debt will lead negative pressure on investors intend to invest in local investments. This means that external debt is an important indicator that reflects the image of the country's financial position in the international arena. There were numerous debt crises that had occurred from 20<sup>th</sup> to 21<sup>th</sup> centuries, i.e. 1994-1995 Economic Crisis in Mexico, 1997-1998 Asian Financial Crisis, 1998 Russia Financial Crisis, 1999-2002 Argentine Economic Crisis, 2001 Turkish Economic Crisis, 2007-2008 Global Financial Crisis, 2010 European Sovereign Crisis and 2014 Russian Financial Crisis. The economies of many countries around the world suffered from these crises. Furthermore, some economies in the region experienced the massive debt levels due to the negative impacts incurred in the crises. These critical debt matters created inspiration for policymakers and academics attempts to predict future financial crises, whereby, debt crisis would bring harmful effects on slowing down economic growth, and eventually leading to economy being trapped in debt overhang matters.

Subsequently, in the past academic literature and economic research attempt to conduct relevant research in order to investigate the relationship between the impacts of debt on economic growth but still can't find the perfect answer due to the complexity of debt issues. Under this context, questions may arise does external debt assists in stimulate economic growth or have negative impacts on economy in Asian countries.

Thus, debt issues are crucial, and it becomes an important prudential dimension in economic. Therefore, it is necessary to carry out empirical research to investigate the relationship between debt and economic growth in Asian countries, and the outcomes of the findings will reflect how debt would contribute or bring harmful effects on economic growth. In the meantime, this research is determining the direct effect by high levels of debt in the public sectors and the impacts on economic growth for the Asian countries.

Based on the study, funds borrowing may act as potential tools for fortifying economic equilibrium and assisting economic growth in the long run. In vice versa, the debt would burden the national economy if it carries on with massive funds borrowing without proper management which would bring negative effects towards a country's financial mismanagement and causing to a country's bankruptcy.

In past researchers are interested to determine what kinds of debt are more effective in generating economic growth, namely the long term or short term external debt. Both types of these debts will be affected by duration factors that becomes manacle on economic growth performance. For example, when a government utilizes the short term external debt, it will lead to higher interest rate and incur costly debt services, which would be constrained in tipping optimal growth. Meanwhile, utilization of long term external debt is associated with the uncertainties risk, i.e. currency exchange rates, fluctuation in interest rates, political instability, corruption elsewhere, etc., and perhaps will face global economy crisis in the long run.

Therefore, policymakers will face dilemma in making decision either applied more on short term external debt or long term external debt as absolute solution for intervening capital resources, while in order to finance fiscal activities without shifting the direction of the government expenditures and taxation policies.

Apparently, researchers who analyze the debt are more focused strongly about the role of long term external debt on economic growth in developing countries. Therefore, policymakers' shift of constancy to switch towards more on long term debt rather than short term external debt in which short term debt tends to enlarge rollover risk (He & Xiong, 2012). Despite that, Diamond and He (2016) found that maturing short term debt can lead to more debt overhang than non-maturing long term debt. Moreover, Mohamed (2017) emphasized that short term debts can raise foreign exchange unstable, country

reserve decline, and trigger problems of debt overhang and sustainability. In these context, questions may arise how does external debt in terms of short and long term affect economic growth in an economy? How does country reserve as an indicator for determine the debt sustainable in an economic?

Further, policymakers becoming more aware of the importance in the debt threshold levels and use it as a benchmark to prevent the problem of debt overhang from occurring in the future (Cordella at al., 2005). However, Cecchetti et al. (2011) stated that beyond 96 percent of debt to GDP might spurs economic growth if countries manage to react fast and wise in utilize high debt in dealing with their fiscal matter, and the authors recommended that debt threshold beyond 96% of GDP would help in economic growth drag, and this critical debt threshold value might act as a warning sign for any government in controlling debt utilization in beyond the threshold level. In other words, the ideal debt threshold level can be applied in the economic condition or circumstances. Since there are still no proper guidelines for policymakers regarding on the best match debt threshold level that has to be determined, it is likely that national debt will lead to a level which would be a constraint on economic growth. Additionally, it might pose great risk in insolvency and the possible bankruptcy of the country in the future.

Subsequently, this study will compute the debt threshold for each selected Asian countries and then these debt thresholds value compared to the 90% debt threshold established by Reinhart and Rogoff (2010). The testable hypothesis of whether 90% debt threshold is an ideal debt threshold level scenario in Asian countries would be an interest in this research. In addition, the testable value of debt threshold for each Asian country is also compared with the debt-GDP ratio over a period of time, i.e. from year 2006 to 2016 to analyze the extent of debt sustainability level has taken place in that country during the period.

Therefore, policymakers need to react instantly with the government debt which is always corresponding and beyond the suggested debt turning. This action should be taken as a preventive measure for the oppressed and immediately upon the threshold debt benchmark before this high debt level becomes a critical matter to the economic growth. Debt problems that are rollover year-by-year have triggered awareness concerning the effects of external debt, long term external debt, short term external debt, debt sustainability and debt threshold over the gross domestic product of Asian countries. Even though it is denoted that in the past empirical findings were increasingly concerned on the issue of the relationship between debt and growth nexus, however, it still may not be reflected or has fulfilled exactly clear answers and solutions for the impact of external debt on economic growth. Consequently, these debt problems have motivated researchers to conduct an empirical analysis to find the answers and solutions to these problems. Thus, the testable hypotheses may indicate the real scenario whether utilizing high levels of debt threshold would bring negative impact on economic growth in selected Asian countries.

## **1.4 Objectives of the Study**

### **1.4.1 General Objective:**

The objective of this study is to investigate the relationship between external debt and economic growth of Asian countries. In past studies, researchers were concerned about prevention of utilizing massive debt on any economies, but, the current hot issue is also on the level of debt turning point<sup>2</sup>, or debt threshold as well. The debt threshold might

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<sup>2</sup> Debt turning point as a tipping point on an inverted U-shaped curve that increases debt would enhance economic growth up to a maximum point. At low level debt up to stepping point, utilize of debt would providing much-needed capital for stimulus economic growth, and these circumstances are related to debt sustainability. However, once increase debt exceeded the maximum point it becomes a drag down direction for economic growth. Thus, the point after turning point that bringing negatively affected on economic growth is called debt threshold.

function as an important warning sign for policymakers in deciding the suitable amount of debt in attempts to spur economic growth.

For the purpose of this study, Asian countries are selected based on criteria of its external debt to economic growth ratio in range that corresponding to its country income status<sup>3</sup>, such as below 30% (low level correspond to low income country), between 30 and 60% (middle-low level correspond to lower middle income country), between 60 and 90% (middle-high level correspond to upper middle income country); and above 90% (high level correspond to high income country).

There were 16 selected Asian countries in this study in which includes Bangladesh, Bhutan, China, India, Indonesia, Jordan, Lao PDR, Malaysia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Turkey and Vietnam. The criteria selection of these 16 Asian countries were based on a geographical location that represents every zone in Asia, and it also represents as developing countries.

#### **1.4.2 Specific Objectives:**

Therefore, based on the general objective of study, then there are three specific objectives that this study has aimed to achieve:

- i. To investigate the impact between external debt and economic growth of Asian countries.
- ii. To examine the impact between long term and short term external debt on economic growth of Asian countries.
- iii. To assess debt-reserve threshold for analyzing sustainability scenario for Asian countries.

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<sup>3</sup> According to World Bank (December 2016), Nepal is classified in low income country. Bangladesh, Bhutan, India, Indonesia, Lao PDR, Myanmar, Pakistan, Philippines, Sri Lanka and Vietnam are classified in group of lower middle income country. Meanwhile, China, Jordan, Malaysia, Thailand, Turkey are listed in group of high middle income country.

- iv. To determine the debt turning points for Asian countries.

## **1.5 Definition of Key Terms**

Basically, national debt is the sum of the amount borrowed and owned by government. National debt usually refers to public debt, but, some countries included debts owned by states, provinces, and municipalities. This means not all countries are using the same term of measurement for national debt.

External debt is a major portion domain to national debt. Therefore, for this research purpose, the national debt is focusing on external debt, so that it will reflect consistency of the same unit in measurement for all the selected Asian countries. Basically, public debt is the accumulated amount of yearly net budget deficit. Usually, a government issues debt by selling treasury bonds at different maturities by paying out interest on to the bond holders to meet the debt obligation. It is due of when the debt has the stating repayment terms and conditions under an implied agreement which the debtor must be agreed and promises to repay the principal loan borrowed plus its interest charged which is termed as debt service.

Public debt is an amount accrual by a nation. This includes its private organization for funds borrowed for purchasing advanced assets, capital stock and others which enable sustainable economic growth. For instance, a country may borrow capital through foreign debt channel in efforts to smoothly run the country's consumption or expenditure in efficiency.

However, foreign debts are known as external debts in which constrained by the intention of foreign investors for financing debts borrowing. It depends much on the confidence through observation of these investors concerning the debt performance on economic growth in the country (Driessen, 2017). External debt can divide into short and

long term. Short term external debt covers abroad loan that having a maturity of one year or less. Meanwhile, long term external debt is defined as debt that has a maturity of more than one year and this capital owed to non-residents by residents of an economy. Nevertheless, engaging debts are involved in loan risk especially from foreign debts via various channels. Foreign debt may be stated in certain currencies, and these may incur exchange rate risk when the currency exchange rate fluctuates frequently. Thus, it might be more costly to repay the debt services in the future. Moreover, foreign debts are also encouraging capital flight when the resident creditors found that there is financial instability has occurred in a debtor country. In these circumstances, liquidity in capital markets to finance economic activities was affected which eventually will encourage the massive outflow of capital and lead to financial crisis in the country. According to Anderson (2013), the primary path of debt burdens created are in the form of national debts which slow down the future economic growth, and, Diamond (1965) defined that national debt normally has the negative impacts on decreasing the long run equilibrium utility level of consumer expenses.

Economic growth is measured based on the percentage increase in gross domestic product, or GDP. Basically, economic growth was the increase in capacity of the economy to generate output requirements in a period of time, usually within a year, through a channel of funds borrowed for money to invest in the production of goods and services. Economic growth means an increase in real GDP in terms of output or expenditure to generate the allocated resources into more valuable output.

## **1.6 Significance of Study**

In this study where it has taken into account the dataset which include several of global financial and economic crises as early as the 1990s until the recent Russian

Financial Crisis in 2014. This dataset is taking into account the various crises in between and are linked to the effects of external debt on growth which will reflect the relevance of magnitude and significant of hypotheses in this study.

Past researchers and analysts are mostly making over to investigate the effects of external debt on the economy growth for a single country in which most of them are focusing on their own country of origin. Therefore, past studies are still limited to use in certain countries only. Particularly, this study covers a group of countries in the Asia region whereby the outcome of the study is wider and covers the same period of time. This outcome from the study can provide benefits to policymakers in several countries in Asian, and generally in Asia region for making more precise decisions in managing external debt on the economic growth. Through this study, it is hoped that these 16 selected Asian countries would take advantage from the findings on the impact of external debt on the economic growth in its respective countries in efforts to address the country's debt crisis. This means that the results of this study will be specifically applied in selected Asian countries; however, it can be applied in other Asian countries in which with similar external debt level and economic growth characteristics as a general guideline in external debt management in their country.

Generally, most researchers prefer to study external debt issues on economic growth in the European countries. For instance, in the past, researchers who had conducted study related to external debt on growth in the European countries involved Checherita and Rother (2010); Casares (2014); Ferreira (2014); Menciger et al. (2014); Masuch et al. (2016) and etc. Hence, this study which covers some countries in Asian is still less popularly practiced by researchers, i.e. Chaudhary and Anwar (2000); Siddiqui and Malik (2001); Lau and Kon (2014) and Akram (2016). Recently, most of the Asian countries are facing massive burden of debt, and they have taken drastic intervention in their countries'

scarce resources such as external debts in order to service debts payment in annually. Within this, to service interest and the principal of debt will lead to slow down in the portfolio of investment activities, and subsequently leading to a fall in overall rate of economic growth. Hence, through the results of the study be able to answer the hypothesis of whether external debt benefits or harms the economic growth in the Asian countries. Therefore, hypotheses can be carried out and more precise guidance can be conveyed to the policymakers in order to assist the government in addressing external debt with a more comprehensive and effective method to sustain an economy.

Sustainable debt is against to economic growth in which this is the main macroeconomic reason in any country around the world, especially the poor and less developed countries are trying to avoid budget constrain in order to boost economic growth even through in the short run. Therefore, this study attempts to investigate the impact of external debt duration on economic growth in selected Asian countries by exploring the long term and short term relationship separately between external debt and gross domestic products.

Long term or short term external debt impacts on economic growth enable Asian countries to make more accurate decisions in managing the use of both types of external debt so as to generate optimal economic growth. Besides that, the debt issue created by government deficit spending is related to whether it fosters and translates into economic growth or vice versa, in long run. If the negative effects are created in economic growth, it means that the policymakers are less efficient in capital management, hence, in deficit spending in the short term. The results of this finding will help in explaining the problem statement of this topic in research. The issue of external debt utilization at a high level can actually be clarified through the construct of debt threshold to their respective countries. When the level of external debt utilization has surpassed the debt threshold, it might be

linked to a high level of external debt. In other words, the use of external debt that surpasses the debt threshold can result in debt burden to a country. By constructing the debt threshold value it will help Asian countries to know the benchmark debt turning point, and as a warning of external debt usage at the appropriate level.

In addition to the debt threshold as a measure of high levels of external debt utilization, the reserve on external debt (reserve-debt threshold) ratio can also be used as a measurement of appropriate external debt utilization. In this study which calculates the value reserve-debt threshold, it can help Asian countries to know where the strength of the country's resources can be attributed and likewise, to the limits of external debt usage in their respective countries. Therefore, it becomes an additional guide alongside the identified debt threshold.

Thus, this study is significant as its outcomes will be as enrichment of the past researchers findings related to this issue due to the fact that findings for Asian countries are still limited. This study also contributes to the current empirical studies in revaluating indebtedness of external debt on recent economic growth and returns. In a nutshell, this finding will provide additional information which will guide those policymakers in fortifying economic growth by well managed external debt. In other words, the policymakers will be confident in understanding impact of debts and this will aid them in handling problems of increasing external debt in order to maintain beyond the debt's threshold level for sustainable economic growth particularly in Asian countries.

## **1.7 Organization of the Study**

This study consists of five chapters in which include an introduction, literature review, methodology, findings and discussion, conclusion and finally recommendation part. Chapter 1 of Introduction covers introduction of the study, the background of the

research, problem statements of the research, research objectives, and significance of the studies are explained. In Chapter 2 of Literature Review explanations and requirements of the variables are defined in the chapter. Subsequently, the conceptual framework and model of the research will be formed and its definition; by then, the proposed hypothesis for the research is stated. In Chapter 3 of Methodology explaining the ways to conduct methods of this research is explained. These include the ways and procedure of the data collection, and the method of data interpretation. In Chapter 4 of Findings and Discussion detailing about the outcome of the research are justified based on the finding that has been collected from the research conducted. Meanwhile, in Chapter 5 it consists of summary of findings, conclusion, recommendations and the limitation in the overall from this research.

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

In general, the problem in public debt<sup>4</sup> began when the government decides to increase expenditures significantly but ended in failure corresponding to its revenues. The debt problem particularly external debt will be unresolved continuously if the government does not take measures and concerted efforts to prevent the economy from running persistent deficits expenses in the future. Leao (2013) argued that debt is sustainable if

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<sup>4</sup> Public debt as how much a country owes to foreign investors, and a part of the public debt is external debt. For purpose of this study, literature on public debt is mainly referred indirectly to external debt.

output growth much dependent on the government's fiscal stance and as long as a country's productivity is below full employment in which eventually an increase in government expenditure may lead to a decrease in the debt-to-GDP ratio.

In the late 1990's, the IMF and the World Bank have suggested initiative to help high levels of poverty and debt overhang developing countries, namely, Heavily Indebted Poor Countries (HIPC) initiative. The IMF and the World Bank have planned a comprehensive debt relief programs aimed at reducing the external debt burden of the countries involved on condition that the governments implement programs in adjustments to structural reforms such that macroeconomic is designed to promote growth and reduce poverty. Subsequently, Marcelino and Hakobyan (2013) in their paper investigated on whether the program had succeeded in promoting economic growth, either directly or indirectly through investments. The outcomes showed that the HIPCI has assisted countries eligible for HIPCs in achieving higher growth. In their study, Marcelino and Hakobyan have noted that this economic growth may not solely be the result of investments but also from other channels in outlining the impact of pure debt relief simultaneously. Many of the economic analysts had questioned whether huge debt has attributed to these HIPCs weak economic performance or vice versa. Hence, it is necessary to refer to some theoretical frameworks that have been proposed and empirical literatures in connection with public debt in general and specifically in external debt on economic growth of a country.

## **2.2 Theoretical Studies**

Concerning the underlying of the sovereign debt issue and concerted efforts needed in reducing expenses by the binding of public debt, some theoretical frameworks have been done in the past by researchers as the guidelines for policy makers in handling the impacts of public debt on economic growth. Among these theoretical frameworks related to this

issue are namely, the classical theory, neoclassical theory, Keynesian economic theory, Ricardian Equivalence theory, Laffer Curve theory, Ponzi Games theory and Debt Overhang theory. These theories have reflected the issue of the impact of public debt on economic growth from various perspectives.

### **2.2.1 Classical Theory**

In a nutshell, the budget deficits would constantly cause the amount of public debt to increase, and this will directly affect the financial stability of a country as mentioned in classical view. In the conventional view, it states that a large public debt would be able to become a country's asset and the continuous deficit expenditures are essential to the economic resources in an attempt to spur economic growth in the country. However, in the classical theory, it stated that due to the limited resources or when the existing capital is unable to meet consumption needs, there is a need to apply for public loans to accommodate on the continuity of economic activities, social activities and development of the country. Loans are compulsory to enable the smooth functioning of governmental activities, particularly in economic activities. Furthermore, this theory asserts that public debt utilized enables national activities to be carried out smoothly; however, utilization of public debt will have an impact on the future fiscal resources. These include direct effects on the combination of all the additional resources in order to pay back financial obligation for public debt owed. In contrary, the use of public debt does not directly increase fiscal charges such as fees and taxes level in the future, which eventually leads to a decrease in consumer's available incomes continuously. Based on the classical theory, the use of public borrowing in loans does not contribute to value added in the economy in the future, because it is tied to the debt services that public debt will only weaken the available incomes of the people. Harris (1986) stated that with the economic diminishing concepts,

the impacts from limitation of resources and public debt will influence the economic growth which is arrested by cost of production.

### **2.2.2 Neoclassical Theory**

Some poor and developing countries might be unable to avoid the deficit spending due to budgetary constraint in order to meet their fiscal space expenses. These fiscal expenses are needed for safeguard the interests of its people in terms of economic and social expenses, which in return, will eventually assist in the economic growth. In this case, a better solution is perhaps covered by budget deficits in public debt financing. In the meantime, the public debt financing would increase the amount of passing fees and expenses through the level and increase in taxes to the coming future generations. The effect behind is obstructing future fiscal resource as stimulus for economic activities and will lead to a decline in aggregate demand in the long run. Solow (1999) defined that neoclassical growth theory as the actual effects of growing in any economy, there are unbound fluctuations that will occur in aggregate demand, and the returns of scale does not depend totally on capital, but other factors such as human capital, population growth, the natural resources and technology progress. Other than that, neoclassical theory also depends much on future savings (Cesaratto, 1999). Solow (1956) mentioned that neoclassical economic is highly dependent on interest reactions. Therefore, this neoclassical theory argued that an increase of public debt will lead to an increase in interest rate in the future. Moreover, in reality the debtor country can only use certain parts of the amount in loans for the purpose of any increase in output because they have to allocate certain amount of the loans to service the debt interest and the principal of repayment. Subsequently, these opposite effects will slow down the growth in gross domestic products. Significantly, utilization of public debt will bring forward burdens to be borne by

the future generations, which is tied to the debt overhang issue in the circumstance if debt management is not handled properly.

### **2.2.3 Ricardian Equivalence Theory**

Contrary to classical theory and neo-classical theory, Ricardian Equivalence theory states that the use of loans such as public debt to cover budget deficits will not affect the governmental activities such as the distribution of capital expenditures, private sector's investments and even unable to achieve the goal in the economy to spur economic growth and increase in gross domestic products continually in the current year and the years to come. In addition, Ricardian equivalence hypothesis argued that the current budget surplus by the government will be reserved for future deficits spending (Benos, 2009). It means that increases in budget deficit will not affected public debt since it is financed by the previous year surplus, and will have neutral effects on the economic growth. Therefore, when relating this theory to the effect of debt on economic growth, then it can be said to be as a worthless effort for policymakers to stimulate economic activities because there is no correlation exists between public debts with other macroeconomics activities. In other words, public debt is to be neutral against economic growth in any economy.

### **2.2.4 Keynesian Economic Theory**

Meanwhile in Keynesian economic theory, it mentioned that changes in aggregate demand would have the greatest short-term impact on real output and highly influence economic decisions from both the public and private sector. Taylor (1980) stated that a significant fluctuation in production can be obtained through a fluctuation in nominal aggregate demand, and this change in demand is a real effect with assumption that the components of expenses remain unchanged. Furthermore, Keynesians argued that when the

government increases spending, it will boost output through the multiplier effect. With regard to the use of public debt in the economy, Keynesians asserted that responsibility towards the public debt can be carried out reliably based on full employment level that has not been reached in the economy. When the full employment has not reached the full economic growth and possesses limited resources, the role of the public debt is to contribute to the current capital expenditure especially when it is needed to run a deficit in the country. For example, while the private sector is unable to employ with limited resources such that unbalancing in the budget deficit occurred, budgeting can help in this aspect through utilization of public debt to achieve the goal of stable employment.

The Keynesians thoughts on public debt which are linked to the budget deficit could lead to an increase in aggregate demand, and as a result, employment and national incomes are optimized. Therefore, through certain channels, debt can absorb its idle balances and recovers the increased liquidity to enable the recovery of economic downturn. In addition, Keynesians believe that public borrowing for expenditure is desired for productive investment loans. This is because the expenses in expenditure consist of the increases in investment. Hence, Keynesian theory implies that public debt is effective in a country that has not yet reached full employment potentially in economic growth.

### **2.2.5 Laffer Curve Theory**

According to Claessens (1990), Laffer curve<sup>5</sup> which refers to correlation between the quantity of payback loans capacity and the size of debt. The Laffer curve theory emphasizes the position of the right hand side of the Laffer curve, which will increase the

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<sup>5</sup> Krugman (1988) stated that Laffer curve with the shape of an inverted U. In order to avoid debt overhang, an economy should be in the upward segment of the curve as this position reflects the low risk of default with the debt and expected payments increase.

risk of debt in terms of repaying the amount of the loan, i. e, in this position it hinders efforts to acquire new loans, and at the same time it hinders the smooth repayment of the debt burden. In addition, these situations are not encouraging for investors in terms of investment, and are perhaps due to the lack of confidence which is related to the debt burden and higher public debt that has occurred in the economy.

Therefore, based on the Laffer curve theory, high levels of public debt could lead to low intention for investors in private investments. Consequently, this is unlikely to help in solving the problem of indebtedness in the economic slope of a country.

The Laffer curve theory implies that the efforts to increase investment and the ability to repay the loans are based on the ability to reduce debt as a proportion of outstanding debt and are more capable in repayment. Furthermore, Laffer curve theory also implies a definite form of debt accumulation which is associated with debt maximum point<sup>6</sup> as a barrier to stimulate economic growth (Elbadawi et al., 1996).

#### **2.2.6 Ponzi Games Theory**

O'Connell and Zeldes (1988) defined Ponzi games as a way to deal with loans which include principal repayment and interest are "rolled over", e.g., financed by the issuing of new debt. However, Blanchard and Weil (2001) stated that the ability of a government can rollover debt depends on the comparison between average growth rate and average riskless rate. For example, Ponzi games are infeasible if average riskless rate is less than the growth rate, and vice versa. Meanwhile, Minsky (1982) and Kindleberger (1978) stated Ponzi Scheme Theory with the concept of the ability to pay out outstanding debts to some debtors is by borrowing loans from others. The Ponzi Scheme Theory

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<sup>6</sup>Casares (2015) suggested that the policymakers should prevent reaching the debt maximum point of the inverted U-shaped as it indicates that the existence of a maximum level of debt.

considers that the public debt can repay its debt to meet the dateline by creating new public debt without increases in any future fiscal charges such as fees that are being brought forward and in the taxes level. This is assuming that the circumstance under the concentration of economic growth rate is higher than the current rate of credit loans. This difference enables the proportion of existing incentive to cover old debt services by creating new loans that would not cause any future fiscal charge ahead. This means that Ponzi Scheme Theory would encourage the use of public debt in overcoming the problem of lacking in capital to cover the state expenses which are increasing from year to year.

### **2.2.7 Debt Overhang Theory**

Apart from studying the sustainability of public debt, it is needed to review on the impact of debt sustainability in reverse, i.e. in a situation of unsustainable public debt that has occurred. Generally, this is related to public debt overhang theory. According to Claessens et al. (1997), debt overhang effect is associated with the use of debt that has exceeded the capacity of the countries to repay with some possibility in the future, and as a function of expected debt service addressing function of the output level of a country. Even in some returns on investment, there has been capital flight by foreign creditors due to the weak economic situation which does not encourage investment activities both from local and foreigner investors. In many developed countries, the ratios of public debt to gross domestic product are much higher than average or more than 90%. For example, Japan is one of the developed Asian countries with such a pace. Japan has been experiencing very low economic growth rate and even deficits since the 1990s up to the present. When referring to debt overhang theory, it means that countries with large public debt tend to decline in continued economic growth. Furthermore, this theory asserts the existence of a nonlinear relationship between public debts on economic growth. A debt default would

exist if the public debt on GDP's debt ratios exceeding a certain threshold and would lower the economic growth. On the other hand, fiscal consolidation needed to be consider in order to overcome the public debt overhang before the debt-GDP ratios reaching maximized debt threshold. This is mentioned by Lensink and White (1999) who had emphasized that a debt threshold occurred thereby more as a warning sign to assist in utilization of the public debts beyond the detrimental economic growth. Following the idea of debt threshold value, there are also the efforts of many researchers to confirm the existence of the debt turning point, namely Checherita and Rother (2012); Afonso and Jalles (2013) and Checherita-Westphal et al. (2014). These researchers have detected the existence of the debt threshold values in their studies of non-linearity between public debts which are related to economic growth.

### **2.3 Underlying Theory: Debt Overhang**

When people are feeling anxious and worried about the current issues and are in dispute relating to the national debt on economic growth, then this problem will become a routine task of economists and researchers in helping to exert the best solution, while maintaining their respective theoretical; namely, classical theory, neoclassical theory, Ricardian equivalence theory, Keynesian theory, Laffer curve theory, theory Ponzi scheme and debt overhang theory. This is based on the theory that each theory describe a truth that there would be a reality associated with the utilized debt and its impact on economic growth that are expected to happen in the future, especially in the long run. Based on the existing theoretical findings; thus, this study explore the impact of debt on economic growth in context to consistent and appropriate debt overhang theory. Theoretical framework is depicted in Figure 2.1.

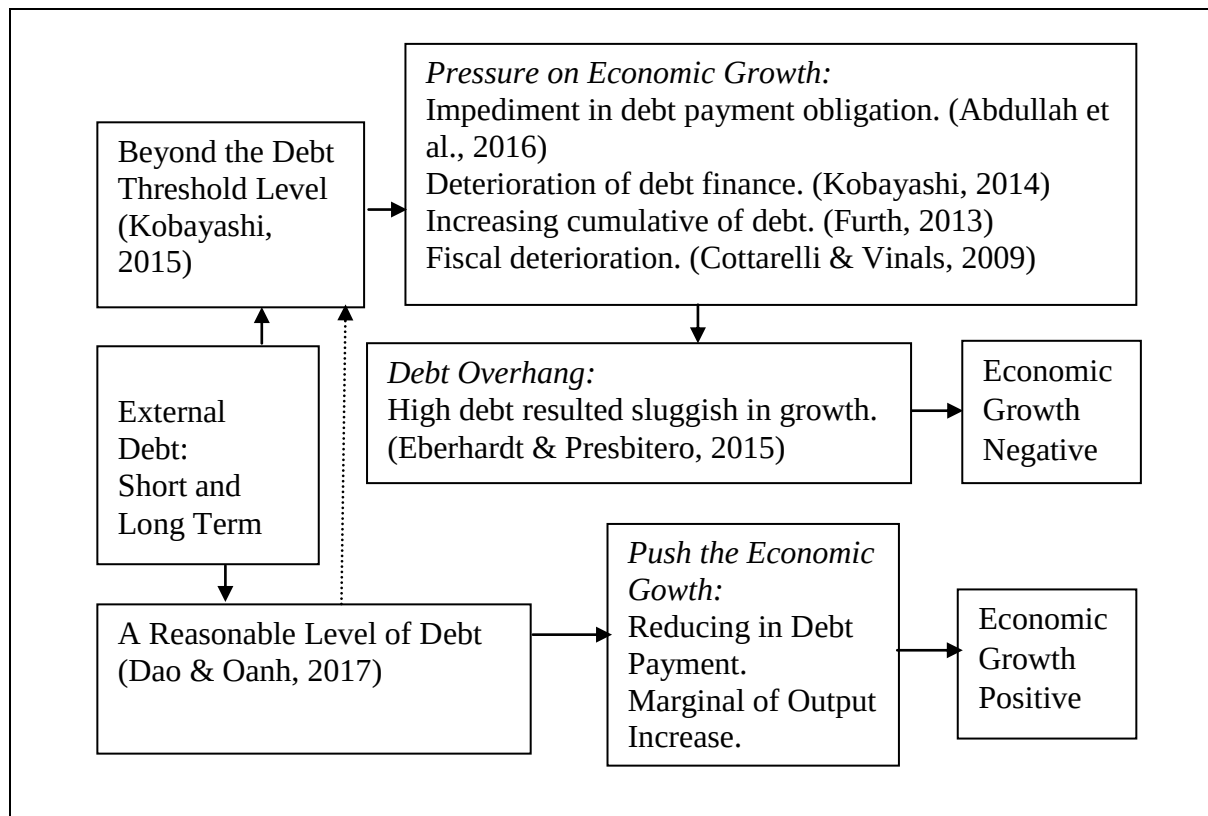


**Figure 2.1:** Theoretical Framework of Debt Overhang.

In connection with the issue of high government debt, generally economists view it as a negative impact on economic growth, particularly on the long term. This is in line with the economic theory, i.e. debt overhang theory, which defined that economic growth is inversely proportional to the government debt growth when debt-to-growth ratio exceeded debt threshold benchmark. This is because the high growth rate of government debt would cause investment to shrink and thus hinders national economic growth. Abdullah et al. (2016) defined that debt overhang phenomenon as being the anticipated current value of any debt borrowing that is not up to cover its outstanding loan. In the same perspective, Kobayashi (2014) defined debt over as phenomenon in which deterioration of public debt finance lowers economic growth. The authors added that debt accumulation tightens the

external loan constraint in which occur income redistribution and fiscal deterioration, in returns, lead to low economic growth.

Consistently, Furth (2013) pointed out that if debt matter is not handled properly, one of the unpleasant features is that it is pleasing to expand, or increase, but is hard to shrink which affect the well-being of debt stock permanently. It means that high public debt is actually slowing economic growth seriously. Moreover, the authors pointed out that in order to increase government debt, it usually brings forward long-lasting undesirable effects on economic growth in the future.

According to Cottarelli and Vinals (2009), deterioration in an economy due to crowding-out effects is brought by increased in interest rate that incurs from increasing public debt which eventually leads to lower economic growth. Furthermore, the authors argues that fiscal deterioration would lead to higher interest rates, and this unpleasant factor causes deterioration of the real economy through crowding-out investment mechanism.

The emerging countries such as China is classified into less indebted country, in which China had adequate private capital markets and high saving rates. Those moderate income countries such as Thailand, Pakistan, Philippines and Malaysia are classified as moderately indebted countries, (World Bank, 2012). These moderate income countries usually have certain reserves of capital and do not need to borrow many debts. Besides, these countries have the ability to pay out its national debt. Therefore, it is important for policy makers to consider debt sustainability as important measures to prevent from the utilization of massive external debt for any economy. This is due to the fact that high external debt might bring harmful effects on economic growth.

External debt sustainability has been a global debate issue by academia, economists or even questioned by the public because of their concern in utilization of massive external

debt that would be linked to negative effects on economic growth. This situation may be linked to a phenomenon of public debt overhang. Kobayashi (2015) emphasized that the government should not waste resources through loose fiscal expenses. However, the government needs to prevent surplus in private investment, so that the economy will not face resources shortage wholly and meanwhile, underlying the matter of economic stagnation in their economic system. The author added that increases in utilized public debt may bring barometer of loose targeted fiscal policy and in returns would cause economic growth to deteriorate. In connection with this theory, the definitive turning point of debt or debt that is exceeding certain threshold level would be a barrier to economic growth in the long run.

Nowadays, many developing Asian countries are trap in debt burdened and are particularly burdened by foreign debts. Indebtedness would occur when the ratio of debt is greater than gross domestic product even though these indebted countries are willing to reduce the massive debts by taking various efforts to stimulate economic growth, such as macroeconomic adjustment and restructuring in the needs of development in the countries. Perhaps these positive macroeconomic activities can generate domestic productivities, stimulate investment and recapture foreigners to be confident in investing in the local markets. As an outcome, it would enhance output ultimately and spur up economic growth simultaneously. In relation to the issues of indebted countries, global financial unions have to give financial assistance to these indebted countries through loans, and urge these countries in recharging the economic stimulus programs. This is to help such countries to boost economic growth. However, these debt solutions are uncertainties to be faced by the indebted countries due to impending debt overhang.

Nonetheless, some countries are lacking in access to private capital markets to capture adequate financial resources in repaying the country's debts. In contrary, some of

these countries conducted various economic reform channels and fiscal consolidation. In return, these indebted countries managed to bailout debt shackle by carrying out various restructuring programs, or being assisted by HIPC initiatives in fiscal stimulus packages mainly from IMF, World Bank, Asian Development Bank and loans borrowed from developed countries.

Moreover, the recent years global crises may act as the warning sign for any economy to utilize less foreign debt to prevent uncertainty risks globally. These crises might affect and pose possible challenges or enhance opportunities for the development of the short term bond markets. Additionally, during this debt sovereign crisis 2010, its effects are likely to affect other surrounding countries which were disbursed directly and involved in trade transactions, including countries in the Asian region. China as the bigger economy controller of Asian countries has also suffered seriously due to the European Sovereign Crisis 2010. As a result, the economic growth in China decreased by 0.37% during 2012. When studying in detail about the external debt growth either during or from the past years cumulatively, the issue that arises is whether the external debt levels of Asian countries are on the debt sustainable paths with considerably high external debt and GDP-external debt ratios.

Moreover, many developing countries especially in the Asian region attempted to carry out various fiscal packages to strengthen and boost their existing national economy. Generally, the impact of any debt sovereign crisis will influence international trade and global economic growth. Consequently, the affected country will take various efforts to tackle the problems that are being faced due to its negative impacts on the economic growth.

Furthermore, fiscal expansion policy is needed to stimulate economic growth while as safeguarding the welfare of increasing population density. This is the dilemma of a

country to realize that their current revenue is unable to accommodate the increasing country's expenditures. Consequently, the government attempts to obtain financial resources for activating its economic activities through loans, such that it may lead to debt burden. Meanwhile, some of the low income and poor countries are tied with debt overhang<sup>7</sup> and were categorized as severely indebted countries. These indebted countries are often facing with insufficient capital for government expenditures to enable the smooth functioning of fiscal activities.

Developing countries grab-in reasonable levels of external debt, the additional debt is expected to enhance in their positive impact on economic growth (Dao & Oanh, 2017). In conventional view, debt potential spur economic growth due to the marginal output of capital depends much higher than interest rate of borrowings.

Oppositely, economies with heavy indebtedness loss their pull on private investor and perceived negative effect on economic growth. Distortion in economic growth cause by situation that marginal output of investment from utilize external borrowing resulted lower in capital formation, and this phenomenon eventually considered as "debt overhang". Furthermore, servicing of debts exhaust up indebted country's revenue. In order to prevent adverse effect debt on growth, but, it becomes debt overhang. Therefore, country's react in revenue circumstances change, well manage, discharge accumulates of too much debt and structural adjustment programs in right pace for prevent debt overhang heavier risks.

## **2.4 Empirical Studies**

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<sup>7</sup> Eberhardt and Presbitero (2015) argued that during debt overhang, economic growth will move towards lower, whereby, high debt may be the result of sluggish growth that at the same time increasing debt and a slowdown in economic growth.

In the past, researchers had been trying to find an answer as to whether the public debt is able to bring a positive effect or impact on economic growth in spite of carrying the burden of debt that can never be settled, or the adverse effect which is associated with debt overhang. Thus, among the hotly disputed issues are the questions of how do public debts have impact on economic growth. Obviously, the findings for the issue of debt sustainability will give insights or guidelines on the use of public debt in many countries globally in making rational decisions by policy makers or otherwise. In the meantime, problem of budget deficits practiced by certain country is attributed to the problem of debt accumulation in a large amount which is likely to ensure the country in fetters by debt overhang.

#### **2.4.1 External Debt Sustainability**

According to economic theory, it is suggested that the use of external debt is to generate positive economic growth for any economies, especially in technology expenditures. However, when a country faces the problem of high debt, or high debt-to-GDP ratio, then it is equated with the use of unhealthy debt, which will bring investment risk and would possible lead to debt overhang. From the investment viewpoints, investors may feel depressed, and apply capital flight, which is indirectly linked to the existence of crowding out effect on investment. For instance, the study of Chipalkatti and Rishi (2001) found that there is a direct correlation between the uses of debt to capital flight. They added that as external debt accumulates, the percentage expansion of one percent in real net debt will cause disbursement of 0.06 percent increase in real capital flight. This means, high foreign borrowing will be as crucial situations that are engaged to the capital flight of a country. In addition, cumulative of capital flight in economic situation from investors will worsen the economy and lead to the decline in a country's economic growth.

Consequently, the final goal in achieving economic growth of the country through expenditures from foreign debt could not be realized. Beja (2006) conducted a study which shows that holding accumulation of huge external debt would promote capital flight, where investors are lack of confidence because of inherent risk in further debt burden, and this condition will worsen the economy of a country. The author suggested that the government should have the intention and take decisive action to manage the external debt well and taking into account the positive interest rate differentials would reduce capital flight. This is to prevent the external borrowing from being transformed into capital flight, when the capital holders respond to mounting burden of accumulated debt faced by the country. Based on Beja (2006), and from the finding from selected experienced capital flight in Southeast Asian countries, the author concluded that if any country continues to face capital flight, it will lead to reduction in available resources in external borrowing. Eventually, this increases economic risk especially in capital “liquidity” effects generally.

There are studies that have been conducted to study the effects of different types of debt which is relating to the economic growth in Malaysia. The types of loans were specified with its effect on economic growth. Among the studies, Choong et al. (2010) found that all components of debt have a negative effect on long run (1970-2006) economic growth in Malaysia. Furthermore, they stated that the increase in foreign debt level will negatively influence economic performance such that a decline in the rate of economic growth would weaken a country's ability to repay back its existing debt. However, Daud and Podivinsky (2015) conducted a study on the impact of an accumulation of public debt on Malaysia's economic growth and the result shows that beyond the public debt threshold level, the country is still eligible in experiencing a positive effect on economic growth. Thus, they suggested that at a lower level of debt, the stock of public debt does not seem to benefit the Malaysian economy.

Ojayi and Oke (2012) investigated the effect of external debt burden to economic growth and the development in Nigeria is using variables, namely national income, debt service payment, external reserves and interest rate. The study describes that external debt has adverse impact on a country's income because the high external debt led to currency devaluation in the nation. This effect had led to the decline in the economy of Nigeria. The authors proposed that the obligation in debt service can be managed better by making sure that it does not exceed its foreign exchange earnings and the loan should be invested in profitable ventures, in order to meet debt repayment. In an effort to avoid a crisis in the economic development of Nigeria, Udoka and Ogege (2012) pointed out that public debt should be reduced to the minimum usage or when it is needed only.

Although generally the issuance of foreign currency can contribute to the growth of foreign exchange reserve, it can cause problems in the assessment of the adequacy of the reserves, especially during periods of financial crisis. In the study by Baksay et al. (2010), the authors had focused on the relationship between the effects of the policy of public debt and foreign exchange reserves management. They found that although foreign currency debt issuance can contribute significantly to the growth of foreign exchange reserves, but applied this policy it can also cause serious difficulties in the assessment of reserve adequacy during economic crisis. They concluded that debt management can contribute to sub-optimal solutions in the decision making process for foreign currency debt issuance.

Many countries with low capital around the world have to borrow liabilities either from domestic or foreign countries to finance the continuous increasing public expenditures. However, most borrowings come with interest attached, which will result in debt servicing. Serving external debt may involve a demand for foreign currency which tends to affect the exchange rate of a country. Saheed et al. (2015) explored the association the effect of public foreign debt on the exchange rate in Nigeria. The authors revealed that

all the dependent variables such as external debt, debt service payment and foreign reserve were significant in explaining exchange rate fluctuation in Nigeria within the period of observation from 1981 to 2013. Therefore, they recommended that external debt should be directly used only in productive economic activities, such that the outcome of these productive economic activities can generate enough returns to settle the amount of debt servicing and principal. As concurring with Riedl (2010) which had stated that the government might focus on productivity growth so that it is capable to form a strong economy over the long term to prevent the economy downturns in the future.

Dimitrios (2011) had attempted to examine the intra and extra trade balance and long term interest rates on government bonds in relation with nation debt levels in Greece. The author agreed that national debt is affected by a very large number of external trade balance. As a matter of fact, if a country is continuously depending on increasing foreign debt, this will increase its deficit shares on trade balance in the international economy. Meanwhile, Wahiba (2014) had used debt service as a percentage of exports and debt indicators in Tunisia for measures of debt effect against economic growth in Tunisia. The author found that the econometric estimation showed positive coefficient, but beyond a certain stock, the coefficient turned into negative values. This reflects that there is a need to control over its debt in which the addition of this supplement will bring unwanted effects on economic performance of the country. Therefore, borrowing debt should only be made in the condition of necessity for the use of extreme emergency.

In terms of levels of the country's income, Soydan and Bedir (2015) have used moderately indebted middle-income countries for a period of 1985 to 2013 to review the impact of external debt on economic growth for selected debt burdened countries. Based on the findings of the study, there was a linear negative impact of external indebtedness on economic growth in selected countries. In addition, the authors identified that debt stock as

the main channel has an impact on economic performance. Furthermore, their study did not find an inverse relationship between the debt u-shape' curve for debt on economic growth. Therefore, they suggested that a country should examine the critical factors on debt problems as the relevant measures directly linked to the external debt for productive investments in the long term in order to improve economic performance. The government in a country should implement the fiscal policy such as optimizing investment in efficiency which is managed to recover macroeconomic in stability and to spur the long-term sustainable growth in economy, (Gupta et al., 2015).

In order to give a time frame for compliance to sustainable external debt, the external debt related to economic growth based on the period of time in terms of both short and long term should be examined in details. Jayachandran (2013) had studied the relationship between external debt and economic growth. This is to enhance economic growth in Maldives with data which varies from 1981 to 2009 and with different stages of external debt such as short term debt, long term debt and total debt on economic growth. The results showed that total debt has positive correlation with economic growth, but long term debt, and short term debt were not significant on economic growth.

In recent years, aids had been conducted for inflows from abroad and also annual budgetary deficits have forced developing countries to manage the financial expenses through loans, primarily in external debt. Pacific Island countries (PICs) have also experienced such a situation relatively. Thus, Jayaraman and Lau (2009) had used data from six selected PICs to review the relationship between external debt and economic growth in PICs during the 17-year period (1988-2004). As a result, the authors found that there is a significant relationship between debt and growth in the short run. However, it is neutral in the long run. Subsequently, this finding implicated that in the short run the external debt had contributed to economic growth and it is beneficial because the borrowed

funds are used efficiently in PICs. Hence, the better economic growth in the short run enhances loan borrowing from abroad because of the good image from economic growth.

Consequently, there is a further increase in the level of external debt in PICs in the long term. Meanwhile, Kasidi and Said (2013) found similar results as that there is no long run relationship of the external debt and GDP in their study in Tanzania for the period of 1990-2010. Based on their findings, they concluded that the external debt was unable to help developing countries to meet developing needs especially to stimulate growth in economic activities.

Furthermore, Forgha et al. (2014) analyzed the feedback of external debt on economic growth through gross domestic investment by data spanning of Cameroon for 34 years (1980-2013). The results revealed that external debt actually had adverse effects on economic growth. This situation could possibly lead Cameroon in debt overhang in the long run. The authors recommended that the authorities in Cameroon should manage the external debt properly by using it on productive goods and services sectors.

Recently, there were some researchers who have studied specifically on impact of external debt against economic growth as summarizes in Table 2.1.

**Table 2.1:** The Relationship between External Debt and Economic Growth

| Year | Author(s) | Research Title | Public Debt on GDP |
|------|-----------|----------------|--------------------|
|------|-----------|----------------|--------------------|

|      |                     |                                                                                                                          |                     |
|------|---------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------|
| 2010 | Malik et al.        | External Debt and Economic Growth: Empirical Evidence from Pakistan                                                      | Negative associated |
| 2012 | Ajayi and Oke       | Effect of External Debt on Economic Growth and Development of Nigeria                                                    | Negative associated |
| 2014 | Zaman and Arslan    | The Role of External Debt on Economic Growth: Evidence from Pakistan Economy                                             | Positive associated |
| 2015 | Mahmoud             | The Role of External Debt on Economic Growth: Evidence from Mauritania                                                   | Negative associated |
| 2015 | Siddique et al.     | The Impact of External Debt on Economic Growth: Empirical Evidence from Highly Indebted Poor Countries                   | Negative associated |
| 2016 | Ugwuegbue et al.    | Effect of External Borrowing and Foreign Aid on Economic Growth in Nigeria                                               | Positive associated |
| 2017 | Onakoya and Ogunade | External Debt and Nigerian Economic Growth Connection: Evidence from Autoregressive Distributed Lag Approach             | Negative associated |
| 2018 | Odubuasi            | External Debt and Economic Growth in Nigeria                                                                             | Positive associated |
| 2018 | Shkolnyk and Koilo  | The Relationship between External Debt and Economic Growth: Empirical Evidence from Ukraine and other Emerging Economies | Negative associated |
| 2018 | Ademola et al.      | External Debt and Economic Growth of Nigeria: An Empirical Investigation                                                 | Negative associated |
| 2018 | Kharusi and Ada     | External Debt and Economic Growth: The Case of Emerging Economy                                                          | Negative associated |

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Source: Various Sources.

In Table 2.1, it depicts that most of the past studies proven utilize external debt was negatively associated to economic growth particularly in developing countries. The past studied such as from Malik et al. (2010); Ajayi and Oke (2012); Mahmoud (2015); Siddique et al. (2015); Onakoya and Ogunade (2017); Shkolnyk and Koilo (2018); Ademola et al. (2018) and Kharusi and Ada (2018). From these findings, we can conclude that increases in external debt with exceeding optimal levels lead to decline in economic growth.

Even though most of the studies had found that external debt has negative effect on economic growth, there are also few studies (Zaman & Arslan, 2014; Odubuasi et al., 2018) with stimulating economic growth in certain countries. For instance, Ugwuegbue et al. (2016) had explored the effect of external borrowing on the growth of the Nigerian economy over a period of 34 years from 1980 to 2013. They found that external debt has a positive and significant effect on economic growth. Therefore, the authors had suggested that the bulk of external borrowings are needed to be channeled into productive investments which are beneficial and to spur economic growth.

#### **2.4.2 Long Term External Debt Sustainability**

Globally, many countries particularly among the Highly Indebted Poor Countries (HIPCs), or even low income countries have paid much attention on addressing the total external debt net repayments. Nonetheless, they have neglected concerns on the potential and challenges created from long term external debt. The accumulation of external debt running growth in rapid rates implied that domestic loans are used to settle net repayment of external debt. Eventually many of these developing countries will face a limited amount of long term external debt after servicing external debt repayments. Meanwhile, these developing countries are unable to meet for the need of domestic economic activities because of insufficient domestic loans. Therefore it is necessary to reveal the real purpose of long term external debt in assisting local economic growth. In other words, how does long term external debt help in fostering higher economic growth in any economy? Many countries around the world are faced with the high risk level of domestic debt and it can possibly fall prey to domestic indebtedness, at which the rate of long term external debt to GDP is above the optimal level of consumption. Long term debt is debt borrowing lasting more than one year. Often, bonds are the most common types of long term debt that are

created in the financial market supply. In order to cover fiscal expenses needs, a government takes on this kind of debt to fulfill instant capital, so that the economic development can continue to operate and is financed by substantial funds. All economic activities need to generate profits and social developments are usually financed by long term debt immediate funds as quick solution. However, these long term debts needs to be managed wisely such that spending into economic activities contributes to marginal economic of scale in long run. In contrary, as times goes by, long term debts tend to be accumulated in huge amount and these long term loans borrowing may frequently take many years to pay off the principal and debt services. In the functions of a long term debt cycle, the debt growth is faster than income and money; after it reaches certain levels of cost and debt services, the long term debt becomes excessive because the interest rate could not be reduced. Therefore, typically a country carried massive long term debt will be trapped in debts and it is hard to settle. This will continue year-by-year, and more long term debt is needed to service interest payments. In return, these debt services limit the capital funding to areas for productive activities in development. For instance, Republic of South Sudan faces constraints from accessing long term debt due of declines in world oil prices, and these situation lead to its international reserve reduces near to exhaustion (IMF Report, 2017). In short, long term debt might generate economic growth if these funds are managed properly via technical debt, and there are initiatives for a government to reduce its debts borrowing (Hurley et al., 2018). In contrary, long term debts might bring harmful effects to economic growth when theses debts continue to thrive in which covered up portion of unproductive fiscal expenses. Furthermore, Mudayen (2017) had conducted research to investigate impacts of foreign debt on fiscal sustainability in Indonesia from 1979 to 2016. The author had found that foreign debt brings negative effects on fiscal sustainability in Indonesia, and this is in consistent with the finding by Radianti (2004).

For debt sustainability in the future, El-Mahdy and Torayeh (2009) had suggested that the government of Egypt should take serious action on fiscal reforms and the policy makers should always ensure that there is increasing positive differential for growth-interest rate for the foreseeable future. Furthermore, Sheikh et al. (2009) stated that utilization of debt borrowing in fiscal expenses through government expenditure channel will contribute to the economic growth. Meanwhile, Abu-Karaki (2016) suggested that some policies should be taken by the government as the efforts in applying some debt policies in undertaking debts outstanding, and in intervention for the extra debt servicing expenses. In parallel, Matiti (2013) suggested that it is necessary for the government to develop a framework for monitoring and implement a policy to manage unforeseen liabilities of debts.

The problems that arise in most developing countries are the issues of the increase in long term external debt stock which are uncontrollable. This will subsequently lead to unpleasant implications to the economy. Peter et al. (2013) urged that in order to address the problems of debt stock, it is the responsibility of a government to ensure that debts are invested in productive economic sectors.

Basically, the rapid development of the public debt has resulted in higher long term external debt interest repayment where this becomes an additional expense to the existing debt. Therefore, Maana (2008) emphasized that the government should implement measures to ensure that the local financial markets through prudent fiscal policy such as lowering the cost of debts and lower or stable the interest rates.

In order to address the crucial problem of debt burden, Hanson (2007) urged that government should be more aware of the risks and burden that often exists in the debts issue, particularly the possible crowding out of small borrowers, and in the cumulative effect of crowding out investment effects can lead to the deterioration of economic substantially, net trade deficit and eventually creates financial crises in the economy.

### **2.4.3 Short Term External Debt Sustainability**

Short term external debt are some sorts of fund functioning as an immediate abroad capital as well as current foreign liabilities owed by a government usually operating within one year. Usually, these liabilities are credit of short term debt from foreign country to assist in fiscal expenses for quick financing and also for filling in the gap between longer fiscal expenditures spending. Rodrik and Velasco (1999) argued that the government always justifies the tendency of short term debts as loans because it is cheaper than long term debt without doubting about the riskiness of interest rate in different debt maturities. Interest rate payment as a portion of short term debt borrowing is an extra operating cost which leads to negative consequences on economic growth. Therefore, the government may increase the taxes rate in order to cover extra debt services. At the same time, it reduces the fund value in spending. Furthermore, when the demands for short term foreign debts are increased by the local government, it may become a trivial issue that foreign investors would grab the opportunities by giving credit flowing as short term loans as much as possible. This action will lead to booming circumstances from loan borrowing in the country. Countries that had experienced financial turmoil such as Indonesia, Korea and Thailand during 1997 were the examples of large ratios of short term foreign debt with a reversal of capital outflows crisis. A large exposure of short term foreign debts flight from a country might vulnerable cause a sudden shock in financial market sentiment. Therefore, short term external debt needs to be dealt with strong financial regulations so that the governments can prevent from excessive short term external debt. Agenor (2001) emphasized that to prevent short term debt flows, prudential regulation of the financial systems and adequate supervision are needed to ensure improved capacity in managing potential risk of reversal from short term capital flight. Concerning these short term debt

issues, Dadush et al. (2000) had carried out study on the relationship between short term debts on economic growth for 33 developing countries during the period from 1986 to 1998 in which there are various global crises that had attacked many countries in globally. As a result, they concluded that the relationship between short term debts on economic growth is negatively related and there are significant effects among these two variables.

#### **2.4.4 Public Debt Sustainability**

Public debt is generally accepted as unpaid government debt burden incurred by the authority of the central government (Chen, 2011; Barkbu, et al., 2012; Campa, 2012). Generally, the sustainability of public debt is associated with the solvency of the government. The government is solvent if the outcomes of public borrowing enable the repayment of the principal and interest involved in addition to increasing economic growth. At times, the government debt is said to be sustainable if debt burden can be managed and controlled, and the debt level does not exceed the increase in economic growth in the long run.

Normally, a country will require an adequate capital to cover the expenses of the country in addition to establish production to generate economic development. However, in the event that expenditure exceeds revenue collection, this creates a situation of deficit spending at which this situation requires a loan in respect of capital to cover the expenses. This is the situation that had occurred in the past few decades with the increasing burden of public debt because of fiscal expansions. In the study, Lee and Ng (2015) found that indicators of debt burden in Malaysia such as budget deficit, budget expenditure, and external debt service and government consumption are negatively related to economic growth. They have suggested that the Malaysian government might need to improve the implementation of fiscal and monetary policy in an efficient way. Additionally, they have

recommended and put emphasis on borrowing via Islamic bonds in handling high public debts at average.

Poor debt management can greatly inhibit a sovereign's ability and it can affect investors' country risk perception on the financial stability of a country. Therefore, a reasonable public debt management strategy as the efficacy of tactical liability management operations is crucial in intervene the domestic debt markets in emergency situations quickly as to rebuild investor confidence. Das et al. (2010) had explored and explained that the level and management of public debt is interrelated to financial stability.

Subsequently, the researchers suggested that the broader implications of a debt management strategy and its implementation should be carefully analyzed by debt managers and policy makers. In the long run perspective, Thornton (2012) suggested that there is no solution to the debt and deficit problem totally until a mechanism can be launched and established that can restrict the government from running persistent deficits.

When exploring the impact of high public debt on long run economic growth, there are two basic things that need to be studied i.e. in terms of the relationship between growth and the initial debt of the government debt-to-GDP ratio threshold. People are more interested to know whether the use of public debt could help in economic growth or the opposite effect; namely the impact of a significant debt load. In short, the effects of public debt on economic growth can be expected to be either positive or negative.

The findings of studies from some researchers on this related issue are summarized as shown in Table 2.2. Afonso and Jalles (2013) made a study on the linkages between public debt, productivity and economic growth of 155 countries during the years 1970 to 2008.

In the studies, the authors concluded that there was a negative effect of debt to economic growth in general. There are similar results as well from similar studies of the

other researchers in the past (Kolluri & Wahab, 2007; Kumar & Woo, 2010; Cecchetti et al., 2011; Panizza & Presbitero, 2013; Calderon & Fuentes, 2013).

However, there are also studies that stated that the higher public debt ratio in relation to the rate of economic growth is in low level, and public debt does not actually make use of long run economic growth (Greiner, 2013).

**Table 2.2:** The Relationship between Public Debt and Economic Growth

| Year | Author(s)                 | Research Title                                                                          | Public Debt on GDP  |
|------|---------------------------|-----------------------------------------------------------------------------------------|---------------------|
| 2016 | Owusu-Nantwi and Erickson | Public Debt and Economic Growth in Ghana.                                               | Positive associated |
| 2016 | Juarez and Almada         | Public Debt, Public Investment and Economic Growth in Mexico.                           | Positive associated |
| 2015 | Lee and Ng                | Public Debt and Economic Growth in Malaysia.                                            | Negative associated |
| 2015 | Kaur and Kaur             | The Effects of Public Debt on Economic Growth and Gross Investment in India.            | Positive associated |
| 2013 | Afonso and Jalles         | The Role of Government Debt in Economic Growth.                                         | Negative associated |
| 2013 | Matiti                    | Public Debt, Public Investment and Economic Growth in Mexico                            | Positive associated |
| 2013 | Calderon and Fuentes      | Government Debt and Economic Growth.                                                    | Negative associated |
| 2013 | Panizza and Presbitero    | Public debt and Economic Growth in Advanced Economics.                                  | Negative associated |
| 2013 | Greiner                   | Sustainable Public Debt and Economic Growth under Wage Rigidity.                        | Negative associated |
| 2011 | Cecchetti et al.          | The Real Effects of Debt.                                                               | Negative associated |
| 2010 | Kumar and Woo             | Public Debt and Growth.                                                                 | Negative associated |
| 2007 | Kolluri and Wahab         | Asymmetries in the conditional relation of government expenditures and economic growth. | Negative associated |

Source: Various Sources.

There were some studies in the past that had found that the utilization of public debt for active productive economic activities will benefit the developing countries particularly. For instance, Owusu-Nantwi and Erickson (2016) had studied the relationship between public debt and economic growth in Ghana by using Johansen cointegration to examine the long term effects of public debt for duration of 42 years with data from 1970 to 2012. The results of their study showed that there were positive and significant impact on long run relationship between public debt and real GDP growth rate in Ghana. This reflects the use of public debt has contributed to economic growth in Ghana.

In addition, other researchers also have studied the relationship between public debt and economic growth such as Juarez and Almad (2016), Kaur and Kaur (2015), Jernej, Aleksander and Miroslav (2014), and Matiti (2013). Their studies also support the use of public debt which showed a positive relationship in promoting economic growth. In other words, the uses of public debt for productive economic activities are capable of self-sufficiency that could contribute meaningfully to the economic growth. Many economic crises had hit many countries globally. Thus, economists are keen to find the optimal debt threshold to be applied by countries, particularly advanced economies.

Many researchers had tried to tackle economic issues relating to the accumulation of public debt and its impact on the economic situation. The results were highly influenced by Reinhart and Rogoff (2010a). They pointed out that beyond a certain point of turning for debt, or debt threshold, the higher public debt will reduce potential growth to the extent that is negative. This means that public debt at low levels increases economic growth. However, when the debt reaches a certain level, an additional increase in the use of debt will give negative impact on economic growth.

In discussing the effectiveness in using public debt to spur economic growth, it is necessary to identify the level of debt that has practically no negative impact on growth, in

which it is related to the debt turning point. The results were highly influential and fantastic with regard to this issue that has been raised by Reinhart and Rogoff in 2010. As shown in Table 2.3, the findings among the researchers were in attempt to dispute the debt-growth ratio in an optimal threshold.

**Table 2.3:** The Debt Threshold and Economic Growth

| Year | Author(s)           | Research Title                                                          | Debt Threshold                                                                 |
|------|---------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| 2010 | Reinhart and Rogoff | Growth in a Time of Debt.                                               | 90% onwards                                                                    |
| 2011 | Cecchetti et al.    | The Real Effects of Debt.                                               | 84% is the best cutoff point                                                   |
| 2013 | Baum et al.         | Debt and Growth: New Evidence for the Euro Area.                        | 95% onwards                                                                    |
| 2014 | Mencinger et al.    | The Impact of Growing Public Debt on Economic Growth in European Union. | Between 53%-94%; 53% for developing countries and 94% for developed countries. |
| 2015 | Maghyereh et al.    | External Debt and Economic Growth in Jordan: The Threshold Effect.      | 53% of GDP                                                                     |

Source: Various Sources.

Subsequently, Reinhart and Rogoff (2010b) by analyzing data on forty-four countries around the world spanning two hundred years for identifying the relationship between public debt and real GDP. They found that the relationship is weak for debt when debts to GDP ratios are below a threshold of 90 percent. When the debts to GDP ratios reach after 90 percent threshold onwards, the average growth rates fall considerably more.

The economic reports on global product reveals that many advanced countries face problems of high public debts and debt burdened which are linked to the inverse effect on economic growth in unsustainable levels. In their studies, the economists found that the

advanced economies will cope with worst effects after debt reaches 90 percent of GDP. Reinhart et al. (2012) have pointed out that once these countries have reached higher debt levels above 90 percent, they tended to suffer lower future economic growth and have even worst effects on the economic stability of the countries. The same views also are from Cecchetti et al. (2011) about debt sustainability, in which they stated that in order to avoid debt burden in the economy, 84 percent was found to be the best cutoff point for debt-to-GDP ratio.

Apart from the study of debt to economic growth in the long run, it is necessary to review the impact of debt on economic growth in the short term. In this regard, Mencinger et al. (2014) have used a dataset of 25 sovereign countries as empirical evidence for statistically significant non-linear and concave impact analysis of public debt on economic growth. In this study, the authors found that this empirical study supports the theoretical assumptions that at the low level of public debt, the impact is directly proportional to economic growth, but beyond a certain turning point inverse effects will be produced on economic growth. Furthermore, in their studies the debt threshold value were found to be between 53%-94% for EU countries generally. Such threshold values are reminders to EU countries to ensure that the debt-to-GDP ratio is not exceeding 53% (Maghyereh et al., 2015) for developing countries and 94% for developed countries. However, Ribeiro et al. (2012) had the opinion that public debts have diverse effects on GDP varying from country-to-country due to a number of different factors. In their findings on selected European countries, surprisingly they found that the level of government debt has no effects on GDP. On the contrary, private borrowing showed positive effects on GDP in all the selected European countries. In consideration for high debt to GDP ratios, Baum et al. (2013) suggested that beyond 95 percent on optimal debt threshold its due of additional debt stock has a negative impact on economic activities. Furthermore, authors stated the

interest rate in the long term is identified and is subjected to pressure stresses when the ratios are exceeding after 70 percent.

In order to intervene in the public debt issues, many governments attempt to implement different measures on expenditures financing on long term debt. However this type of expenditures should be focusing totally on public finance investment. Checherita-Westpal et al. (2014) suggested that the optimal limit of debt levels around 50% of debt threshold as safety within the Stability and Growth Pact's debt ceiling of 60% of GDP. These targeted debt limit are also as an important benchmark to determine the optimal debt ratio for any economy in practices. There are a number of theoretical arguments that led to the conclusion that higher public debt ratios or above the debt threshold might depress economic growth. Most economists have accepted that debt expansion through various channels would have effects on the short run but not in the long run. However, Nersisyan and Wray (2010) and Herndon et al., (2013) asserted that it is not necessarily that once the threshold was exceeded, it will be lead to lower economic growth. This is based on their review that most of the advanced countries are highly endogenous but these side effects are merely balance by the non-government sectors. They argued that the effect of this miracle that stimulated economic growth is actually caused by the private sector's willingness to save and net imports.

Elmendorf and Mankiw (1998) have explained the view of conventional theory of debt effect on economic growth accordingly. The authors also agreed the main idea on the positive impact of debt for economic growth (aggregate demand) in the short run, but crowding out<sup>8</sup> effect on investment will happen in the long run. In contrast, the theory of

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<sup>8</sup> Diamond (1965) defined crowding-out as government debt consumption displacement the private investment. Meanwhile, Carlson and Spencer (1975) defined crowding-out as an increase in government demand (public debt), which fails to generate total economic activity, whereby, this government action incurred "crowded-out" effect in the private investment.

Ricardian Equivalence sticks to the facts of neutrality of debt to economic growth in the long run.

The decline in economic growth can be attributed to investors' confidence in private sector investment where it was shown that public debt burden will rise to the risk of investment. In relationship to this problem, Jayaraman and Choong (2006) conducted a study in Fiji to examine the relationship between debt and growth for a period of 34 years (1970-2003), and the results showed that debt would influence economic growth, both in the long and short runs.

Prior studies have shown that an increase in the stock of public debt should give the impression of a conflict with national economic growth rate. However, some case studies have provided the results which showed that an increase in public debt does not necessarily give the opposite effect, but it would strongly affect the function between real interest rates and the rate of public debt stock. Lin (2000) pointed that if the growth rate of public debt is exceeding the real interest rate, then it is a potential negative impact on the rate of economic growth, and vice versa.

Debt and its effects on economic growth can be seen from various points of view. For example, in terms of population growth, Al-Zeaud (2014) investigated the effect of public debts to economic growth by using per capital income approach in Jordan. In this study, augments growth and debt specifications are based on conditional convergence growth by adding several variables. Among the variables is population growth. The study found that to sustain in economic growth, positive effect of public debt should be maintained and at the same time the negative effects of population growth should be reduced.

However, there is a different effect of public debt on economic growth in Swaziland. For instance, Ntshakala (2015) focused to the data spanning for Swaziland

from 1988 to 2013 as guided by neoclassic economic growth theory. With regard to the external debt, the authors found that there was no significant relationship between external debt and economic growth, while; the concomitant effect of domestic debt was surprisingly found to have a significant positive relationship with economic growth. Based on this finding, the author suggested that the government could stimulate sustainable public debt loads to utilize the borrowing in financing their productive economic activities.

In understanding the effectiveness of public debt to national growth, Kaur and Kaur (2015) makes empirical study on the effect of public debt on economic growth in India, where it covers a period of 32 years (i.e., from 1981 to 2012). The results from the study show statistically significant positive effect between public debt and economic growth in India. There has been contrasting findings compared to other economists in the relationship between public debt and economic growth. Consequently, they argued that the resources from the debt raised should be channeled into productive public investments.

Some researchers consider the selection of public debt, whether getting resources by way of domestic debt or external debt based on costs and benefits analysis. Another study by Bcaugrand et al. (2002) investigated the choice of budget deficit financing in between foreign debt and domestic debt in Central and West African countries. The authors found that external debt as a superior choice for financing the budget deficit would even face probable external debt of devaluation. As the results of this study, they stressed on the importance of debt sustainability in the long term which includes short term borrowings at the beginning that need to form a solid track record in manipulate loans. This is to ensure that the loans borrowed can meet their debt-service obligations.

The economic policy makers need to make informed decisions when there is either external debt or domestic effect which slows down the economic growth. This would

involve the use of a public debt that is more advantageous to finance deficit spending for the better economic growth in the long term.

From the data obtained for a period of years from 1980 to 2010 in Pakistan, Atique and Malik (2012) had reviewed the impact of domestic debt and external debt in this country by using ordinary least squares (OLS) approach. The results showed that both external debt and domestic debt are significant negatively on economic growth. Whereby, the effects on economic growth slowing down are more sharply attributed by external debt. The authors states that the inverse effects are more borne by external debt due to the weak currency exchange and debt servicing in terms of foreign currency. In awareness to the cause of this problem, the authors also urged the government to carry out public debt management so that the debts utilized are for effective added value to any economy.

Regarding to public debt sustainability in a certain country, the high debt to GDP is of serious concerns in analysis. These include serious address in the ability to reform economic activities and economic channels, leadership, transparency of policies, anti-corruption and commitments of the authorities for the program and restoration of debt agreement so that these economic reforms would bring the debt levels back to sustainable levels in gross financial needs. In order to control public debt, it is easier to implement fiscal policy rather than monetary policy, or through other channels. With this view, Ewijk et al. (2013) agreed that uncertainties with underlying economic assess the evolution of public debt. The degree of suitable financial level will reflect the 'early warning signal' for utilization of debt not up to critical level, i.e. the role of debt threshold for financial stability benchmark. Hence, this should be the concerted efforts for a government adheres to the degree of suitable financial level to prevent indebtedness from occurring again in the future economy.

A country needs to take a gradual approach to domestic debt financing by issuance short-term bills and to ensure that the loans consistently meet its debt servicing obligations with a prudent level of debt risk. Bcaugrand et al. (2002) stressed that concerns should be on overall long term debt sustainability by ensuring the borrowing requirements are met and to be on alert of the medium to long-term debt risk premium to safeguard on its long-term solvency. According to Panizza (2008), the government could switch towards more in domestic borrowing if possible so that this domestic debt can play an important role in reducing the risks of debt overhang.

#### **2.4.5 Debt Neutrality in Economic Growth**

The use of debt to generate economic growth is posing risk indeed if the debt is not implemented wisely. In fact, there are some parties who have questioned the role of debt in incapacity to help in boosting economic growth; they deny the effectiveness of debt in economic growth. Such issues are propagated by the Ricardian equivalence neutrality. There are some results of research that support debt neutrality theory. However, there are also researchers who doubt this issue in relation to the use of debt on economic growth. Buiter (1988) explained that the debt neutrality is linked to the real economy equilibrium whereby the circumstance expenditures on current life style over time are not affected by or are independent from changes on lump-sum taxes in the future. The author associated the use of the public debt as a substitute for lump-sum taxes today and would not have an impact on current and future behavior in private expenditure and capital formation. Chong et al. (2010) had argued that circumstance of no debt neutrality could happen if the substitutions occur between debts to the future taxation of the people's income for the purpose of current income taxation. This would imply redistributions by heterogeneous consumers in rearranging lifetime spending which will increase aggregate expenses

eventually. Subsequently, the effects of heterogeneous from consumer's expenses perhaps are unable to accommodate the private investment, which would raise the deficit and incurred expenditures that are likely to have impact on crowding out effects of national debt on economic growth.

#### **2.4.6 Debt Overhang**

Krguman (1988) states the debt overhang as a condition in which the expected repayment on abroad debt falls short of the contractual obligations value of the debt. In other words, debt overhang as one of the most important side effects of external debt. Many scholars have paid close attention reviews debt overhang empirical studies of differ patterned analysis to identify the debt crowding-out effects on macroeconomic through fiscal activities such as investment, in which the dataset obtained regardless to each country's differentiation or unique characteristics by countries respectively. However, such studies are important as measures of the conditions for debt relief efforts. Some of the studies include Degefe (1992), Mbire and Atingi (1997), Mbanga and Sikid (2001), and Osei (1995). The authors found that there are existing public debt crowding-out effects on private investment.

In short, debt accumulation deters and spillover economic growth. Sometimes people would be associated with the debt overhang and neglected investment for growth and investment in the field other than economic. According to Were (2001) debt overhang needs to be viewed from a wider perspective. Apart from debt overhang which is associated with investment in physical capital, it also includes benefit tradeoffs that will be generate output in the future, such as investment in human capital and technology acquisition in multiplying effects of economic growth in the future. The use of the debt

should be managed properly so that it can have an impact to spur economic growth. In contrary, it could potentially lead to the problem of debt overhang in a country.

On the other hand, Furth (2013) suggested that as-far-as possible a country should avoid the use of high debt level because the effect can seriously slowdown in economic growth. Moreover, the author was in the opinion that the increase in public debt will bring a drag and will pose permanent effect on the economic in the future. Therefore, policy makers need to examine the short term policies particularly relating to adopt national debt to cover the deficit expenditures. This is because debt is said to have a negative impact on economic growth as an ongoing basis.

Thus, Pescatori et al. (2013) noticed that there is no evidence of any particular debt threshold above which medium term growth prospects are dramatically compromised. In additional, they emphasized that the debt trajectory is an important signal to reflect the debt level in predicting future growth prospects.

Furthermore, the authors identified that there are countries with higher levels of debt but have apparently declined and the economic growths are on a par with countries of lower debt levels. This is because it was found in their studies that higher debt is related to a shift of production at the highest level.

#### **2.4.7 Growth–Debt Nexus**

Neck et al. (2015) established that to spur growth in public debt, it may be related to the ideology of politician in achieving one's own self-fish purpose typically in trying to fulfill obligations to its own party supporters. In short, it is a necessary condition, which is very important in terms of the economic growth in any country. For instance, economic growth is also reflected in a country's overall development. Moreover, economic growth is the development potential productivity in the long term. Economic growth is important

because it helps the government to forecast future expenditure levels of the population in order to enhance the standard of living and making necessary adjustment in government's policy. Eventually resources are used efficiently and adequately to accommodate a growing population, especially in the Asian countries.

There are some views about the possible positive economic growth related to public debt while there are also others having opinions that the public debt would be harmful to the economic growth in the long run particularly with high levels of debt. Whereby, high levels of debt refer to the higher interest rates on loans which will increase the costs of borrowing particularly for new private investments. This impact may trigger on a crowding-out effects in restricting economic growth. This would happen if the government sector is using the benefit from low costs domestic loans and use up private domestic saving as compared to the external loans. Hence, the higher interest rate would reduce private sector investment in accumulation and eventually will undermine economic growth. Similarly, the crowding-out effect is related to public investment at which the economy in high debt-GDP ratio requires a huge tax revenue to cover interest payments on public debt with the remaining balance for fewer capital investment which will limit economic growth. The interest rate burden of domestic debt may absorb certain domestic capital that will enhance in reducing economic growth ultimately. Subsequently, many investment projects especially long term projects involved would be abandoned. Hence, the impact of less efficiency in investment will slow down output in productivity. Moreover, the higher interest rate might have negative impact on the trade balance. The impact of high interest rates will attract foreign investment in the purchase of assets that would result in increases demand on local currency. Consequently, this will increase the value of the exchange rate leading to a state of more imports than exports which would

ultimately lead to deficit in trade balance. Accordingly, the growth of public debt risk could be attributed by the outstanding accumulated debt.

Most of the studies in the past or recent researches assumed that there are homogeneous effects on debt against economic growth. However, in the study by Ahlborn and Scheickert (2016), it is assumed that cross-country heterogeneity effects occurred in this matter. They categorized the country into clusters regarding to their economic system, namely Liberal, Continental and Nordic countries. As the authors' finding, Liberal and Continental countries tend to bring a neutral and even positive effects generated from utilized public debt in spillover economic growth purposely in long run. Moreover, no debt threshold effects were found in Liberal countries, but, Nordic countries exert negative effects with debt turning point around 60 % of GDP. They concluded that the effects of high debt levels differ from country-to-country depending on the system implemented in the country.

In order to study the relationship between debt-to-GDP ratios to monetary, finance, institutional and macroeconomic variables, Afonso and Alves (2014) had used a dataset for fourteen selected European countries. Their study has shown that 1% increment of public debt will lead to -0.01% on economic growth. Meanwhile, as stated by the authors, debt service has 10 times harmful effects on growth and in average of 75% debt thresholds were applicable in these selected European countries. As an assumption, usually, they concluded that debt will affect economic growth negatively for any duration.

Most developing countries are striving to achieve developed nation status by using debt in intensive ways in order to stimulate the national economy. The intensified activities involve macroeconomic condition in the state expenditure that has overtaken the ability of its revenues. As mentioned by Ball and Mankiw (1995), a country that faces serious negative levels in saving might run into budget deficit if the government fiscal expenses

are overtaken by its revenues as the last better choice. In this situation the state had to find a solution to deal with pomegranate alternative source of budget deficits. Usually, the budget deficit in the spending of the government expenditure, are questionable whether it can affect at least the recovery of economic growth. According to Keynesians economies, the use of debt in terms of budget deficit is effective in generating economic growth in the long term. However, another impression behind in the neo-classical economies and Ricardian equivalence economies, i. e. Keynesians economies stated that the utilization of debt generated by the budget deficit will be negatively associated with economic growth. Meanwhile, utilizing of budget deficit is only a futile effort as argued by debt neutrality hypothesis. Many studies have been made on the budget deficit to economic growth, especially studies of a certain country individually. For example, Hassan and Akhter (2015) studied the relationship between budget deficits and its impact on economic growth of Bangladesh with time series data of Bangladesh for a period from 1976 to 2012. In their studies, the authors found that an empirical result has shown an adverse relationship of the budget deficit on economic growth of Bangladesh. The authors in opinion that sometimes the government has made efforts in preparing huge amount of deficit to finance the existing budget for fiscal expenditures. However, the projects should be well managed by the government in order to allocate resources from budget deficit for the purpose of expenditures and improve productivity besides paying off for the loan borrowed.

As in the early years of 2000s until recent years, deficit spending has been an issue of concern amongst economists and policymakers. The issue of concern is the question on how to tackle the impact of fiscal deficit. Thus, again, they are debating on how debts have benefited economic growth in terms of jobs, or, vice versa, creating debt burden in the economy. Deficit spending is the yearly accrual of expenses, or the amount in which expenditures exceed the revenues received on a yearly basis. When the government

expenditure spending exceeded its country's revenue, the government may need to take effort to cover the shortage in capital resources by applying debt borrowing, particularly from external fund borrowed. Mankiw (2013) stated that a country's fiscal deficit occurred when its taxes collected are unable to cover its government expenditures. Consequently, the government expenditures have to be financed by borrowing from the private sectors and from abroad additionally.

Often, the government will not rise up taxes, but consider deficit spending as the instant solution which does not directly burden the people in the country. However, when the country's economy deteriorates because of the impact of fiscal, such as improper management of capital, the people in the country will basically put the blame to policymakers. This is because they are responsible for the decision-making in increasing the deficit. In reality, it may be supported by the economist findings that even though deficit spending has the effect of increasing current expenditures, these effects will counterbalanced by crowding out in investment. The reason is related to a fall in saving which would lead to an increase in the interest rates, and assuming the other economic factors are constant. This will naturally reduce investment in business, eventually bringing to economic crisis, or downturn.

In implementing the budget deficit, the government might face objections from various quarters. This is because the budget deficit is associated with actions in line with high taxation which can reduce economic productivity, particularly in the private investment. According to Driessen (2016), the practices of budget deficit will establish a system where deficit and debt are interdependent, i.e. a situation in which the execution of the budget deficit will increase debt levels. This is because the budget deficit is initially the principal held by the public and is the contributor to debt. On the other hand, perhaps some may support the execution of budget deficit with the assumption that it assists business

investment cycle and eventually stimulate economic productivity. At present, Vietnam is among the highest budget deficit country but has a high economic growth in Southeast Asia. Their miracle economic growth with high budget deficit has inspired researchers to find the real effect of the budget deficit on economic growth in this country. For instance, Van and Sudhipongpracha (2015) had obtained a dataset of Vietnam from 1989 to 2011 related to government's fiscal policy including *Doi Moi*<sup>9</sup> economic reform policy in order to review the relationship between the budget deficit and economic growth. The result of this study indicates that budget deficits had no significant effects on the country's economic growth. In contrast, economic growth in Vietnam is driven more by a factor of an increasing in foreign direct investment (FDI) on economic productivity sector over the same period. Therefore, the authors had stressed that the government of Vietnam should ensure an efficient use of budget deficit as well as the inflow of foreign capital enterprises to sustain economic growth. Meanwhile, Doa and Bui (2016) also obtained data of Vietnam from 2003 to 2015 to investigate the relationship between budget deficit and economic growth. They also found that budget deficit does not spur economic growth in Vietnam over the period which is relevant to Ricardian paradigm. Besides that, Bhoir and Dayr (2015) also reviewed the impact of fiscal deficits on economic growth from 1991 to 2014 in India. The study found that there is no significant relationship between fiscal deficit and economic growth in India. The authors suggested that the government should be more concerned and likewise should increase effort in human capital development in order to upgrade the per capita income of people. Likewise other works of scholars such as Kormendi and Meguire (1985), Ghali (1997), Bittante (2013), and Velnampy and

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<sup>9</sup> *Doi Moi* means Vietnam's economic liberalization movement, as Vietnam's central government economic reformation strategy to run country's economic renovation based on "socialist-oriented market economy" (Gabriele, 2006). The *Doi Moi* establishing adopted suit policies and programs to promote economic development which has ability integration with the international economy, (Dinh, 2000).

Achchuthan (2013) had found the same conclusion that budget deficit and economic growth are neutral in long run.

Recently, based on the findings from the studies that had been done, the issue which is related to the impact of the budget deficit on economic growth does not reach a conclusion, particularly in the developing countries. In order to focus on this issue, Rahman (2012) obtained data from 2000 to 2011 in Malaysia to examine the relationship between budget deficit on economic growth by using variables such as the government's debt, productive expenditures and non-productive expenditures on real GDP. The study found that the budget deficit is a neutral relationship to economic growth in the long run, which is in line with the Ricardian equivalence economies. According to the author, even though the budget deficit consumption pattern is over a local debt, the Malaysian government should control the external loan debt in order to avoid uncertainties in external factors generated by issues of global economy.

In Sri Lanka, Aslam (2016) also conducted a research to examine the dynamic relationship between budget deficits in generating economic growth. Based on annual time series data from Sri Lanka for 1959 to 2013, the author used independent variables such as budget deficit, exports, exchange rate and inflation to test their gross domestic product as the dependent variable on the 1<sup>st</sup> level difference for the short and long run dynamic relationship. As a result, the budget deficit has triggered long run relationship in economic growth. Additionally, the budget deficit has positively spurred economic growth in Sri Lanka. Thus, the author further urged policy makers to consider the use of budget deficit accordingly such that the budget deficit can accelerate and reach the potential towards sustainable economic growth in Sri Lanka. In the same perspective, the works of Onwio and Ekong (2016) presence of protracted positive relationship between budget deficits and economic growth by using the time series data for 30 years using stretched OLS method.

The authors argued that prudent fiscal management measures could lead to the impression of crowd-in private investment and eventually consolidate economic growth in Sierra Leone. In the past, researchers (Adam & Bevan, 2005; Aghion & Marinescu, 2007; Brender & Drazen, 2008; Kneller et al., 1999) also found the similar outcomes from their empirical studies related to budget deficit and economic growth, which is supporting the neo-classical economic theory.

Supporting other scholars Ezeabasili et al., (2012) with data from Nigeria during 1970 to 2006 to determine whether fiscal deficit stimulated economic growth or vice versa. The result obtained has shown that fiscal deficit has a strong negative relationship with economic growth at which the proportion of each per cent increase in fiscal deficit will result in a decrease in economic growth by 0.023 per cent. In contrast, based on the views of Eminer (2015), an increase in spending, either productive or unproductive spending, will both lead to budget deficit. However, the effect of such a budget deficit would have different effects on economic growth. The author applied data over 28 years of North Cyprus with autoregressive distributed lags (ARDL) approach to detect causal relationship of the budget deficit and economic growth. As a result, it showed long run relationships between these two variables. However, the author denied that today's budget deficits have an impact on the future economic growth. Furthermore, the author concluded that the findings are consistent to most of the Keynesian approach literature such as Fischer (1991); Woo (1999); Mohanty (2013) and Hassan and Akhter (2014). These outcomes from various findings by some researchers influence the mind set of most people who are interested in economic issues, and in general, they might make the assumption that the impact of utilization of national debt or budget deficit is neutral on economic growth in the long run.

The demand of external debt borrowing via foreign direct investment (FDI) differs from countries. For developed countries, they may need FDI focusing on merges and acquisitions between cross-border global companies. Meanwhile, developing and emerging market countries, FDI are crucial and these countries compete in promoting FDI. This is because investors are needed from abroad to help in funding their international sales. Nowadays, developing countries in Asia are attractive investment choices for foreign investors as compared to other region such as the European Union, or the United States. Basically, FDI assists in global economy, as well as foreign investors and country recipients. These foreign investors are beneficial in terms of the best growth prospects to businesses in the recipient country. This is because foreign investors are seeking for the best return with low risk businesses. Hussain and Haque (2016) had conducted empirical research related to debt borrowing via FDI on economic growth in Pakistan for a period 1973 to 2014. The researchers found that debt borrowing through FDI has a positive significant impact on growth in Pakistan. The authors urged the government to reduce constraints for capital flows in order to boost and promote economic growth.

FDI would bring benefits and positive effects on economic growth much depends on maturity of the investment. Usually, the long term FDI is more beneficial in stimulating economic activities as compared to short term FDI. Generally, short term FDI investors withdraw their investments more frequently for instant profits earning. This situation will lead to sudden shortage of capital in the businesses. That is the reason in which a country usually has deficit net FDI. In short, FDI might bring inverse impacts on economic growth in the long run.

Often, investors from abroad would refer to the healthiness of a country's account balance before furthering their asset investment in the country. Current account balance is an important indicator which indicates that the ability of a country's saving after

subtracting from net trade, net abroad income and net current transfers. Current account balance depends much on transaction of import and export of goods and services. For instance, when a country exports higher value in goods and services than imports, this indicates positive current account balance. Oppositely, deficit occurs when imports are more than exports. It is also reflected in a nation's low level of savings. A current account is normal when the country has more investment chances and can afford in domestic savings from abroad investors. Deficit in account balance is actually a potential in fostering output growth faster and bring economic development (IMF, 2006). However, it might be unstable if the deficit is covered through debt borrowing. The countries which have large current account deficits and use capital flows to finance the deficits are related to deficit risk. For instance, during the Asian Crisis of 1997, there was a large portion of hot money outflows, or capital flight at which the investors lost confidence, and eventually led to an immediate devaluation particularly in East Asia countries. Nonetheless, current account balances are manageable and needs to be financed by sustainable capital flows to prevent being trapped in account deficit. A country may provide attractive portfolios to encourage foreign investors in FDI which will enhance domestic productivity and have the capability to be competitive in exports for the long run.

When there is current account surplus in a country, a high rate of domestic saving would allow a country to accumulate huge investment and foreign exchange reserves also increases accordingly. Consequently, the government debt will also decrease which can safeguard a country's economic security from critical risk. Accordingly, Adorn (2008) examined the political and economic implication of China's rising share of U.S public debt at which this foreign-held debt is a real threat to U.S prosperity or excuse for economic nationalism. The author concluded that U.S-China global prosperity will continue if China

follows a more market-liberal path and with U.S as well as refraining from protectionism as it is fiscally prudent.

International reserve play an important role between central banks in global passing reserve funds through gold or in common currency. A government should always ensure the country's reserves is well managed to meet its obligations in external businesses payment. Reserves are also used as cover back liabilities of local currency that was issued. These motions covered financing of imports and absorbing critical capital flight potentially or cover-up excessive volatility in foreign exchange in order to stabilize local currency. Central bank must compromise the reserves safety by diversity its portfolios. Besides that, central bank must ensure these reserves are well managed to sustain at least six months of import goods and services. These reserves must be adequate to cover for debt payments and account balance deficit. Country with trade surplus has the ability to deposit high reserves. The two Asian countries with strong trade surplus are China (USD 3,010.0 billion) and Japan (USD 1,233.0 billions) and are leading with high amount of international reserves as of December 2016 (CIA World Fact Book, 2017).

The role of international reserves on economic growth of any country depends much on economic and financial stability with multilateral concerns. For example, as in the recent Global Financial Crisis 2008, it has proven that vulnerabilities of crisis can spread to interconnected economies. Therefore, the international reserves may be used as a tool for promoting economic stability, such as preventing vulnerability to financial critical matter and stimulate economic development in economy. In order to sustain growth, some countries may face critical shortage in international reserves in funding policy programs, and might seek help from IMF to assist in funding in terms of financial support to solve the countries' macroeconomic matters.

An ageing population has also contributed to a major part in a country's expenditure. For instance, median ageing population group growth increases rapidly around the world. In 2014, Japan (26.3%) and Italy (22.4%) as among the other countries have higher percentage of population ageing age being 65 years old, by 2050 have forecasted about more than 2 billion people around the world being 60 years old (World Health Organization, 2014). In the nearest coming 2030, it is estimated that 60.2 per cent of Asia countries would in ageing population status and Malaysia is one of the East Asia countries high percentage of ageing population. The high percentage of population ageing might exert considerable economic burden. This is because an ageing population is related to an unproductive group in economic growth due to lesser contribution in gross national income. Furthermore, the government ought to spend high amount in pension and health-care costs for the ageing population. Therefore, countries that are having ageing population need to take necessary action to strengthen economic growth by preparing and starting to use high technology equipment to replace shortage of workers in assisting economic development in the country for a sustainable future.

In reality, public debt or fiscal deficit could not be reduced easily because higher public debt or fiscal deficit which leads to an increase in the primary surplus. However, it is simpler to reduce unproductive public expenditure on consumption. It concurred with Futagami et al. (1993); Gong et al. (2001) and Heinemann (2002) which stated that public debt crowds out public investment in consistency with debt overhang theory. According to Boccia (2013), many countries currently face high public-GDP ratio and reach as high as the level of 90%. This phenomenon is encountered particularly by advanced economies such as the United States, Japan and etc., where these countries are at risk of significant and prolonged reductions in economic growth. In this unfavorable situation, high public

debt could threaten in increase of interest rates which crowd out private investment, and thus, raise inflation.

Basically, inflation would influence external debt indirectly on abroad funds borrowing. Inflation causes devaluation of a country's currency in an economy. During inflation, people are facing with general increase in prices of goods and services and fall in the purchasing value of money such that they will find other alternatives in holding their assets. For instance, they may place their savings in the bank to earn higher interest rates. However, if there is less volatile of money in spending by consumers, this will lead to dampening of economic activities. Therefore, inflation becomes hot economic debate topics because it is related to low levels of consumption and is crucial due to the dampening of economic activities which affect economic growth. In repeated processes during inflation, production costs of goods and services become costly due to devaluation of a country's currency. Hence, this situation leads to the general increase in level of prices. These negative impacts of inflation are in consistency with Ramlan and Suhaimi (2017) findings in Malaysia that inflation has negative significant impact on economic growth.

In contrast, inflation will be beneficial to those debtors from abroad. The debtors from abroad pay less for their liabilities which are less valuable than the loan they borrowed, and this might help them to reduce its massive debt more easily. In addition, inflation might be beneficial to those suppliers. For instance, during inflation consumers will be forecasting on the possibility of potential price hike such that they will make decisions to purchase instantly rather than pay higher prices later. These instant aggregate demands might boost up production in the factories to meet the greater demands. Additionally, this will reduce unemployment rate and consequently assist in boosting economic growth.

If the fiscal deficit spending is not properly addressed and the deficit amount repeating each year, this eventually will lead to inflation. The government would be saddled with debt and interest payments that could not be fully accommodated by the current tax collected. Angelica and Monica (2013) had clarified certain issues which are related to the primary fiscal deficit, public debt, the reports between debt and income, and the questions about what would happen if the deficit will be so large that it seems public debt will increase very significantly compared with revenue collection of a country. According to their studies, these situations will trigger the collection of revenue in the country in a critical condition in financing the public debt such that this require immediate action in budget balancing. Therefore, they concluded that the government will be forced to decide to a monetary financing for any given deficit or may continue debt financing indefinitely depending on the relationship between the growth rate of output and the real interest rate. If the real interest rate exceeds the growth rate of output and the primary deficit is zero or positive, then it is difficult to maintain and continue the debt financing because it will become an increasingly high portions of GNP while interest payment grows continuously.

The real interest rate is nominal interest after considering inflation rates, which is the interest rate an investor, saver, or lender receives after allowing for inflation. Real interest rate will bring pros and cons in the economy. Savers will seek for higher real interest rate to earn more profits from their saving. In the contrary, this brings disadvantages for those borrowers because they have to pay higher interest with depreciating value of the loans. In reality, the real interest rates in developed countries are at low levels. Nonetheless, many countries face real interest rate deficit during inflation, particularly from countries in low-income groups to developing countries.

The real interest rates are indicator in the value of money. Consumers seek for higher real interest rate to save their money. On the other hand, businessmen desire and seek for low real interest rate to secure loans in expanding businesses. Normally, low real interest rates are correlated to weak economy in a country because consumers do not desire to save in banks with low real interest rate. Thus, this will lead to shortages of capital for businesses. Schnabl (2017) stated that a low real interest rate indicates that the economy system is operating in inefficiency with low productivity growth.

Consequently, Ramlan and Suhaimi (2017) conducted research by using Malaysia quarterly data from 2004 to 2013 related real interest rate on economic growth. The authors found that real interest rates are positively significant on economic growth in Malaysia. However, low real interest rates may lead consumers to withdraw saving and invest into equities with share prices rising and in return, the effect in terms of wealth will boost economic growth.

Subsequently, low real interest rate will spur consumers' desire to spend based on their perceived economic prospects. The negative real interest rate supports investments activities. Companies might take the advantages of the low interest rate to invest in new facilities, technology and R&D in order to increase productivity efficiently. Eventually, this will foster sustainable economic growth and better prospects in the future.

Similarly, Maiga (2017) obtained dataset from Nigeria which covered a period from 1990 to 2013, and as a result, the author concluded that the real interest rate had slightly boosted productivity and had an impact on growth in Nigeria.

## **2.5 Gap in the Literature**

Over the past decade until the present, the role of external debt in the economy is to generate growth and has gained serious attention by fiscal policymakers. The decision on

whether to take the external debt as a resource to cover the gap of spending deficits or vice versa greatly influence the dynamic economic growth of whether to spur economic growth or stifle economic growth in the future. In the past, many researchers had conducted studies which relate to public debt on economic growth and debt sustainability. The studies also include determining the debt threshold levels.

Thus, concerning all types of public debt, namely external debts are related to growth in which the outcomes of using the debt are reflected by the healthiness of the national economy. Countries that have taken debt as a source of capital to establish fiscal activities will have a unique experience that may generate whether positive, neutral or negative impacts. These unique experiences serve as the major key factors for those fiscal policymakers to capture the effectiveness of debt on growth, or on aspects concerning how to maximize utilization of debt beyond its turning point purposely for fiscal productive activities.

In short, past studies have contributed many research results relevant for fiscal policy makers to decide whether or not to use this measure of debt deficit spending. Thus, it is of serious concern by the government has decided to take up this measure of debt sustainability on growth.

However, in past scholars kept more focus in research specifically on the issue related to debt impact on growth in single country, and even though the past studies have been made for the region, namely in the European countries, OPEC countries, etc. However, it is absolutely limited, particularly in the Asian region.

Furthermore, most researchers would consider the debt issue solely in terms of either for public debt or external debt only, or, for domestic debt only that would affect economic growth. Similarly issues that are related to the debt sustainability on growth is a case study of a certain country only and studies for the Asian countries are still limited in

the past studies. The most influential researcher in this issue of utilize debt on economic growth, namely Reinhart and Rogoff (2010) had been shocked the world economically with their statement that the debt threshold is 90 per cent.

Thus, this study aims to find out the impact of total debt and the diversity of debt on economic growth for Asian countries. It aims to compare the effect and impacts of the different types of total debt, namely long term external debt and short term external debt on economic growth in Asian countries. Additionally, the studies of the effect of debt sustainability on growth in Asian countries will be more precise and uniform whereby the data obtained from the same period.

Furthermore, this study aims to review whether debt threshold of 90 per cent as benchmark that was suggested by Reinhart and Rogoff suitable accepted in globally or not, and to examine whether it can be used or applied in the Asian region or vice versa. Furthermore, hopefully the significant of the empirical results may use as general guideline for those fiscal policy makers in making exactly decision associated with issue of debt and growth, particularly in Asian countries.

In a nutshell, due of studies that based on region related issue external debt on economic growth still limited particularly in Asian countries becomes an interest for this study. Furthermore, studies that distinguish a long and short term external debt impact on economic growth for Asian countries is still limited.

The study of debt-reserve threshold as an indicator for determine debt sustainability Asian countries is relatively new and in the early stages. In addition, the issue raised whether the debt threshold of 90 per cent could be answered in this study for Asian countries while also identifying the debt threshold for this region.

## **2.6 A Remark**

The impact of external debt on economic growth can be viewed from three economic philosophies. Keynesian economies assumed that as long as the economies have not achieved full employment, then there will be spaces to expand in utilization of resources such as external debt. Keynesian economies claimed that the mentioned variables are positively associated. Moreover, as Ponzi Scheme Theory encourage utilization of external debt in overcoming the problem of lack of capital to cover the necessarily fiscal expenses.

However, the neo-classical economies viewed that the relationship between debt and economic growth should be inverse effects based on the fact that debt could lead to crowd-out, particularly in private investment as mentioned by Laffer curve theory that high levels of public debt may lead to low intention for investors in private investments and eventually slow down the economic growth.

The possible effects of the use of external debt might be to stimulate economic activities temporarily only, whereby when this phenomenon of utilization in debt is in the long run, the effect may not be inclined to positively or negatively associate. This is consistent with the Ricardian equivalence hypothesis which stated that the relationship of these variables is neutral.

Notwithstanding the use of the public debt, the key purpose is to use debts as sources to finance activities that are productive. Hence, it is important that the government should manage debt as well as possible and besides; policymakers should not misused external debts on the grounds for the benefit of a particular party. If the government does not play a legitimate role and to be transparency in this mater, this will lead to unsustainable public debt and this is in accordance to the theory of public debt overhang.

Hence, the governments' debt threshold can serve as a guide to prevent debt overhang from occurring. The debt threshold is an early signal such that utilization of

fiscal deficit or even debt should not exceed the limits; otherwise, it will slow down economic growth.

In short, this chapter provides a summary of overall of literature reviews impact of external debt against economic growth which contained from journal and theory that is adapted for this study. The Theory of Debt Overhang as basic in underlying theory and gap of the literature purposely satisfied for the research. Subsequently, the next chapter explains the description of variables, conceptual framework, hypotheses development, empirical framework, data collection and methods are used to conduct this research.

## **CHAPTER 3**

### **RESEARCH METHODS**

#### **3.1 Introduction**

This section would describe the definition of dependent and independent variables, discuss on how the series of data are collected, applied time series analysis in which consists of various methodologies concerning on time series data. In order to capture the research data, this study applies the secondary data obtained from World Bank data base, Global Financial Data, IMF economic reports, Asian Development Bank statistical data base and reports, articles, and other related statistical sources.

The study methods covered stationary tests, cointegration test, and error correction model analysis for econometric specification models. The time series analysis in this study investigated the relationship of external debt, long term external debt, short term external debt, debt sustainability, and debt threshold on economic growth. In the initial stage need to ensure that the time series data is stationary before estimating through any time series model in order to deal with the problem of properties in time series data is stationary spurious regression. This is due to the inherent time series data usually a seasonally unadjusted form. Furthermore, without a non-stationary data of variables, it will cause invalid outcomes of analysis and thus it must involve auto adjustment by data stationary test. Normally before proceed cointegration test for all data variables, at first need to examine the macroeconomic data series by unit root test. This unit root test purpose to determine whether the data series existence of unit root or not. The cointegration test carries for all variables to examine whether exists long run relationship between the data series. After a diagnostic data via the unit root test and co integration test, then it continues with error correction model (ECM) regression analysis to reveal the impact of external debt on economic growth. For compute the debt turning point, the time series data proceed through ECM regression analysis in order to determine coefficient of debt-growth and debt-growth in square values, by then these coefficient values applies in debt turning point formula to calculate actual levels of debt threshold for Asian countries.

### **3.2 Description of Variables**

In accordance with the scope of this study, the independent variables were tested and investigated in order to detect out if these independent variables have a specific effect on the dependent variable. In the same approach, the dependent variable will measure if absolutely reasonable of independent variables have an impact on the dependent variable.

Thus, the main dependent variable of the research is gross domestic product (GDP). Meanwhile, the independent variables are external debt, long term external debt, short term external debt, and other determinants of economic growth such as debt services, current account balance, country reserve, foreign direct investment, government expenses, inflation and real interest rate in order to determine significant effects between external debts on growth, and simultaneously construct the debt turning point in selected Asian countries.

There were five models to determine the external debt on economic growth. These five models are formed accordingly based on five hypotheses in order to investigate the relationship between external debts and its impacts on economic growth. Each model is functional by related variables equation for each hypothesis and that is based on in line with the economic theoretical theory is specified.

Therefore, the first general regression model of this study is related to external debt on economic growth as following:

$$GDP = f(\text{external debt, debt services, government expenditures, inflation and population}) \quad [3.1]$$

This model investigated the impact on utilization of total external debt stock on fiscal activities. If positive impact meant external debt has contributed to spur economic growth, otherwise negative impact meant external debt brought a decline effect on economic growth.

Explicitly the above equation can be stated thus,

$$GDP_t = \alpha + \sum_{j=1}^n \beta_j x_t + \varepsilon_t \quad [3.2]$$

Where:

GDP: Gross domestic product, is the real GDP per capita (2010 constant prices). It is the dependent variable.

$x_t$ : Consists of different explanatory variables that were used. The set of conditioning variables are external debt, external debt services, government expenditures, inflation, and population. These variables are known to be supported consistently associated with economic growth. (external debt [ED], external debt services [EDS], government expenditures [GE], inflation [INF] and population [POP]).

Meanwhile,

$\alpha$ : Coefficient of constant.

$\beta_j$ : Coefficient of independent variables. These coefficients of conditioning variables may be either positive or negative.

Finally,  $\varepsilon_t$  is represented the random error term.

Thus,

#### **Model 1:** Economic Growth and External Debt

Hypothesis  $H_1$ : External debt is negative impact on the economic growth of selected Asian countries.

The empirical equation as:

$$GDP = f(\beta_0 + \beta_1 ED + \beta_2 EDS + \beta_3 GE + \beta_4 INF + \beta_5 POP + \varepsilon) \quad [3.3]$$

Where;

GDP = Gross Domestic Product

ED = External Debt

EDS = Debt Services

GE = Government Expenditures

POP = Population

INF = Inflation

$\beta$  = coefficient

$\varepsilon$  = error term

Subsequently, to investigate the ultimate kind external debt on economic growth, thus, model long term external debt and short term external debt were impact on economic growth as the following:

GDP = f (long term external debt, current account balance, foreign direct investment, real interest rate and population)

[3.4] GDP = f (short term external debt, current account balance, foreign direct investment, real interest rate and population)  
[3.5]

Model 2 and 3 might reveal the difference of effects on utilizing abroad loans in term of duration in used for stimulus on economic growth which either brings positive effects or possess slow down on growth.

Explicitly the above model 2 equation can be stated thus,

$$GDP_t = \alpha_2 + \sum_{j=1}^n \beta_{2j} x_t + \varepsilon_t \quad [3.6]$$

Where:

GDP: Gross domestic product, is the real GDP per capita (2010 constant prices). It is the dependent variable.

$x_t$ : Consists of different explanatory variables that were used such as long term external debt, current account balance, foreign direct investment, real interest rate and population. These variables are known to be supported consistently relationship with economic growth. (long term external debt [LRED], current account balance [CAB], foreign direct investment [FDI], real interest rate [RIR] and population [POP]).

Meanwhile,

$\alpha_2$ : Coefficient of constant.

$\beta_{2j}$ : Coefficient of independent variables. These coefficients of conditioning variables may be either positive or negative.

$\varepsilon_t$  : Random error term.

Thus,

**Model 2:** Economic Growth and Long Term External Debt

Hypothesis  $H_2$ : Long term External debt is negative impact on economic growth of selected Asian countries.

The empirical equation as:

$$GDP = f(\beta_0 + \beta_1 LRED + \beta_2 CAB + \beta_3 FDI + \beta_4 RIR + \beta_5 POP + \mathcal{E}) \quad [3.7]$$

Where;

GDP = Gross Domestic Product

LRED = Long Run External Debt

CAB = Current Account Balances

FDI = Foreign Direct Investment

RIR = Real Interest Rate

POP = Population

$\beta$  = coefficient

$\mathcal{E}$  = error term

Subsequently, the study investigate short term external debt impact on economic growth by explicitly the model 3 equation that can be stated thus,

$$GDP_t = \alpha + \sum_{j=1}^n \beta_{3j} x_t + \varepsilon_t \quad [3.8]$$

Where:

GDP: Gross domestic product, is the real GDP per capita (2010 constant prices). It is the dependent variable.

$x_t$ : Consists of different explanatory variables such as short term external debt, current account balance, foreign direct investment, real interest rate and population. These variables are known to be supported consistently associated with economic growth. (short term external debt [SRED], current account balance [CAB], foreign direct investment [FDI], real interest rate [RIR] and population [POP]).

Meanwhile,

$\alpha_3$ : Coefficient of constant.

$\beta_{3j}$ : Coefficient of independent variables. These coefficients of conditioning variables may be either positive or negative.

$\varepsilon_t$  : Random error term.

Thus,

**Model 3:** Economic Growth and Short Term External Debt

Hypothesis  $H_3$ : Short term external debt is positive relationship on economic growth of selected Asian countries.

The empirical equation as:

$$GDP = f(\beta_0 + \beta_1 SRED + \beta_2 CAB + \beta_3 FDI + \beta_4 RIR + \beta_5 POP + \varepsilon) \quad [3.9]$$

Where;

GDP = Gross Domestic Product

SRED = Short Run External Debt

CAB = Current Account Balances

FDI = Foreign Direct Investment

RIR = Real Interest Rate

POP = Population

$\beta$  = coefficient

$\varepsilon$  = error term

In order to determine the debt sustainable status, a specific model is formed between external debts on country reserve to reflect the levels of sustainable in any economy. For this model, external debt (ED) as the dependent variable and independent variables such as, external debt on country reserve(ED-CR), external debt on country reserve in square value, debt services, government expenditures and population. Therefore, this model function as following:

$$GDP = f(\text{external debt, country reserve, debt services, government expenditures and population}) \quad [3.10]$$

Explicitly the above equation can be stated thus,

$$GDP_t = \alpha_4 + \sum_{j=1}^n \beta_{4j} x_t + \varepsilon_t \quad [3.11]$$

Where:

GDP: Gross domestic product, is the real growth rate (2010 constant prices). It is the dependent variable.

$x_i$ : Consists of different explanatory variables that were used such as external debt, country reserve, external debt services, government expenditures and population. These variables are known to be supported consistently associated with external debt. (external debt [ED], country reserve [CR], external debt services [EDS], government expenditures [GE] and population [POP]).

Meanwhile,

$\alpha_4$ : Coefficient of constant.

$\beta_{4j}$ : Coefficient of independent variables. These coefficients of conditioning variables may be either positive or negative; and

$\varepsilon_t$  : Represented the random error term.

Thus,

**Model 4:** Economic growth and External Debt-Reserve ratio in examine Debt Sustainability.

Hypothesis  $H_4$ : External debt is negative relationship on country reserves when the debt-reserve ratio above debt-reserve threshold of selected Asian countries.

The empirical equation as:

$$GDP = f(\beta_0 + \beta_1 ED + \beta_2 CR + \beta_3 EDS + \beta_4 GE + \beta_5 POP + \varepsilon) \quad [3.12]$$

Where;

GDP = Gross Domestic Product

ED = External Debt

CR = Country Reserve

EDS = Debt Services

GE = Government Expenditures

POP = Population

$\beta$  = coefficient

$\varepsilon$  = error term

Lastly, the fifth model was investigated on the debt turning point for each selected Asian countries. This model with GDP as dependent variable, and independent variables such as external debt to GDP ratio, external debt to GDP ratio in square value, government expenditures and population. This model compute the debt turning point is as follows:

$$\text{GDP} = f(\text{external debt, debt services, government expenditures, inflation and population}) \quad [3.13]$$

Explicitly the above equation can be stated thus,

$$GDP_t = \alpha_5 + \sum_{j=1}^n \beta_{5j} x_t + \varepsilon_t \quad [3.14]$$

Where:

GDP: Gross domestic product, is the real growth rate (2010 constant prices). It is the dependent variable.

$x_t$ : Consists of different explanatory variables that were used such as external debt, external debt services, government expenditures, inflation and population. These variables are known to be supported consistently relationship with economic growth. (external debt [ED], external debt services [EDS], government expenditures [GE] and population [POP]).

Meanwhile,

$\alpha_5$ : Coefficient of constant.

$\beta_{5j}$ : Coefficient of independent variables. These coefficients of conditioning variables may be either positive or negative; and

$\varepsilon_t$ : Represented the random error term.

Thus,

**Model 5:** Economic Growth and External Debt in compute Debt Threshold

Hypothesis  $H_5$ : External debt would have negative relationship on economic growth when the debt-to-growth ratio exceeded its debt threshold level of selected Asian countries.

The empirical equation as:

$$\text{GDP} = f(\beta_0 + \beta_1 \text{ED} + \beta_2 \text{EDS} + \beta_3 \text{GE} + \beta_4 \text{INF} + \beta_5 \text{POP} + \varepsilon) \quad [3.15]$$

Where;

GDP = Gross Domestic Product

ED = External Debt

EDS = External Debt Services

GE = Government Expenditures

POP = Population

$\beta$  = coefficient

$\varepsilon$  = error term

For these five models, each model was composed based on empirical equation with one dependent and five independent variables. Model 1 investigates overall effect of external debt on economic growth for answering the first objective of this study, that is, to determine the impact between external debt and economic growth of Asian countries. Model 2 and 3 examines the differences in the significant effects of long and short term external debt on economic growth for answering the second objective of this study, that is, to assess the impact between long and short term external debt on economic growth of Asian countries. Meanwhile, Model 4 is to identify the debt sustainable status in economy for answering the third objective of this study in attempts to calculate debt-reserve threshold for analyzing sustainability scenario for Asian countries. Lastly, Model 5 is to investigate the debt threshold status in economies for answering the fourth objective of this study in efforts to compute the debt turning points for Asian countries.

GDP represents gross domestic product in USD at constant 2010 price, and in volume units. The core independent variables such as external debt, long term external debt, and short term external debt other variables related to debt burden such as debt services, foreign direct investment (FDI) are measures in USD at current prices, and government expenditures was measures in USD at constant 2010 price.

For foreign direct investment covered the FDI inflows minus FDI outflows. Variables supported the debt sustainable such as current account balances and country reserves are also measured in USD at current prices.

Population represented is the total annual resident of a given country based on population register while, variables such as inflation and real interest rate influence the value of debts. The inflation is based on consumer price index at constant 2010, and real interest rate is the borrowing interest rate adjusted by the GDP deflator.

### **3.3 Conceptual Framework**

In this literature framework, it describes some possible mechanism to determine and to relate on the utilization of government expenditures and the eventual impacts of external debt consumption on economic growth in which depicted in Figure 3.1. Past of studies have been conducted to explore the relationship between debt and economic growth. Most of the past studies had identified that many debtor countries' economy performance were restricted by a huge debt accumulation. In other words, high level of public debts can be possible influence and have adverse effects which are transmitted on economic activities.

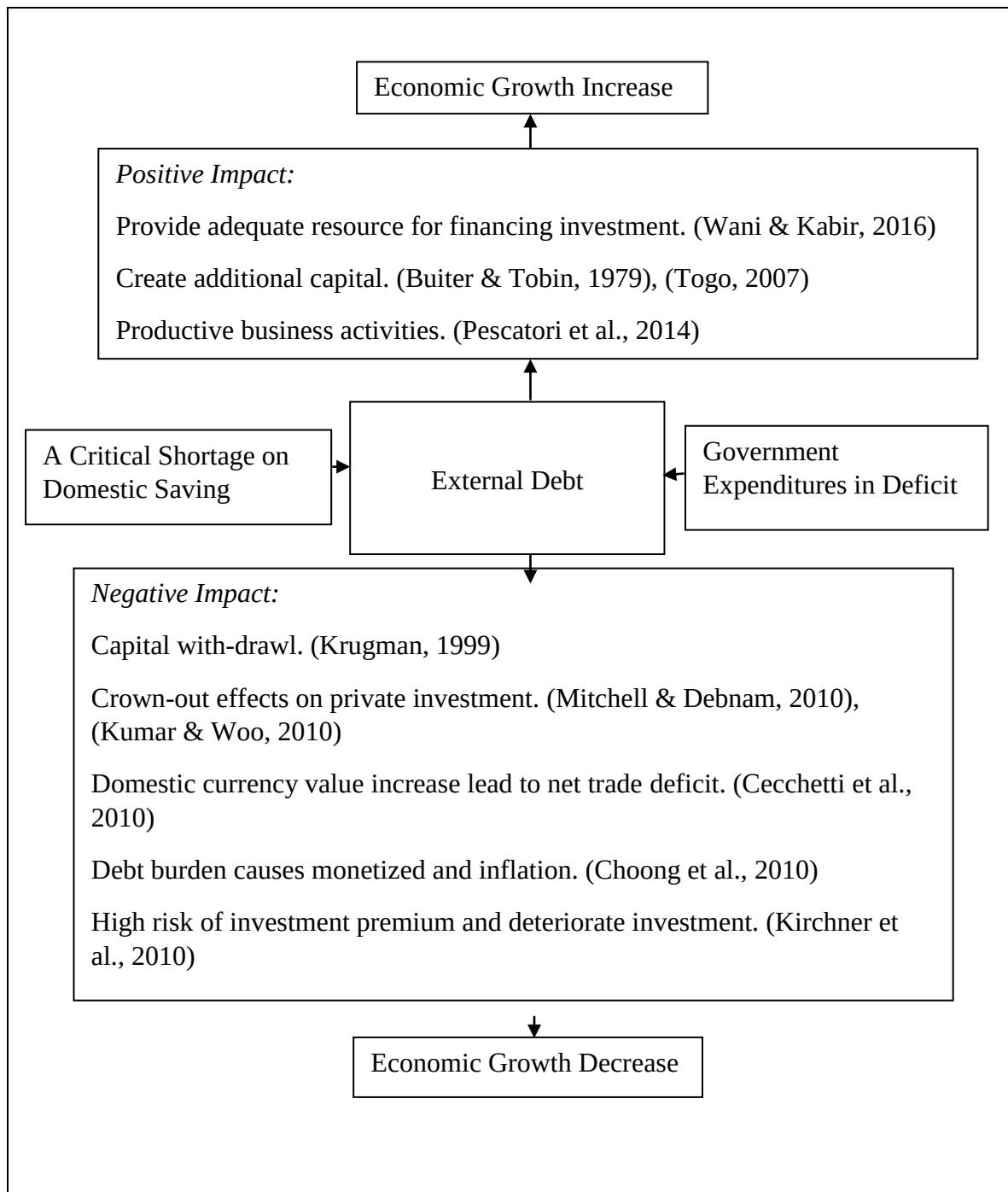


**Figure 3.1:** Analytical Framework of the Impact of Utilize External Debt on Economic Growth.

According to Kumar and Woo (2010), high levels or indebtedness levels in public debts' influence on economic growth is crucial, and it is mainly related to decline in investment and reducing labor productivity's growth rate. However, as of financial fact,

Kirchner et al. (2010) pointed that high debt level may increase extra risk premiums, in which these risks will add-up to the existing financing costs. Hence, this lead overall effects of unsustainable debt finances.

When a country is trapped in high public debt, it will certainly pose a negative image of the country's finances are burdened by massive debts. Based on the critical problem of public debt, it has inspired and encourages academic and fiscal policy makers to find an exact answer and to give a clearer picture in reaching for a solution concerning public debt in order to respond to the public. In the currently empirical framework, more issues are focussed on the impact of the rising level of public debt and a certain high level of debt to examine whether it will show positive effects or vice versa on the growth rate in an economy.

Based on the studies by Cecchetti et al. (2010), the authors had identified that a huge expanding on debt especially the existence of high level in debt will incur unfavourable effects such as domestic currency increase, interest rate rise, economic instability, and eventually slowing down of the nation's economic growth. These opinions are supported by Reinhart and Rogoff (2010) that high level of debt can have negative impact on economic development, and these phenomena are similar to the general theoretical assumption that positive growth is related at low level of debt. Meanwhile, high level or above the debt turning point onwards of debt will invert an adverse growth to prevail (Mencinger et al., 2015). Notwithstanding these, Pescatori et al. (2014) found some evidences that the higher debt that is utilized is linked with a higher level of output. This is because this kind of higher debt is sharply channeled into productive business activities.

In an aggressive government sector, a large amount of domestic loans in demand will cause a critical shortage in public saving, whereby, domestic saving should be used for the purpose of investment in the private sector. However, these domestic loans were

applied in government sector. Financially, when domestic interest rates are shown relatively lower compared to external borrowing, this encourage the government to borrow loans domestically. In contrast, excess demand in loans by the local government will use up the loan from private domestic saving which should be used for private investment typically. As a result, the private financial institutions have to increase interest rates in order to obtain sufficient funds to get loans for covering up the deficit saving gap. However, this action of raising the interest rates lead to higher cost of credit. Hence, this reduce private investment demand in total. Reduction of private investment in accumulation would hinder economic growth. In this situation, the shortage in domestic saving spur up local interest rate. This higher interest rate would increase the cost of borrowing for new investment in the private sector. Thus, the motives of the new investment definitely be in dispute. Moreover, this affect the activities from the existing investment and finally lead to the deterioration in economic growth (Mitchell & Debnam, 2010).

This situation of existing government debt consumption has led to crowding-out effects on private sector in investment. In consequence, the higher interest rate will also impact and has adverse effect on trade balances. This indirectly reduce the economic growth rate. The government debt consumption has caused higher interest rate on assets which become the focus of foreign investors. The demand for domestic currency would increase and leads to push up in domestic currency, and this domestic currency value more when compared to currencies from abroad. The immediate effect of this value added domestic currency tends to increase import and decrease in export simultaneously. The net trading reflect deficit in the trade balance account due to the increases in interest rate which has arisen from government debt consumption. Eventually this cause the economic growth to shrink.

The level of public debt would also pose higher uncertainty risk particularly in the confidence levels of investors to invest in the private sector. This is because of the high level of debt burden which is associated with a higher risk of investment premium in a country. Therefore, this kind of circumstance would either lead to delay in investment from investors, or they perform less efficiently for their existing investment due of investment risk premium. Furthermore, investors prefer short term investments than long term investment in order to avoid unexpected investment's risk in the long term. This means that high government consumption of public debt from local saving would generate less incentive for investors in private sector investment. In return, this could slow down the growth in productivity. Conversely, high public debt causes investors to shift their funds of investments to other countries which are considered as to be safer to earn profits from investment abroad. Krugman (1999) stated this adverse circumstance as capital flight could worsen the situation of insufficient existing resources, and maximise the adverse impact on growth in productivity.

The impact of government debt in domestic fiscal consumption not only raise up interest rates, but also causes inflation problems. It stems from the high interest rates which would lead to the cost of operating in businesses relatively higher than normal. Thus, they have to raise the price of goods generally. As a result, the rises in price level generally would lead to inflation. In this case, the low purchasing power of consumers lead to lesser spending on domestic goods. Consequently, this cause stunted businesses activities, and eventually slowdown in economic growth.

External debt is applicable and is necessary as an economy mechanism when the domestic saving account does not have adequate amount to cover the actual spending on investment activities. This is the rationale of a government lending from abroad in order to fulfil the resource gap between domestic saving and actual investment expenses. The

inadequate savings may constraint investment and to function properly. Based on this scenario, the government should take effort to satisfy such resource gap by running fiscal deficit. However, again this deficit spending is borne by funds borrowed, particularly from external borrowing.

Togo (2007) revealed that public debt play an important and main role during financial shortage such as to fulfil the interest of government in covering its deficit spending, or as substitute of unpopular taxes increases and generate profit for capitalist in lending activities. The author defined that deficit spending would probably bring debt burden to the nation in the long run. Furthermore, the author added that applying government borrowing may waste resources, and the accumulation of debt leads to higher taxes and inflation which discourages saving activities. Similarly, Leao (2015) also was in the same opinion with Togo that public debt may burden those tax payers due of higher taxes for fulfilment of repay back the national debt.

Alesina and Tabellini (1990) revealed that the accumulation of debt based on its mechanism in redistributing income over time and across generations would reduce the deadweight losses of taxation. Buiter and Tobin (1979) reviewed that some empirical evidences against the neutrality hypothesis in that the government debt's expenditures such as private saving and consumption would bring equivalence effects to assist in economic growths. Furthermore, the authors argued that funds borrowing are as stimulus and powerful tool in boosting up economic activities in the short run. In addition, there is no point of view that has been mentioned that the government debt will diminish private capital in the long run. In short, the authors concluded that debt does not absorb private investment in the long run.

However, Choong et al. (2010) mentioned that a rising debt burden is associated to the government debt and will eventually lead to monetised and inflation. Therefore, the

authors rejected that there is no debt neutrality when the government utilized debt in fiscal spending.

In most discussions of literature framework, it focuses on the early stages of the development process of a country whereby the country is either ranked developing or onwards. In the process of development, the accumulation of public debt provides adequate resources for financing public investment, including private investment, which plays a major role in economic growth (Wani & Kabir, 2016).

On the other hand, an increase of public debt up to a high level will be a financial burden, and it will trigger a crowding out effects on private investment spending. However, some people might question about how true is high public debt related to crowding out effects on private sector investment. If the answer is interconnected, then, at what level of quantity is a reasonable public debt crowding in effects to stimulate economic growth.

According Buffie et al. (2010), utilization of an appropriate amount of public debt with well debt management skills will help developing countries to cope with their existing shortage gap of capital stock to finance productive investment spending.

In contrast, the accumulation of huge debt from time to time may potentially deteriorate investment and eventually would lead to decline in economic growth. In association to these issues, this study is in the opinion that the accumulation of external debt would be useful for investment activities when debt-growth ratio maintenance on debt turning point, and is called debt threshold.

Therefore, the purpose of a conceptual framework formed is for exploring the impact of independent variables such as external debt, long term external debt, short term debt, that may or may not affect dependent variable, i.e., gross domestic product (GDP). Within this, the debt sustainability is determined by the debt-to-reserve ratio based on the debt reserve threshold that is calculated. In addition, it is necessary to determine the debt

threshold level or the ratio of debt-to-GDP for low-income, middle-income and middle high income countries in Asian.

The impact of external debt on growth, debt sustainability and debt threshold may be useful as benchmarks for policy makers to remind the government to be on alert or in full awareness such that public debt is not being utilized excessively and beyond the limits of suggested debt threshold level.

### **3.4 Hypotheses Development**

It is hard to pre-stated the impact of external debt on economic growth, but, as forecasting in this study, it may either positively stimulate economic growth or detrimental to the economy.

The outcomes of the hypotheses may reflect improve development in a country, and by contrast it may bring a fall in economic growth through debt overhang and debt crowding out investment effect.

This study with hypothesizes that a huge amount of accumulated external debt will affect economic growth negatively, and the external debt would trap in economic growth negatively only when it had exceeded the debt threshold level.

#### **3.4.1 External Debt on Economic Growth**

Past researchers have conducted studies associated with external debt on economic growth, and the outcomes of these studies indicate that there are some researches that support the views in Keynesian while some are in favour of neoclassical views on economic growth. In order to identify the impact of external debt on economic growth, the empirical framework is depicted in Figure 3.2. In this framework consists of economic growth as the dependent variable and five independent variables. Meanwhile, external debt

as the core independent variable and other control variables such as debt services, government expenditures, inflation and population.

The study that was conducted by Owusu and Erickson (2016) and Jayachandran (2013) found that the external debt has a significant positive effect on growth. In contrary, Degefe (1992), Osei (1995), Nabire and Ating (1997) and Mbanga and Sikid (2001) found that exist external debt crowding-out effects on private investment, which eventually slowed down growth.

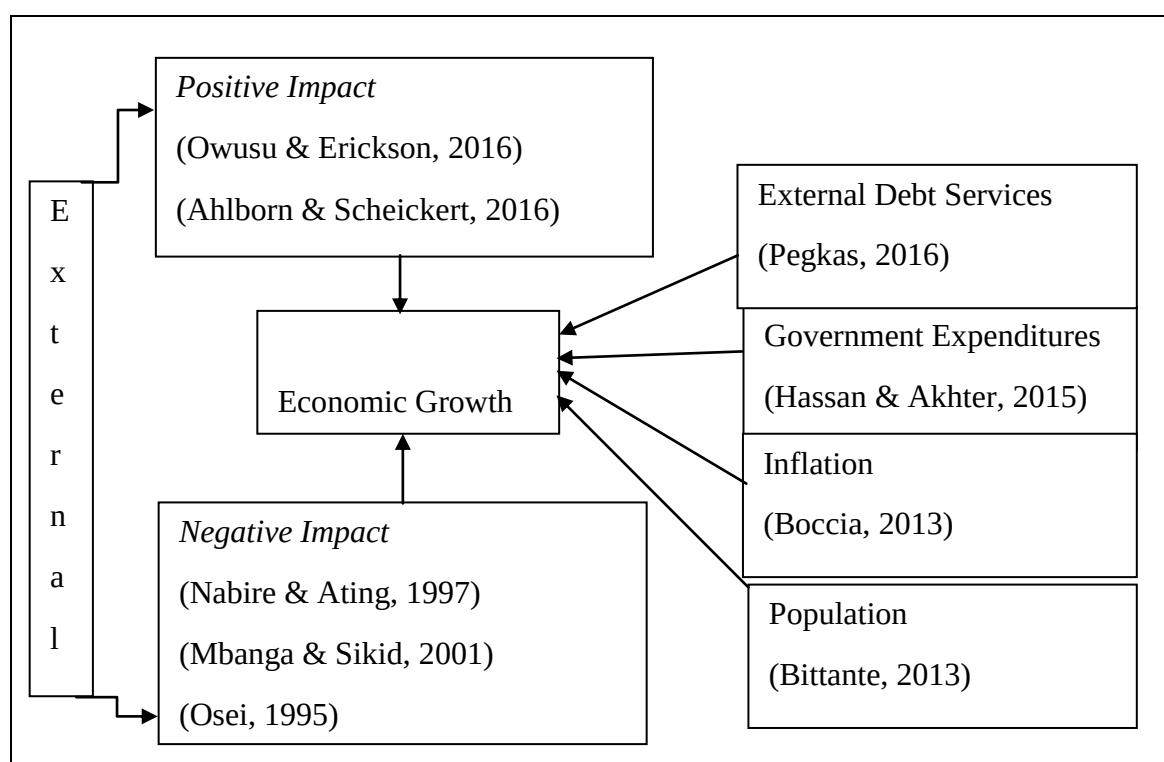


**Figure 3.2:** Empirical Framework of External Debt on Economic Growth.

Furthermore, most previous studies showed tendency negative effects external debt on economic growth i.e. findings of Kolluri and Wahab (2007); Kumar and Woo (2010); Reinhart and Rogoff (2010); Cecchetti et al. (2011); Udoka and Ogege (2012); Afonso and Jalles (2013); Calderon and Fuentes (2013); Panizza and Presbitero (2013); Lee and Ng

(2015) and Ash et al. (2017). Therefore, this research aims to confirm the following hypothesis in selected Asian countries:

Hypothesis  $H_1$ : External debt is negative relationship on economic growth of selected Asian countries.

### **3.4.2 Long Term External Debt on Economic Growth**

Over the past few decades, many developing countries facing the problem of spending deficits were forced to agree with the use of long term external debt as a cover gap of deficit expenditures (Shabbir & Yasin, 2015). Long term external debt were prone to face external factors such as the risk of currency stability, interest rates and the global financial crisis problems (Gurtner, 2010).

Additionally, a long term debt life circle leaded to debt amount arising and debt service costs became excessive (Cecchetti et al., 2011). Based on findings by Zaman and Arslan (2014) for the period 2007 to 2013 related to utilize long term external debt stock on growth in Romania, they found that increases in long term debt were unable to pull up economic growth perspective due to debt services rollover year-by-year.

Figure 3.3 is illustrates the framework of long term external debt on economic growth. The dependent variable is economic growth. Meanwhile, long term external debt as core independent variable and other control variables such as account balance, foreign direct investment, real interest rate and population.

In studies related to long term external debt on economic growth, the outcomes can predict in three possible of effects, namely, it will generate growth, or, adverse effect on growth, or, no significant effect in between.

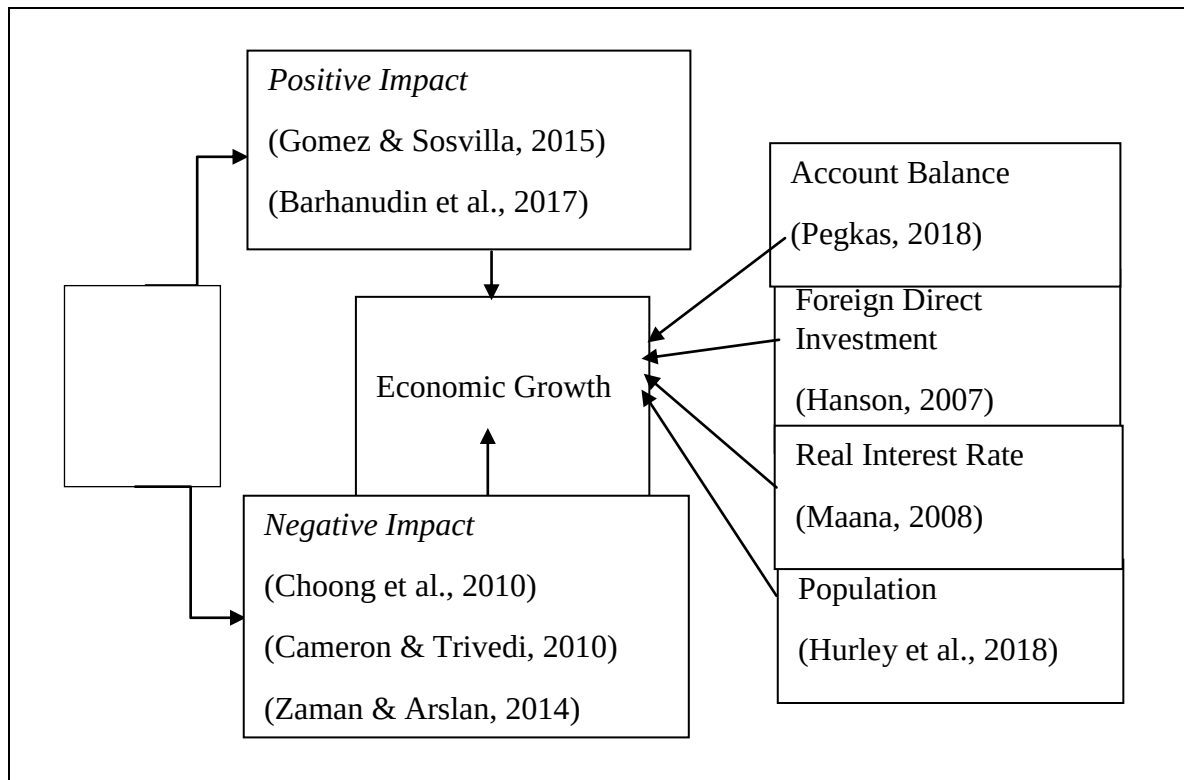


**Figure 3.3:** Empirical Framework of Long Term External Debt on Economic Growth.

The past studies and findings by Pattillo et al. (2002), Cameron and Trivedi (2010), Choong et al. (2010), Riedl (2010), Ahlborn and Schweickert (2015) and Spilioti (2015) confirmed that the long term external debt did not promote or spur economic growth, but actually worsen a country's economic circumstances. In short, long term external debts were prone to various type of risks and risk uncertainty in the long run. Hence, this research aims to confirm the following hypothesis in selected Asian countries:

Hypothesis  $H_2$ : Long term External debt is negative relationship on economic growth of selected Asian countries.

### 3.4.3 Short Term Debt on Economic Growth

In Figure 3.4 as the empirical framework of short term external debt impact on economic growth. The independent variable economic growth with short term external debt as core independent variable, and other economic growth control variables such as account balance, foreign direct investment, real interest rate and population.

Any country may face not sustainable economic system when there are structural imbalances in revenues and fiscal expenditures in its economy. It means that the economy faces capital inadequacy. For instance, developing countries in Asian often ran their budget deficit by hoping that the measure being taken is able to improve efficiency and a sustainable economic system. Hence, the easiest way of recursion is by choosing short term external debts to meet the gap of capital inadequacy and to continue financing the productive economic activities and development.

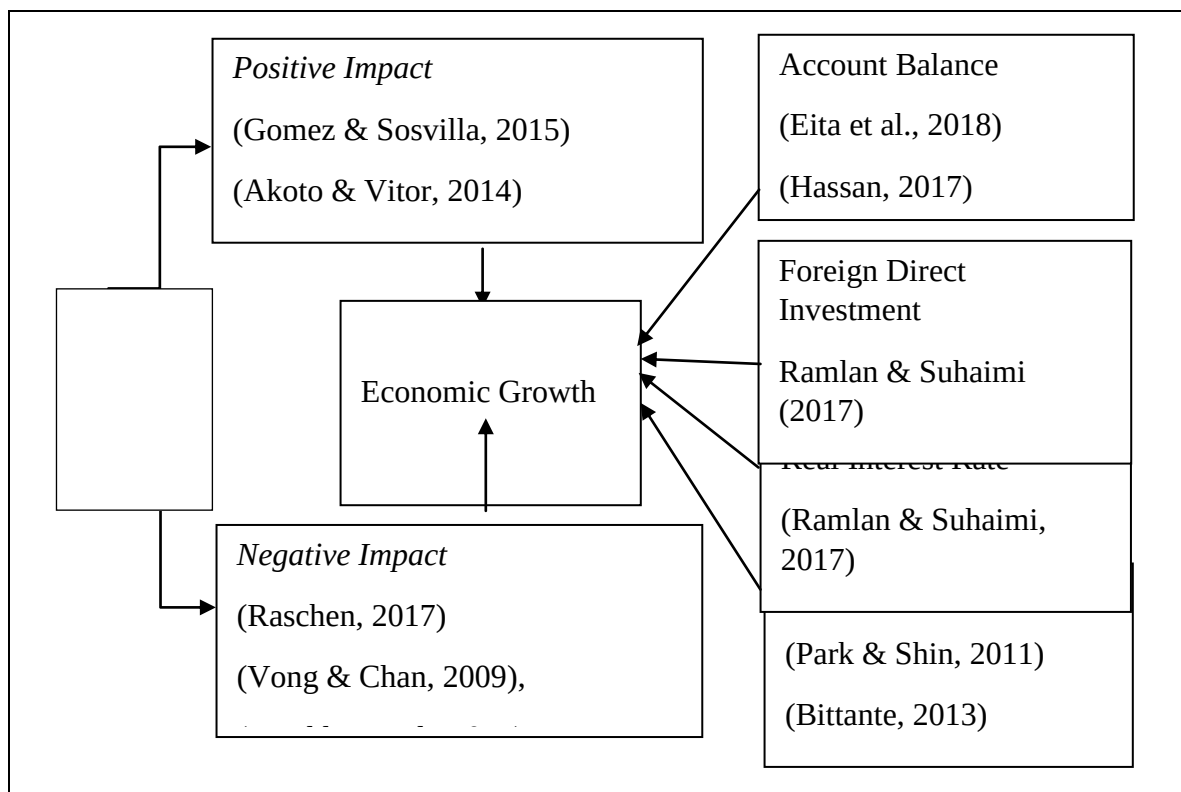


**Figure 3.4:** Empirical Framework of Short Term External Debt on Economic Growth.

Loan borrowing from abroad relatively attractive due to low interest rates offered. In addition, developing countries prefer short term debt due to incentives in smoothing repayments profile, reducing interest rate risks and most importantly for waiving the step-up interest rate margin productive economic activities. However, these kinds of debt which are usually granted by foreign banks and financial institutions will lead to massive borrowing and neglecting prudential regulations. Thus these debts will create many disadvantages and risks in the process of debt buildup for the loan country, depreciation on own country currency making the exchange rates risks as a reality. Therefore, these situations might possible lead to speculative asset boom, which had happened to Asian Financial Crisis during the period of 1997-1998.

In the past, some empirical evidences had been proven that short term debts had inverse and significant effects on economic growth. Raschen (2017) had found that the short term debts in Sub-Saharan countries must be monitored wisely because of their recent strong rise in short term debts causing the burden in debts to rise significantly from the period of 2010 to 2015.

The past evidences also found that short term debts had exhibited negative impacts either directly or indirectly on economic growth, i.e. Vong and Chan (2009), Choong et al. (2010), Lau and Lee (2016) and Jayiddin and Jamil (2017).

However, there were also empirical evidences indicated positive significant between short term external debt and economic growth, i.e. Butts et al. (2012), Benmelech and Dvir (2013), Akoto and Vitor (2014) and Gomezpuig and Sosvilla (2015).

Short term external debt is relative better choice in support a temporary shortage for sustain productive fiscal activities in situation that this secure new capital which will bring guaranteed revenue. Furthermore, this short term loan can payback quickly with

minima of risk. Thus, this research aims to confirm the following hypothesis in Asia countries:

Hypothesis  $H_3$ : Short term external debt is positive relationship on economic growth of selected Asian countries.

#### **3.4.4 Debt Sustainable based on Debt-Reserves Threshold**

Despite of using gross domestic product as a measurement for debt burden to examine whether the economy is in a sustainable status or vice versa, a country's reserve may also use as debt burden indicators to determine the country's debt sustainability, that is in line with the model of foreign exchange reserve sustainability that was introduced by Jeanne and Ranciere (2011). In this Jeanne and Ranciere foreign exchange reserve sustainability model, the authors defined that a government might utilize optimal foreign reserve exchange in deal with liabilities payment as well as debt when it faces shortage of capital inflows.

However, Alfaro and Kanczuk (2018) suggested that countries do not accumulate reserves via borrow internationally using their own currencies in order to meet solvency condition. Furthermore, the authors commented that this could makes them constraint with new liabilities, and exposes them to debt burden risk. According to Fakuda and Kon (2010), an increase in country reserve tends to a permanent reduce in expenditures, slowdown fiscal activities. The authors added that a rise in increase in foreign exchange reserves would enhance total external debt, and eventually lead an increase to the existing debt stock.

In Figure 3.5 is illustrated the empirical framework for investigates the debt sustainable. Debt sustainable status is determine by comparing the debt-reserve ratio against debt-reserve threshold. If debt-reserve ratio lower than debt reserve threshold, this

means debt sustainable, and vice versa. In addition, Senibi et al. (2016) argued that shortfall in revenues, and limited capital available might be overcome with the capital from foreign reserves to assist in stimulating economic development. For instance, Cambodia remains at a low risks level in external debt depress and under beyond its respective debt thresholds, and as resulted, strong net foreign direct investment leads to fast foreign reserves growth and reached USD7.9 billion in June 2017 (IMF Report, 2017).

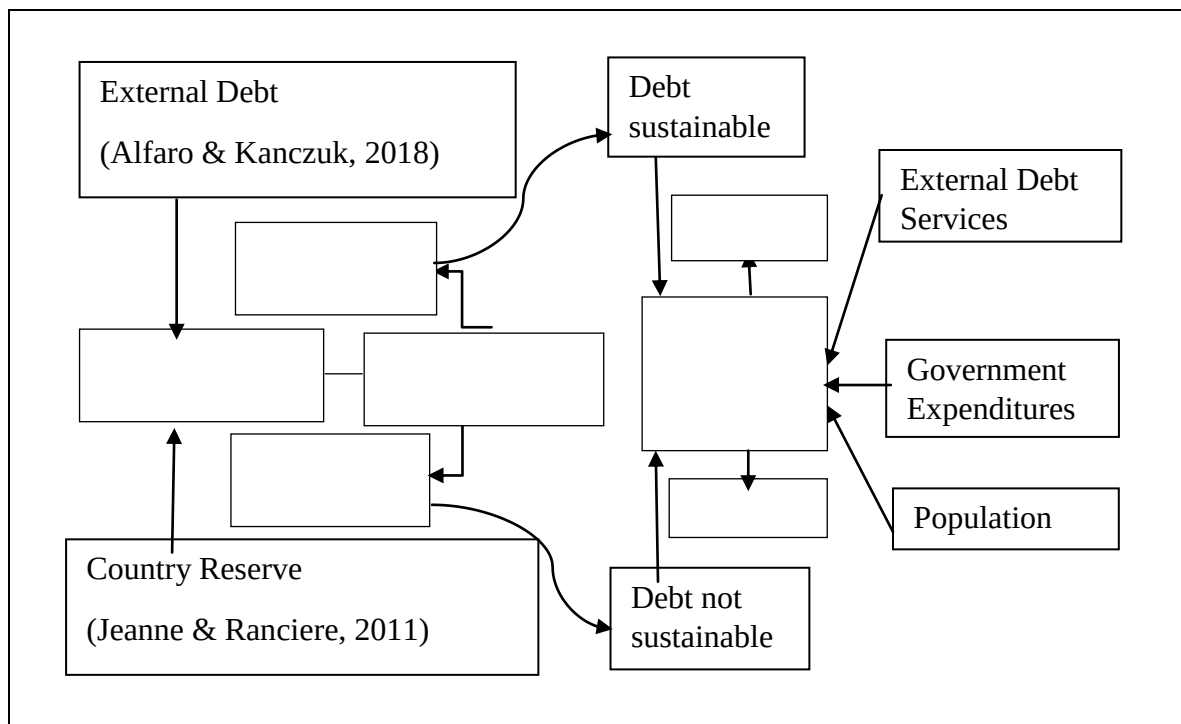


**Figure 3.5:** Empirical Framework of Debt Sustainable for Asian Countries.

However, external debt might have inverse impacts on a country's reserve if it utilizes reserve for the purpose of reducing the amount of external debt stock. It means that in term of payoff the maturities in debts instantly, a country's reserves become the choice to address these debts arisen. Hence, this will indirectly slow down economic activities because the capital is being placed in unsuitable economic path particularly in the developing countries. Furthermore, the sustainable development in the developing

countries might be challenged by the volatile net international capital flows estimated to be negative until 2017 (United Nations, 2017).

In nutshell, debt sustainable potential assist in stimulate fiscal activities and therefore contributes to positive economic growth. In contrary, debt not sustainable would constraint fiscal activities spending and this situation lead to slow down the economic growth. Subsequently, this research aims to confirm the following hypothesis in Asian countries:

Hypothesis  $H_4$ : External debt would have negative relationship on economic growth when the debt-reserve ratio above debt-reserve threshold of selected Asian countries.

#### **3.4.5 Debt Threshold Level on Economic Growth**

Reinhart and Rogoff (2010b) were analysing data from forty-four countries around the world and spanning two hundred years to identify the relationship between public debt and real GDP. They found out that debt exceeding the 90 per cent threshold will be harmful on economic growth.

Furthermore, Cecchetti et al. (2011) argued that in order to avoid exceeding the debt on fiscal activities, 84% is suggested to be the best cut off point for debt-to-GDP ratio.

For findings the impact of debt threshold on economic growth, the empirical framework is presented in Figure 3.6. In this empirical framework, gross domestic product as the dependent variable and external debt as core independent variable. Meanwhile, other control variables such as debt services, government expenditures, inflation and population. In regard to the debt turning point, Mencinger et al. (2014) have divided the research based on categorize dataset between developing countries and developed countries. They stated

that the government should ensure that the debt-to-GDP ratio is not exceeding 53% for developing countries and 94% for developed countries.

However, Nersisyan and Wray (2010), Herndon et al. (2013), and Otomoshio et al. (2016) asserted it is unnecessary so as once the threshold was exceeded, it will be lead to lower economic growth due to the facts that most of the advanced countries are highly endogenous but these adverse effects is merely balanced and neutralised by the non-government sectors.

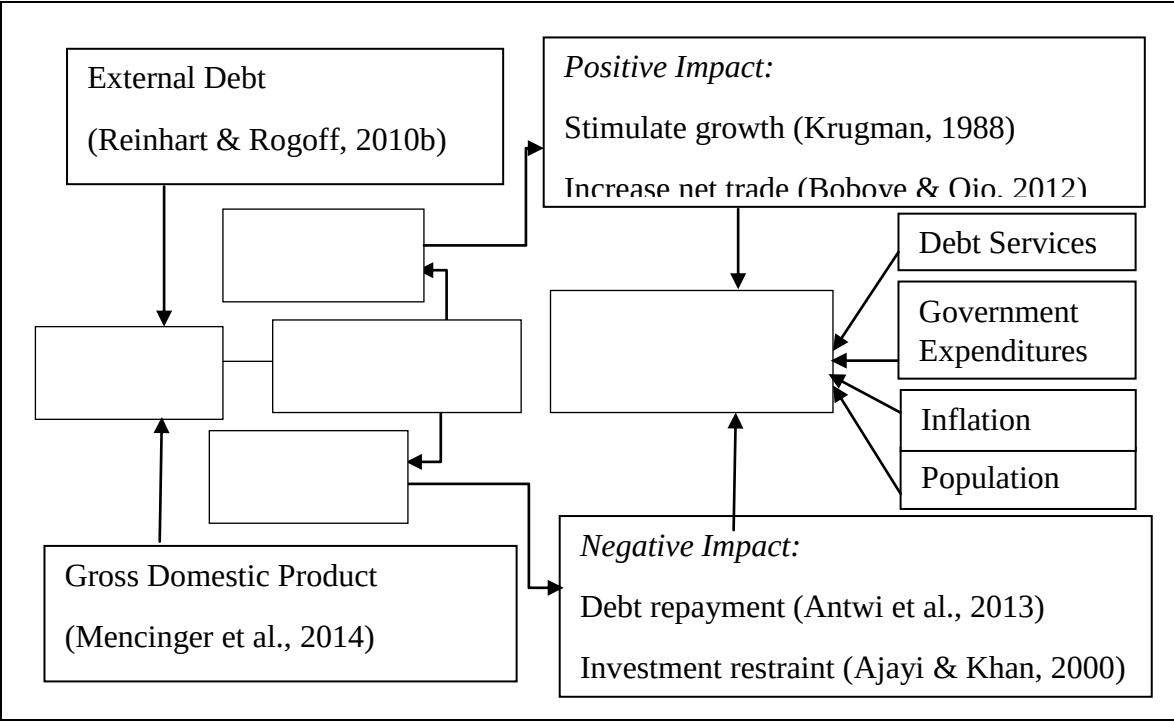


**Figure 3.6:** Empirical Framework of Debt Threshold for Asian Countries.

In this empirical framework, the status of external impact on economic growth is determine by compared the debt-GDP ratio against calculated debt threshold. If this debt-GDP value lower than debt threshold, it means this ratio bring positive impact on economic growth. Krugman (1988) mentioned that utilize debt at reasonable level would benefit to economic growth. Furthermore, Boboye and Ojo (2012) emphasized that utilize

low level debt potential to gain more export than import, and eventually contribute to net trade balance. Other than that, Dao and Oanh (2017) opinion that government should awareness of improve capital management skills to limit new loans and recognize appropriate external debt ratio due to loans creates a debt burden pressure.

Nevertheless, if debt-GDP ratio higher than the debt threshold, in return, it would bring negative impact to economic growth. Beyond the debt threshold means utilize debt over the limit of debt capability, in which related to a country carry massive of debt. Antwi et al. (2013) urged that high level of debt could increase debt repayment pressure, in which new loans added to its existing debt and increase the costs of loans. A country carry massive debt would indicated a bad image for investor and investment becomes restraint (Ajayi & Khan, 2000).

Therefore, high level of debt needs instant intervention by government with alternative solution such as increase interest tax to cover up apart of debt services and principle (Sabbir, 2013). In short, utilize debt above debt threshold level would constraint the fiscal activities and eventually slowdown the economic growth. In a nutshell, this research aims to confirm the following hypothesis in Asian countries:

Hypothesis  $H_5$ : External debt would have negative relationship on economic growth when the debt-to-growth ratio exceeded its debt threshold level of selected Asian countries.

### **3.5 Data Collection**

The study covered 16 selected Asian countries for the period 1980 to 2016 by using annual series data. These 16 selected Asian countries satisfied the geographical criteria in which represent various zone of Asia. For instance, Middle East of Asia represented by Turkey and Jordan. West Asia represented by Pakistan. Meanwhile, Bangladesh, Bhutan,

India, Nepal and Sri Lanka are represented South Asia. East Asia represented by China. Subsequently, South East Asia represented by Indonesia, Lao PDR, Malaysia, Myanmar, Philippines and Thailand.

The study data which was covered 36 years could certainly indicated the long run effects of external debt and economic growth for Asian countries in which it has covered several economic crises in globe. This would indirectly influence the data obtained, and therefore strengthen the validity of the data in this study.

The selected Asian countries for this research are purposely targeted for the group in developing countries. Therefore, this study consists of selected Asian countries such as Bangladesh (lower-middle income), Bhutan (lower-middle income), China (middle-income), India (lower-middle income), Indonesia (lower-middle income), Jordan (upper-middle income), Lao PDR (lower-middle income), Malaysia (upper-middle income), Myanmar (lower-middle income), Pakistan (lower-middle income), Sri Lanka (upper-middle income), Thailand (upper-middle income), Philippines (lower-middle income), Turkey (upper-middle income) and Vietnam (lower-middle income) (World Bank, 2018).

### **3.6 Techniques of Econometric Estimation**

In the analytical part of this study, the econometric model specification, procedures Johansen Cointegration and error correction model (ECM) are discussed. Meanwhile, in order to determine the turning point debt, or debt threshold, the econometric method is applied. The outcomes result on coefficients from ECM, such as the coefficient of debt growth and debt growth square values will be used for calculating the maximum value of debt-to-GDP ratio for each country.

According to Hakkio and Rush (1991), after filtering the time series data to be free from containing unit root, it is necessary to further with the cointegration test to examine

whether it consists of long run equilibrium relationship between the data variables. After identifying the existence of long run relationship, the vector error correction model analysis is applied to obtain information from the analysis econometric model that has been formed. Besides that, in order to identify debt threshold, the econometric derivation (quadratic equation) approach is employed.

### **3.6.1 Unit Root Test**

In the test, the unit root test is to assist in data time series and is said to contain unit root or non-stationary. Among the unit root tests, it is to analyze the type of time series data such as Augmented Dickey-Fuller (ADF) test and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) test. Both types of root test units have their own criteria for determining the validity of series data whether or not it contains root units. Jafari et al. (2012) argued that ADF test as useful tool in test a series of data is stationary in condition with low power of rejecting the null hypothesis. In contrary, Katircioglu, Feridun and Kilinc (2014) emphasized that KPSS test applying in series rely with condition the unit root test potential in eliminates a possible low power against stationary unit root exists in the ADF test. In this case, the KPSS test acts as a complement to the ADF test in determining the validity of the data being studied as stationary. Although the two types of tests differ due to the assessment criteria, the results of the test still determine the validity of the data at an early stage. Therefore, both tests can be performed to act as a double confirm series is stationary before performing the cointegration test. Hereby, this study is considering ADF and KPSS approaches in testing time series data in stationary.

#### **3.6.1.1 Augmented Dickey Fuller Test (ADF)**

Normally, in order to determine whether the data is stationary or not, it is necessary to analyze such data by using the ADF test. The ADF test can help in the analysis of a very large data and a more complicated set of time series models (Said and Dickey, 1984). The general equation to test the stationary of variables in the ADF test is stated as below:

$$\Delta Y_t = \beta_1 + \beta_{2t} + \gamma Y_{t-1} + \alpha_i \sum_{i=1}^k \Delta Y_{t-1} + \varepsilon_t$$

Referring to the ADF test in this equation,  $Y_t$  is the research variable of interest or individual time series,  $\Delta$  is the first difference operator,  $k$  is the lag order will be identified guided to the Akaike Information Criterion (AIC),  $t$  represents the time trend and  $\varepsilon_t$  is the serially uncorrelated random error term zero mean and constant variance. A set of parameters  $(\beta_1, \beta_{2t}, \gamma, \alpha_1, \dots, \alpha_m)$  to be estimated as shown in the equation for  $\Delta Y_t = \beta_1 + \beta_{2t} + \gamma Y_{t-1} + \alpha_i \sum_{i=1}^k \Delta Y_{t-1} + \varepsilon_t$ .

In ADF test, the hypothesis in the unit root tests as:

$$H_0: \gamma=0 \text{ (} Y_t \text{ is non-stationary)}$$

$$H_1: \gamma \neq 0 \text{ (} Y_t \text{ is stationary)}$$

Gujarati and Porter (2009) mentioned that in ADF test, a unit root within the series is not rejected if the null hypothesis of  $\gamma$  equals to zero. In another meaning, the unit root hypothesis of ADF test can be rejected if the t-test statistic from this test is negatively smaller than the critical value tabulated.

The Augmented Dickey Fuller (ADF) test is applied in tackling stationary status of variables in the model or equation. To check whether the variable is stationary, the null hypothesis is defined as the variable which is non-stationary and with the presence of a unit root and the alternative hypothesis is defined as variable which is stationary or does not possess a unit root. Often, in order to make sure that the variable does not possess a unit root, the analysis should go further for the first differencing method. Normally, when a

particular variable is converted into first differencing, it will become stationary and the normal guideline is 5% of the critical value. When the absolute value of a test statistic is more than the absolute 5% of the critical value, then, the null hypothesis can be rejected and rather than accept the alternative hypothesis.

Oppositely, when the absolute test statistic is less than the 5% critical value, then, we do not reject the null hypothesis and rather than accept the null hypothesis. However, to ensure the tested variable is significant in the model, the coefficient error term must be in negative value, otherwise the model tested is not valid.

### 3.6.1.2 Kwiatkowski, Phillips, Schmidt and Shin Test (KPSS)

In contrast with the other unit test, the hypothesis in KPSS unit root test is inversely related. Specifically, the null hypothesis stated that the series being tested is stationary and the alternative hypothesis specifies that the series is non-stationary (Kwiatkowski et al., 1992). The authors argue that KPSS test can distinguish a series that appears to be stationary, series that appear to have a unit root, and series for which the data are not sufficiently informative to be sure whether they are stationary or integrated.

In general, the null hypothesis and the alternative hypothesis are stated as below:

$$H_0 = \sigma^2 = 0 \text{ (Non-unit root)}$$

$$H_1 = \sigma^2 \neq 0 \text{ (Unit root)}$$

The test statistic in the KPSS test depends on the function as below:

$$\hat{\eta} = \frac{T^{-2} \sum_{t=1}^T (\sum_{i=1}^t v_i)^2}{\hat{\sigma}_v^2}$$

Where,  $\hat{\sigma}_v^2$  is a consistent of  $\sigma_v^2$ . However, the limit null distribution of the test statistic

can be distributed to the two cases, such as  $\hat{\eta}_\mu$  value for the constant trend case, and  $\hat{\eta}_\tau$

value for the linear trend case. Furthermore, the KPSS test rejects  $H_1$  in favour of  $H_0$  for large values of the statistic, (Kwiatkowski et al., 1992).

The KPSS test is applied in identifying stationary status of variables in the model or equation. If the Lagrange Multiplier (LM) statistic is greater than the 5% critical value, then the null hypothesis is rejected; the series is non-stationary.

### 3.6.2 Empirical Approach

In this study, the empirical model, empirical equation for hypotheses were applied, and justification of variables used in for each model as following:

**Model 1:** GDP = f (external debt, debt services, government expenditures, inflation and population) [3.16]

The empirical equation as:

$$GDP = f (\beta_0 + \beta_1 ED + \beta_2 EDS + \beta_3 GE + \beta_4 INF + \beta_5 POP + \epsilon) \quad [3.17]$$

Equation (6a) is depicted core independent (external debt) impact on dependent variable (economic growth). Meanwhile, variables such as external debt services, government expenditures, inflation and population also expected have relationship on economic growth.

The variables are also used in ascertaining the significant impact of external debt on growth modelled by Okafor and Eiya (2011). The economic growth of a country is dominated by external debt. Proper use of external debt will certainly help to implement fiscal activities that will generate output to the country's economy. However, the use of external debt as capital can face many risks if it is not managed properly. In addition, external debt also results in costs of borrowing, which is related to debt services. This is

because debt services are involved in taking up some of the proper sources of loan capital for economic activities.

Government expenditures play an important role in determining sustainable economic growth by increasing spending for the productive economic sector. However, to accommodate the increasing government spending each year with shortage of financial conditions, abroad borrowing is an option to fill the gap of fiscal spaces. This situation indirectly indicates that government expenditures can carry debt burden if the country faces a lack of financial resources to cover rising spending from year to year.

Inflation also affects an economy's economic growth by reversing the current economic growth rate. Inflation basically raises the price of goods in general where such a rise in prices is likely to reduce consumer purchasing power. Inflation implies a fall in the value of money, in return, aggregate spending slumped and eventually resulting in a slowdown in economic growth.

Economic development much depends on population of a country, and well economic development potential to increase economic growth, i.e. the economy is growing rapidly through via knowledge economic. However, a larger population with limited financial allocation would put pressure on existing financial. In this situation, a large population can pose a threat on economic development where the government had to make external loans to keep up with current spending needs such as welfare and infrastructure for the fast-growing population. In short, the independent variables in this Model 1 are expected to influence and affect the economic growth of Asian countries.

Population growth is faster than economic growth is certainly not good for economic development, especially when the aging population is high in a country. This is because the aging population, especially from the pensioners is not productive in economic development. Furthermore, the government has to bear the high cost of welfare for the

elderly. This indirectly increases the financial burden of the aspect of implementing unproductive fiscal activities. Therefore, population brings inverse effect to economic growth due to high aging population.

**Model 2:**  $GDP = f(\text{long term external debt, current account balance, foreign direct investment, real interest rate and population})$  [3.18]

The empirical equation as:

$$GDP = f(\beta_0 + \beta_1 LRED + \beta_2 CAB + \beta_3 FDI + \beta_4 RIR + \beta_5 POP + \varepsilon) \quad [3.19]$$

In dealing with large project expenditures that involve high amounts of money in the form of financial constraints, the government has to make long term external loans to finance it. This long term loan enables the improvement of the infrastructure for the benefit of the people as well as the continuation of economic activities. Given that long term external debt involves a long term repayment period, government expenditures need to be well managed to obtain long-term marginal returns for economic growth. However, long term external debt is associated with a variety of loan risks and unforeseen risks that could increase the amount of existing loans. With this, long term external debt increases debt burden and in turn impedes fiscal spending, and the impact will eventually stave off economic growth.

Economic growth much depends on current account balance performance either current account surplus nor current account deficit. A current account surplus is good for stimulate economic growth because it occurs surplus in foreign exchange for extra invest in other countries. Moreover, current account surplus assists in increased domestic employment from the export sector, and at the same time greater demand for domestic goods. On the other hand, a country in undervalued it exchange rate potential in gaining high export from export sector, and therefore leading to higher domestic employment. In

contrary, occurs current account deficit as a threat for economic growth. It is because when higher import spending lead to domestic unemployment rises, decreases in domestic output, and in return weaken the economy.

Economic sustainable in developing countries are associated with contributes from foreign direct investment inflow in which it assists in provided developing countries much capital for economic growth. Foreign direct investment also helps in strengthen economic development in developing countries via transfer of technology, enhance domestic human capital development, transfer businesses knowledge and other trade promote economic development. In addition, foreign direct investment would bring side benefit in term of contribute to corporate tax' incomes in the host economy.

In oppositely, foreign direct investment can bring disadvantages from investors. For instance, foreign firms do not create positive externalities such as they employ their own country workers and produce inappropriate products for local market. In another scope of view, FDI outflow has a negative impact on the domestic economy as it involves capital flight to other countries which indirectly reduces local financial resources for use in local fiscal activities. In addition, excessive capital withdrawals will adversely affect the local economic stability and extent to foreign investors lose confidence in the host economy, where such a situation is certainly detrimental to economic growth.

Real interest rate could influence economic growth through two direction, whether interest rate increase or decrease. An increase in interest rate would incurs financial burden for business firms in which increase the costs of borrowing. In order to cover up an increase in costs of borrowing, simultaneously they would increase the price of output. Consequently, an increase interest rate lead to constraint in economic sector and slowdown in produce output.

In contrary, a decrease in interest rate would lead to constraint fiscal activities where local saving reduce effects a shortage in local financial sources. Real interest rate play a role as a tool in check and balance the local financial market in provide an adequate financial source instead of proceed on abroad loans.

**Model 3:**  $GDP = f(\text{short term external debt, current account balance, foreign direct investment, real interest rate and population})$  [3.20]

The empirical equation as:

$$GDP = f(\beta_0 + \beta_1 SRED + \beta_2 CAB + \beta_3 FDI + \beta_4 RIR + \beta_5 POP + \varepsilon) \quad [3.21]$$

In equation (8a) is reveal main independent variable, that is, short term external debt impact on economic growth. The other variables such as current account balance, foreign direct investment, real interest rate and population also involved in influencing economic growth.

When economic development did not have sufficient resources, short term external debt as useful instant solution financial tool in cover up of financial shortage. In addition, well manage in short term debt needed to ensure that such loans are financial in productive activities. Whereby, the marginal output greater than costs of borrowing in short run would benefit to spur economic growth. Nevertheless, short term debt come with high costs of borrowing compare to long term debt. It means that short term debt faces high risk in term of interest rate payment.

Furthermore, short term debt potential in increase existing debt instantly if these short term loans failed in utilizes wisely for generate needed output. Therefore, short term debt is prefer if government confident that the short term loans are able to contribute productive of output.

Current account plays a role in contributing to local capital for the sake of economic growth. For instance, a current account deficit is bring beneficial in loans for domestic due of foreign investor pump-in capital for host country. With the additional capital injection from abroad, it is certain to provide sufficient capital for firms to produce local goods. This indirectly provides sufficient local goods and reduces imports, and ultimately contributes to economic growth.

The role of real interest rate in assists stimulate economic is depends on economic circumstances. When economic in recession, a reasonable interest rate helps firms reduce in costs of borrowing, in which reasonable interest rate lower the costs of productivity. However, interest rate would rises during in economic boom. An increase interest rest would increase in domestic saving where consumer would earn high interest of saving in financial institution. In other hand, higher the saving means reduce in consumer spending. In this situation, it affected the aggregate demand of output and indirectly causes slowdown in fiscal activities. In nutshell, real interest rate would effects on economic growth.

A rapid growth in population is not bring burden in an economy if this huge population consists of adequate human capital assist in managing economic development activities. Well mange economic development lead to export on goods more competitive in globe market. Increased international exports enable the country to gain surplus in trade, as well as the current account gain surplus. The large population actually provides huge domestic demand for daily spending, which in turn contributes to high domestic production. High spending from large consumers has certainly led to higher national production. In a word, the population of a country is capable influence on economic growth.

Therefore, it is clear that the selected variables in the empirical equation are relevant to answer these five independent variables, especially short term external debt would have an impact on economic growth.

**Model 4:**  $GDP = f(\text{external debt, country reserve, debt services, government expenditures and population})$  [3.22]

The empirical equation as:

$$GDP = f(\beta_0 + \beta_1 ED + \beta_2 CR + \beta_3 EDS + \beta_4 GE + \beta_5 POP + \varepsilon) \quad [3.23]$$

Empirical equation (9a) is represented gross domestic product as dependent variable and five independent variables such as external debt, country reserve, external debt services, government expenditures and population. The variable in this empirical is also modelled by Akram (2016). This empirical equation (9a) is findings the effect of external debt on economic growth when the debt-reserve ratio compared to debt-reserve threshold.

Developing countries ought to obtain external debt to finance their development activities due of they failed to collect adequate revenues to cover up their yearly budget. Furthermore, accumulation of external debt from year-to-year would lead to debt burden due of a part of new debt has used for financing the old debt. Consequently, utilize on external debt not fulfil the economic development expenses, especially the targeted poor group. In other words, the external debt would increase the miseries of the poor instead of reducing poverty in developing countries.

Economic strength is linked to high country reserves, where country reserves serve as immediate resources to tackle critical external debt that needs to be addressed immediately, or assists in shortens debt maturity, before it becomes an ongoing debt burden. So the role of country reserves remains as stability of the national financial system.

However, high external debt could diminish country reserves, and vice versa. For instance, When government in attempt to increase country reserve amount, it would affected in raises external debt outstanding. Furthermore, an increase in country reserves also cause a decline in expenditures and other fiscal activities. It means accumulation of country reserves reasonable level could boosting trade activities, as financial adjustment tool in prevent occur inflation in economy. In nutshell, country reserves functioning as financial support in tackle critical of external debt. The suitable level of country reserves potential in boost up economic growth.

Debt services are compatible with the external debt inherent in the economy. The higher the external debt, the higher the interest payment on debt services. This can be attributed to the costs of debt services having taken part in the actual value of the loan amount. This means that debt services have constrained resources for productive fiscal activities. In short, debt services pose a threat to economic growth if utilize in external debt cannot generate higher marginal output than interest payment.

The role of the government in spending fiscal activities is important to boost economic conditions. Aggregate demand can be increased through higher government spending as a result of creating a multiplier effect. Government expenditures can also create job opportunities and help increase the income of the people. On the other hand, an increase in government spending could also reduce domestic saving and result in an increase in interest rates that could create a crowd-out investment effect in the private sector. Similarly, high government deficit spending can result in high national debt if the source of such expenditure comes from foreign loans, which in turn has a direct effect on private investment in the long run. Therefore the government needs to be dynamic in spending so that economic growth can be achieved in the long run.

The population of a country has a robust effect on their economic growth. High population growth was likely to constrain economic development. The growth of a population can help to provide sufficient manpower to develop a productive sector as well as population potential in increasing aggregate demand, and eventually assists in increasing the economic growth. However, when the population density that is not in line with existing employment opportunities, it becomes as a burden for government spending in which in caring welfare for the unemployed, particularly occurs in developing countries. This means that if population is large, but the provision of inadequate employment opportunities also affects constraint the economic growth of a country.

For determining debt-to-reserve threshold, a non-linear in the form of a quadratic equation is in the model in which the debt-to-reserve ratio adversely effects on growth. The model has specification on the lagged debt-to-reserve ratio and the lagged debt-to-reserve ratio squared. In the process to gain the debt-reserve threshold, this study employs the time series data approach in assessing the matter of adverse causality between debts on country reserves. To determine debt-to-reserve threshold, hereby, the instrumental variable dynamic regression specification using time series data is as follows:

$$LGDP_t = \alpha_i + \beta L(GDP)_{t-1} + \gamma_1 ED/CR_t + \gamma_2 (ED/CR_t)^2 + \sum_1^n x_t + \eta_i + \varepsilon_t \quad [3.24]$$

Equation (10) is depicted LGDP is the natural logarithm of gross domestic product in growth rate (2010 constant prices), ED/CR as external debt to country reserve ratio and (ED/CR) as external debt to country reserve ratio in square value. The  $\gamma_1$  and  $\gamma_2$  coefficient values were taken to calculate the maximum debt-to-reserve ratio, as-well-as debt reserve threshold.

Therefore, in this empirical equation is reveal the relationship of external debt, country reserves, debt services, government expenditures and population on gross domestic

product, in which this empirical equation in order to determine the debt sustainable status by taking account debt against reserve as the indicator.

**Model 5:** GDP=f (external debt, debt services, government expenditures, inflation and population) [3.25]

The empirical equation as:

$$\text{GDP} = f(\beta_0 + \beta_1 \text{ED} + \beta_2 \text{EDS} + \beta_3 \text{GE} + \beta_4 \text{INF} + \beta_5 \text{POP} + \varepsilon) \quad [3.26]$$

In model 5 mainly to determine the debt threshold of Asian countries and compares to the debt-growth ratio for seeking the impact of external debt on economic growth. In empirical equation (11a), gross domestic product as dependent variable against to independent variables such as external debt, external debt services, government expenditures, inflation and population.

External debt functioning a major role in stimulus the economic activities, especially in developing countries. In many countries, the debt-growth ratios beyond a certain debt turning point. At above the allowable debt turn point, utilize debt would become a barrier to sustain economic development. Furthermore, at high level of external debt occurs low debt transformation rate and hindered economic growth. However, utilize external debt at below the debt turn point lead to high debt transformation rate, in return, assists in economic growth expansion. Therefore, encourage prudent debt management in taken the relevance level of external debt would inhibiting economic growth. In other hand, external debt plays a significant role as liquidity financial sources in fixing up macroeconomic stability.

Debt service costs depends on the level of credit lending. The higher level of loans incurs greater the costs of interest payment, and vice versa. Therefore, the use of external loans at excessive the ability of debt service costs should be avoided. This include make

financial adjustment in fiscal activity, and at the same time cut-off unproductive fiscal expenses. In this way, the reduction of cost of fiscal expenses lead to increase in marginal output in which it higher than the interest of debt payment. Other than that, alternative choice is government could increase tax revenues so that government can spend more on debt services obligations. Costs of debt service at reasonable level can fostering economic development, but, excessive debt service costs would impair economic growth. Thus, the role of debt services can be summarized as contributing to economic growth in circumstances that the expenses of interest payment at non-excessive debt service costs ability status, where at this level the marginal of output can finance the cost of debt payment. It is important for the developing countries to manage wisely with the debt services and they needs to strengthen debt service reduction in order to gain economic growth.

The dynamics of increasing growth of the economy largely depends on government spending. An increase on government expenditure can produce multiplier effects on sector economies. For instance, an increase on government spending such as in provide facilities, spending on healthcare, education and other utilities spending as a preliminary provision to other economic sectors to stimulate aggregate demand. However, government spending can lead to an increase in interest rate, which in turn affects the saving in economy. Increasing interest rates is a threat to private investment as they face higher borrowing costs, and eventually the cost of production increases. As a result, the relative price of goods is more expensive and this has resulted in lower consumer spending. Thus, government spending in which contributes to shortage in local saving certainly affects the economic growth of a country.

The prices in goods increase over a counted period of time is an inflation. When inflation takes place in an economy, it can bring harmful effects on economic growth

through several situations. If the inflation rate is higher than the saving rate, then the value of money in saving decreases over time. Thus, Inflation causes the purchasing power of consumer declines, and this causes them to spend less than they normally would. On the other hand, the impact of inflation has led to higher prices of local goods compared to imported goods leading to an increase in consumption of imported goods, resulting in a net trade deficit. To avoid the economic fluctuations of the adverse effects of inflation, economic growth needs to match equally to the growth of the money supply.

Population as one element in empirical research examines the vital role of government in providing education as the basis platform for economic development. Education development is an effort by the government to promote human capital development, so that its citizens have the knowledge and skills in running fiscal activities as the ultimate goal of the government to achieve sustainable economic growth.

This empirical equation concerns these five independent variables such as external debt, debt services, government expenditures, inflation and population on economic growth as relevant since the effects of these independent variables are justified.

For identifying debt-to-reserve threshold, the research assuming a non-linear inverted U the form of a quadratic equation is in the model in which the debt-to-reserve ratio adversely effects on growth. The model has specification on the lagged debt-to-reserve ratio and the lagged debt-to-reserve ratio squared. This model is similar as modeled by Uguru (2016) in measuring external debt level in term of variables used and the concept of debt turning point calculation. In the process to gain the debt-reserve turning point, the research employs the time series data approach in assessing the matter of adverse causality between debt and country reserve. The outcomes of coefficient of ED/CR ratio, ED/CR ratio in squared were used to calculate the reserve-debt turning point by ED/CR value

divide by twice of ED/CR squared value. The  $\gamma_1$  and  $\gamma_2$  coefficient values were taken to calculate the maximum debt-to-reserve ratio, as-well-as debt reserve threshold.

Similarly, a non-linear inverted U quadratic equation is applied in the model in which the debt adversely effects on growth after optimal debt level. The model has specification on the lagged debt-to-GDP ratio and the lagged debt-to-GDP ratio squared. In the process to gain the debt turning point, the research employs the time series data approach in assessing the matter of adverse causality between debt and economic growth. The outcomes of coefficient of ED/GDP ratio, ED/GDP ratio in squared are used to calculate the debt threshold by calculating the CR/ED value divide by twice of ED/GDP squared value of each selected Asian countries.

Hereby, the instrumental variable dynamic regression specification using time series data is as follows:

$$LGDP_t = \alpha_i + \beta L(GDP)_{t-1} + \gamma_1 ED_t + \gamma_2 (ED_t)^2 + \sum_1^n x_t + \eta_i + \varepsilon_t \quad [3.27]$$

In equation (12), LGDP is the natural logarithm of gross domestic product in growth rate (2010 constant prices).  $GDP_t$  and  $ED_t$  are the annual change of GDP and ED in growth rate in which the initial external debt against GDP,  $t$  as the time trend, and  $x_t$  is the support determinants of associated debt on growth. Meanwhile,  $\gamma_1$  and  $\gamma_2$  are coefficient of  $ED_t$  and  $ED_t$  in squared value respectively,  $\eta_i$  as the heterogeneity control value for unobserved country-specific effects and  $\varepsilon_t$  as the unobservable error term. The  $\gamma_1$  and  $\gamma_2$  coefficient values were taken to calculate the maximum debt-to-GDP ratio, as-well-as debt threshold. Mencinger, Aristovnik and Verbic (2015) emphasized that the negative coefficient value of the quadratic function of debt-to-GDP variable indicating an inverted U-shaped between economic growth and debt. Furthermore, Mencinger, Aristovnik and Verbic (2014) applied calculation of debt threshold value via the quadratic function by constructing the partial derivative with the respect to debt. Hereby, the similar approach of

taking the debt threshold value (or debt-to-GDP turning point)<sup>10</sup> from Mencinger, Aristovnik and Verbic (2014) was applied, and the calculation of debt threshold value is as follows:

$$\text{The debt threshold value (dtv), } dtv = -\frac{\gamma_1}{2\gamma_2} . \quad [3.28]$$

In regards to theoretical assumption that the non-linear in the quadratic equation, this research predicts that the coefficient of debt and debt squared variable will be negative when debt-to-growth ratio exceeds the turning point. This situation implies that public debt at low levels has a positive impact on economic growth; while above the turning point (high levels) has deleterious effects on economic growth. Nowadays, many researchers are still questioning and concerning about whether the threshold values above 90% is the cut point for policy makers to control in utilizing public debt in order to fulfill economy activities.

### 3.6.2.1 Johansen Cointegration Techniques

As mentioned in Okonkwo and Odularu (2013) that cointegration test conducted to examine if the variables have long run association, they added that different methods can be applied in performing the cointegration test. In addition, all variables are integrated in the same order once cointegration has been established. Consequently, for testing the long run dynamic effects between the external debt, long term external debt, short term external debt, and other control variables on economic growth, the Johansen Cointegration technique was applied. Johansen and Juselius (1990) stated that the existence of cointegration implies the existence of the causality relationship between the variables. This meant that based on the Johansen Cointegration test, all variables in time series data must

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<sup>10</sup> The debt threshold value is calculated as negative value of debt-GDP coefficient ( $\gamma_1$ ) divided by two times value of debt-GDP in square coefficient ( $\gamma_2$ ).

be in the same order. This is to ensure that the data in used have long run relationship before it can be forwarded to equation models test by using error correction model (ECM).

Johansen Cointegration test consists of two test statistics, namely trace and maximum eigenvalue statistics test for testing the long run relationship between variables, (Johansen & Juselius, 1990). The Johansen approach based on condition is as follows:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^g \ln(1 - \lambda_i) \text{ [trace-test]}, \text{ and}$$

$$\lambda_{max}(r, r+1) = -T \ln(1 - \lambda_{r+1}) \text{ [max-test]}.$$

Where  $r$  is the number of cointegrating vectors under the null hypothesis and  $\lambda_i$  is the predicted value for the  $i^{\text{th}}$  ordered eigenvalue from the  $\Pi$  matrix. As the rule, reject the null hypothesis that there is  $r$  cointegrating vectors in favor of the alternative that there are  $r+1$  for *trace-test* or more than  $r$  for *max-test* if the result of test statistic is greater than the critical value from the Johansen's guidelines tables (Brooks, 2008).

According to Johansen and Juselius (1990), there exists the possibility that the difference in results between the trace and maximum eigenvalue statistic. Hereby, they have proposed to examine the estimated cointegrating vector match on interpretability of the co-integrating relations.

In Johansen Cointegration test, variables could be non-stationary at level but when the data are converted into first differenced, they will be stationary. We assume that the variables data are non-stationary at level but when these data are converted into first differenced, it will be stationary. Null hypothesis is zero means that the variables are said to be not-cointegrated, and alternative hypothesis is that they are cointegrated among variables. The guideline is that when the trace statistic value is more than 5% critical value, we can reject null hypothesis. As the results, we accept the alternative hypothesis. In other words, when trace statistic value is less than 5% critical value, then we can accept null

hypothesis. As the results, we accept the alternative hypothesis. After all the variables are cointegrated, it means that the variables have long run association. This means that the variables are moving together in the long run. Furthermore, when the variables are cointegrated, we can proceed with the error correction model.

The similar guideline rules are applying in maximum eigenvalue test, that is, when the trace statistic value is more than 5% critical value, we can reject null hypothesis. In order to strengthen the cointegration test results, the maximum eigenvalue statistic test and trace statistic test should be conducted. When the outcome of maximum eigenvalue statistic value is more than 5% critical value, we can reject null hypothesis. Conversely, when the maximum eigenvalue statistic value is less than 5% critical value, then we can accept the null hypothesis and reject the alternative hypothesis. In vice versa, when maximum eigenvalue statistic value is less than 5% critical value, we could not reject the null hypothesis and rather, accept the null hypothesis. Subsequently, trace statistic test should proceed. The method and procedures of trace statistic test are the same as maximum eigenvalue statistic test. Both of the maximum eigenvalue and trace statistic test results are in the same decision for cointegration test. Therefore, these two cointegration tests can play an important role to double check and double confirm whether the tested variables were in cointegration, or whether the tested variables have long-run relation or vice versa. According to ADF unit root test, when the residual variables is stationary at  $I(0)$ , then they occur a long run relationship between two variables. The unit root test would treated all the series tested are integrated of the same order, that is  $I(1)$ , then the cointegration technique that developed by Johansen and Juselius<sup>11</sup> (1990) was employed to investigate of a long run relation among variables.

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<sup>11</sup> Johansen and Juselius (1990) technique are capable to identify the number of cointegrating vector for any non-stationary series with the same order of integration and traced all variables as potentially endogenous.

### 3.6.2.2 Error Correction Model and ECM Diagnostic Test

After identifying the existence of cointegration relationship to exist between the variables, then the next step is to construct an ECM to model the dynamics of the relationship. It aims to determine the speed of adjustment in the short term to long term in the circumstances equilibrium. As has resulted, the greater the coefficient of error correction term (ECT) as the higher the speed of adjustment from the short run disequilibrium to long run equilibrium. In order to avoid all variables trapped into the matter of endogeneity and exogeneity in the estimation, the equation as follows:

$$LGDP_t = \beta_0 + \sum_1^n \alpha_t LGDP_{t-1} + \sum_1^{nt} \alpha_{nt} x_{t-1} + \delta_1 ECT_{t-1} + \varepsilon_t \quad [3.29]$$

Where:  $LGDP_t$  is the natural logarithm of total gross domestic product in growth rate (2010 constant price) for at time  $t$ .  $LGDP_{t-1}$  is the natural logarithm one-year lagged real GDP at time  $t$ . Then,  $x_{t-1}$  consists of different conditioning variables in one year lagged that were being used. [conditioning variables: external debt, long term external debt (LRED), short term external debt (SRED), external debt services (EDS), account balance (CAB), country reserve (CR), foreign direct investment (FDI), government expenditures (GE), population (POP), inflation (INF) and real interest rate (RIR)].

Meanwhile, the term  $ECT_{t-1}$  is the error correction term<sup>12</sup> (one-year lagged error correction term) derived from the long run cointegrating relationship in the equation and  $\delta_1$  can be interpreted as the speed of adjustment from short run disequilibrium to long run equilibrium.

Subsequently, the outcomes of the post test of ECM model for Lagrange-Multiplier test for these 16 selected countries are in order to identify whether the models are serial

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<sup>12</sup> Error Correction Term indicates the speed at which the GDP returns to equilibrium after a change in other independent variables of the model that was used.

autocorrelation or vice versa. Meanwhile, the outcome of Jarque-Bera test is to determine whether the residuals are normally distributed in the models.

### **3.7 A Remark**

This chapter has explained how the data obtained, justify the rational of five models formed and the analysis methods applied in this study in order to investigate the relationship between external debt and economic growth. Before examining these models, all the variables were screened through unit root test for determine all the variables in stationary status. Subsequently cointegrated test for checking variables have relationship in long run, and ECM diagnostic checking in order to satisfy the well design models. These models were basically formed by economic growth model concepts with applied econometric equations. Each model consists of a single dependent variable and five independent variables. Meanwhile, Error Correction Model as regression analysis for these five models. In term of constructing the debt sustainable (debt-to-reserve) and debt threshold (debt-to-growth), non-linear equations (quadratic function) were formed. The next section was generated dataset based on the variables by using time series approach, and the outcomes were analyzed in order to investigate external debt impacts on economic growth of selected Asian countries.

## **CHAPTER 4**

### **RESULTS AND DISCUSSIONS**

#### **4.1 Introduction**

This chapter report the results that are generated from datasets in which obtained by using various statistical analysis and test methods. Firstly, this chapter would perform the descriptive statistics of each selected Asian countries, followed by analysis of stationary datasets by applying Augmented Dickey Fuller (ADF) and Kwiatkowski, Phillips, Schmidt and Shin (KPSS) tests to determine the characteristic in order of integration for the variables and ensure that it is equal for all series. Then Johansen cointegration tests were conducted for testing long run relationship. After all the tested series are integrated of the same order, then the next procedure that follows was using Error Correction Model (ECM) to examine the long run relationship between the variables. While, the coefficient of

external debt-GDP use for calculate debt threshold. Subsequently, diagnostic test to determine the residuals are normally distributed in the models.

## 4.2 Descriptive Statistics

In Table 4.1, the range of average GDP of these 16 countries are between USD451.04 billion to USD8424.16 billion for a period of 36 years. Based on the mean amount of GDP, Turkey shows the highest mean of GDP in these selected countries, follows by Malaysia (USD6639.19 billion), Jordan (USD3086.60 billion) and China (USD2288.95 billion).

**Table 4.1:** Mean and Maximum Amount of GDP for 16 selected Asian Countries in 1980-2016

| Country     | Mean (USD billion) | Maximum (USD billion) |
|-------------|--------------------|-----------------------|
| Bangladesh  | 550.864            | 1029.578              |
| Bhutan      | 1288.839           | 2751.213              |
| China       | 2288.946           | 6894.464              |
| Indonesia   | 2284.208           | 3974.059              |
| India       | 846.000            | 186.000               |
| Jordan      | 3086.600           | 3786.533              |
| Lao PDR     | 757.896            | 1642.749              |
| Sri Lanka   | 1896.380           | 3759.230              |
| Myanmar     | 539.250            | 1420.485              |
| Malaysia    | 6639.188           | 11028.190             |
| Nepal       | 451.038            | 686.084               |
| Pakistan    | 853.340            | 1181.598              |
| Philippines | 1771.567           | 2753.350              |
| Thailand    | 496.570            | 590.000               |
| Turkey      | 8424.161           | 14071.170             |
| Vietnam     | 847.612            | 1770.258              |

Table 4.2 shows the external debt stock in terms of mean and maximum amount of these 16 countries in 36 years, and the range of external debt stock of mean amount varies from USD0.05 billion to USD14.00 billion.

Based on the external debt stock mean amount, China has the highest mean external stock debt among these selected countries, followed by India (USD15.40 billion), Turkey (USD14.00 billion) and Indonesia (USD12.20 billion). Meanwhile, the lowest mean external debt stock is Bhutan.

**Table 4.2:** Mean and Maximum Amount of External Debt for 16 Selected Asian Countries in 1980-2016

| Country     | Mean (USD billion) | Maximum (USD billion) |
|-------------|--------------------|-----------------------|
| Bangladesh  | 1.690              | 3.860                 |
| Bhutan      | 0.040              | 0.230                 |
| China       | 35.300             | 177.000               |
| Indonesia   | 12.200             | 30.900                |
| India       | 15.400             | 48.000                |
| Jordan      | 1.030              | 2.570                 |
| Lao PDR     | 0.290              | 1.160                 |
| Sri Lanka   | 1.330              | 4.660                 |
| Myanmar     | 0.560              | 0.820                 |
| Malaysia    | 6.550              | 20.200                |
| Nepal       | 0.240              | 0.420                 |
| Pakistan    | 3.400              | 7.300                 |
| Philippines | 4.760              | 7.770                 |
| Thailand    | 6.640              | 13.700                |
| Turkey      | 14.000             | 40.100                |
| Vietnam     | 2.500              | 9.820                 |

Subsequently, Table 4.3 shows long term and short term external debt in mean from 1990 to 2016. In general, long term external debt is leading and higher in amount as compares to short run external debt for these selected Asian countries, except China in which its long term external debt mean amount is less than its short term external debt mean amount. In terms of the debt services payment of total external debt stock, China is leading when compares to other countries with their average debt services payment amounted to USD2.89 billion for 36 years. On the contrary, Nepal and Lao PDR are the lowest in average debt services payment (USD0.01billion, followed by Bangladesh (USD0.059 billion) and Jordan (USD0.084).

**Table 4.3:** Mean Amount of Debt Services, Long and Short Term External Debt for 16 Selected Asian Countries in 1980-2016

| Country     | Long Term<br>(USD billion) | Short Term<br>(USD billion) | Debt Services<br>(USD billion) |
|-------------|----------------------------|-----------------------------|--------------------------------|
| Bangladesh  | 1.510                      | 0.110                       | 0.059                          |
| Bhutan      | 0.040                      | 0.010                       | 0.003                          |
| China       | 14.300                     | 20.800                      | 2.890                          |
| Indonesia   | 10.000                     | 1.900                       | 1.790                          |
| India       | 12.800                     | 2.300                       | 1.770                          |
| Jordan      | 0.620                      | 0.380                       | 0.084                          |
| Lao PDR     | 0.310                      | 0.020                       | 0.010                          |
| Sri Lanka   | 1.090                      | 0.170                       | 0.098                          |
| Myanmar     | 0.500                      | 0.050                       | 0.179                          |
| Malaysia    | 4.360                      | 2.510                       | 0.642                          |
| Nepal       | 0.220                      | 0.020                       | 0.010                          |
| Pakistan    | 2.890                      | 0.240                       | 0.278                          |
| Philippines | 3.770                      | 0.880                       | 0.617                          |
| Thailand    | 4.240                      | 2.310                       | 1.130                          |
| Turkey      | 10.010                     | 3.390                       | 2.380                          |
| Vietnam     | 2.120                      | 0.360                       | 0.146                          |

In Table 4.4, it shows the mean and maximum of country reserves that would indicate whether a certain country has the ability to repay the external debt for their creditors. In other words, it means that the country's reserves are the basic benchmark of debt sustainability for each country. China has the highest average reserves within 36 years (USD932 billion), and its maximum country reserves amounted to USD3900 billion in a particular year. Even though China has massive external debt stock, however it also shows that China has certain adequate reserves and the ability to repay their external debt borrowing. Besides that, India is at the second position in average country reserves (USD110 billion) in which its maximum reserves rose to USD362 billion in a particular year.

Subsequently, Thailand with its mean country reserves of USD58.20 billion and its mean maximum country reserves of USD181 billion is leading amongst the Southeast Asia countries. The strength of a country's reserves can safeguard the country's potential financial problems, especially when a country needs liquidity to address the current economic crisis, or to assist in resolving external debt that has exceeded the optimal level of debt threshold.

However, by comparing the country's reserves against the total amount of external debt, it is hard to differentiate whether the debt is sustainable in a country for a particular year. Therefore, an econometric analysis is needed in order to identify whether there is any impact and effect that is generated from the utilization of external debt to economic growth in these selected Asian countries.

**Table 4.4:** Average and Maximum Amount of Country Reserve for 16 Selected Asian Countries in 1980-2016

| Country | Mean (USD billion) | Maximum (USD billion) |
|---------|--------------------|-----------------------|
|---------|--------------------|-----------------------|

|             |         |          |
|-------------|---------|----------|
| Bangladesh  | 5.290   | 32.300   |
| Bhutan      | 0.390   | 1.250    |
| China       | 932.000 | 3900.000 |
| Indonesia   | 37.400  | 116.000  |
| India       | 110.000 | 362.000  |
| Jordan      | 5.100   | 16.600   |
| Lao PDR     | 0.355   | 1.270    |
| Sri Lanka   | 2.570   | 8.210    |
| Myanmar     | 1.790   | 8.840    |
| Malaysia    | 47.500  | 140.000  |
| Nepal       | 1.700   | 8.880    |
| Pakistan    | 6.690   | 22.000   |
| Philippines | 23.900  | 83.800   |
| Thailand    | 58.200  | 181.000  |
| Turkey      | 40.800  | 131.000  |
| Vietnam     | 8.060   | 36.500   |

### 4.3 Unit Root Test

#### 4.3.1 Augmented Dickey-Fuller Test

Amongst the tested variables, it indicates that some of the variables are non-stationary at level. However, when the variables are tested for at first differencing, the results reveal that they are in same order. For examples, most of the variables in countries are non-stationary at level such as Bhutan, China, Indonesia, India, Jordan, Loa, Myanmar, Malaysia, Sri Lanka and Thailand, but in stationary status at the first differencing.

Subsequently, some of the variables in countries such as Nepal, Pakistan and Philippines are stationary at the first differencing with results in which the t-test values are more than its 5 % critical values. The t-test values are in the range between -16.260 to -1.716. Meanwhile, the 5% critical values are between -3.689 to -1.161. The unit root test from Augmented Dickey-Fuller (ADF) test of tested variables are represented in Table 4.5 to Table 4.10 for 16 selected Asian countries.

**Table 4.5:** Augmented Dickey-Fuller Test for Tested GDP of 16 Selected Asian Countries from 1980 to 2016

| No. | Country     | At Level |                   | At Differences |                   |
|-----|-------------|----------|-------------------|----------------|-------------------|
|     |             | T-test   | 5% Critical value | T-test         | 5% Critical value |
| 1   | Bangladesh  | 28.460   | -2.969            |                |                   |
| 2   | Bhutan      | 6.309    | -2.969            |                |                   |
| 3   | China       | 16.994   | -2.969            |                |                   |
| 4   | Indonesia   | 4.183    | -2.969            |                |                   |
| 5   | India       | 3.521    | -2.969            |                |                   |
| 6   | Jordan      | 2.628    | -2.969            | -3.690         | -2.972            |
| 7   | Laos PDR    | 25.097   | -2.969            |                |                   |
| 8   | Myanmar     | 13.087   | -2.969            |                |                   |
| 9   | Malaysia    | 3.500    | -2.969            |                |                   |
| 10  | Nepal       | 3.907    | -2.969            |                |                   |
| 11  | Pakistan    | 4.636    | -2.969            |                |                   |
| 12  | Philippines | 8.582    | -2.969            |                |                   |
| 13  | Sri Lanka   | 7.923    | -2.969            |                |                   |
| 14  | Thailand    | 0.987    | -2.969            | -4.430         | -2.972            |
| 15  | Turkey      | 2.991    | -2.969            |                |                   |
| 16  | Vietnam     | 20.537   | -2.969            |                |                   |

Notes: For level, STATA (11) suggest that at lag 0. Meanwhile for first differencing, the lag goes to lag 1-4 at 5% critical values. In which lag 1=-1.692, lag 2=-2.975, lag 3=-2.978 and lag 4=-2.980.

Table 4.5 is portraying the GDP unit root results for these 16 Asian countries from 1980 to 2016. The GDP variable for most country has not consists of a unit root at level except Jordan and Thailand. However these two countries are stationary in the difference form at difference levels of significant. The priori expectation stationary status of tested variable is when the value of the ADF test statistic is greater than the 5% critical value. The t-test values of these 16 countries are in the range between -8.078 to -1.829 with its 5% critical values are between -3.560 to -1.692.

**Table 4.6:** Augmented Dickey-Fuller Test for Tested External Debt of 16 Selected Asian Countries from 1980 to 2016

| No. | Country    | At Level |                   | At Differences |                   |
|-----|------------|----------|-------------------|----------------|-------------------|
|     |            | T-test   | 5% Critical value | T-test         | 5% Critical value |
| 1   | Bangladesh | -1.209   | -2.969            | -3.519         | -2.972            |
| 2   | Bhutan     | 6.705    | -2.969            |                |                   |
| 3   | China      | 0.933    | -2.969            | -4.514         | -2.972            |
| 4   | Indonesia  | -2.002   | -2.969            | -3.073         | -2.989            |

|    |             |        |        |        |        |
|----|-------------|--------|--------|--------|--------|
| 5  | India       | 2.780  | -2.969 | -1.968 | -1.692 |
| 6  | Jordan      | -2.113 | -2.969 | -2.113 | -1.691 |
| 7  | Laos PDR    | -1.964 | -2.969 | -3.657 | -2.972 |
| 8  | Myanmar     | -2.485 | -2.969 | -5.154 | -2.972 |
| 9  | Malaysia    | 1.949  | -2.969 | -5.045 | -2.972 |
| 10 | Nepal       | -1.810 | -2.969 | -4.620 | -2.972 |
| 11 | Pakistan    | 1.346  | -2.969 | -3.940 | -2.975 |
| 12 | Philippines | -0.619 | -2.969 | -6.641 | -2.972 |
| 13 | Sri Lanka   | 4.195  | -2.969 |        |        |
| 14 | Thailand    | -0.514 | -2.969 | -3.168 | -3.168 |
| 15 | Turkey      | -1.313 | -2.969 | -2.986 | -2.975 |
| 16 | Vietnam     | 2.846  | -2.969 | -5.747 | -2.978 |

Notes: For level, STATA (11) suggest that at lag 0. Meanwhile for first differencing, the lag goes to lag 1-4 at 5% critical values. In which lag 1=-1.692, lag 2=-2.975, lag 3=-2.978 and lag 4=-2.980.

Subsequently, Table 4.6 is portraying the external debt unit root results for these 16 Asian countries from 1980 to 2016. From the dataset, the results showed that Bhutan and Sri Lanka were stationary at level from the unit root test, and it means residual series result for these two countries are stationarity at level. The dataset external debt of other countries were not stationary at level, but, stationary at first differencing. For instance, dataset of external debt from Vietnam was stationary at first differencing, that is its t-test value (-5.474) greater than 5% critical value (-2.978).

Meanwhile, most of countries dataset of their external debts were stationary at first differencing. The t-test values in the range between -6.641 to -1.968 with its 5% critical values are between -3.168 to -1.691.

**Table 4.7:** Augmented Dickey-Fuller Test for Tested Long Term External Debt of 16 Selected Asian Countries from 1980 to 2016

| No. | Country    | At Level |                   | At Differences |                   |
|-----|------------|----------|-------------------|----------------|-------------------|
|     |            | T-test   | 5% Critical value | T-test         | 5% Critical value |
| 1   | Bangladesh | -1.594   | -2.969            | - 3.051        | -2.972            |
| 2   | Bhutan     | -1.716   | -2.969            | - 1.716        | -1.691            |
| 3   | China      | 3.545    | -2.969            |                |                   |
| 4   | Indonesia  | -2.093   | -2.969            | -3.169         | -2.975            |
| 5   | India      | 3.025    | -2.969            |                |                   |
| 6   | Jordan     | -2.699   | -2.969            | -3.502         | -2.978            |

|    |             |        |        |        |        |
|----|-------------|--------|--------|--------|--------|
| 7  | Laos PDR    | -2.039 | -2.969 | -4.401 | -2.972 |
| 8  | Myanmar     | -2.809 | -2.969 | -3.361 | -2.978 |
| 9  | Malaysia    | 1.833  | -2.969 | -4.953 | -2.972 |
| 10 | Nepal       | -1.523 | -2.969 | -3.295 | -2.972 |
| 11 | Pakistan    | 2.300  | -2.969 | -3.805 | -2.975 |
| 12 | Philippines | -1.847 | -2.969 | -2.269 | -1.692 |
| 13 | Sri Lanka   | 6.880  | -2.969 |        |        |
| 14 | Thailand    | -0.732 | -2.969 | -3.175 | -2.972 |
| 15 | Turkey      | -1.592 | -2.969 | -4.479 | -2.980 |
| 16 | Vietnam     | 2.979  | -2.969 | -5.657 | -2.978 |

Notes: For level, STATA (11) suggest that at lag 0. Meanwhile for first differencing, the lag goes to lag 1-4 at 5% critical values. In which lag 1=-1.692, lag 2=-2.975, lag 3=-2.978 and lag 4=-2.980.

Table 4.7 is shows the long term external debt unit root results for these 16 Asian countries from 1980 to 2016. The dataset of long term external debt from China, India and Sri Lanka were stationary at level with its 5% critical values. The dataset of long term external debt other countries were not stationary at level, but, stationary at first differencing. For instance, dataset of long term external debt from Jordan was stationary at first differencing, that is its t-test value (-3.502) greater than 5% critical value (-2.978).

Other countries of their long term external debts were not stationary at the level form, but, stationary at first differencing, and its t-test values in the range between -5.657 to - 1.716 with its 5% critical values are between -2.978to -1.691.

**Table 4.8:** Augmented Dickey-Fuller Test for Tested Short Term External Debt of 16 Selected Asian Countries from 1980 to 2016

| No. | Country    | At Level |                   | At Differences |                   |
|-----|------------|----------|-------------------|----------------|-------------------|
|     |            | T-test   | 5% Critical value | T-test         | 5% Critical value |
| 1   | Bangladesh | -2.591   | -2.969            | -4.703         | -2.972            |
| 2   | Bhutan     | -0.432   | -2.969            | -4.777         | -2.975            |
| 3   | China      | 0.170    | -2.969            | -4.389         | -2.972            |
| 4   | Indonesia  | 1.812    | -2.969            | -1.812         | -1.691            |
| 5   | India      | 1.061    | -2.969            | -3.913         | -2.975            |
| 6   | Jordan     | -1.490   | -2.969            | -1.747         | -1.694            |
| 7   | Laos PDR   | -0.257   | -2.969            | -5.949         | -2.972            |
| 8   | Myanmar    | -1.231   | -2.969            | -3.851         | -2.975            |
| 9   | Malaysia   | 1.220    | -2.969            | -4.908         | -2.972            |

|    |             |        |        |        |        |
|----|-------------|--------|--------|--------|--------|
| 10 | Nepal       | 4.680  | -2.969 |        |        |
| 11 | Pakistan    | -1.683 | -2.969 | -6.279 | -2.972 |
| 12 | Philippines | 1.388  | -2.969 | -2.999 | -2.972 |
| 13 | Sri Lanka   | 1.031  | -2.969 | -4.732 | -2.972 |
| 14 | Thailand    | -0.526 | -2.969 | -3.670 | -2.972 |
| 15 | Turkey      | -0.027 | -2.969 | -3.557 | -3.689 |
| 16 | Vietnam     | 1.572  | -2.969 | -2.976 | -2.975 |

Notes: For level, STATA (11) suggest that at lag 0. Meanwhile for first differencing, the lag goes to lag 1-4 at 5% critical values. In which lag 1=-1.692, lag 2=-2.975, lag 3=-2.978 and lag 4=-2.980.

Table 4.8 is portraying the unit root test of short term external debt results for these 16 Asian countries from period 1980 to 2016. As result has shown, only dataset short term external debt from Nepal was stationary at level, that is, and this residual series result for Nepal is stationarity at level. The dataset of short term external debt other countries were not stationary at level, but, stationary after first differencing. For instance, dataset of short term external debt from Thailand was stationary at first differencing, in which its t-test value (-3.670) greater than 5% critical value (-2.972). Meanwhile, the short term external debt dataset of other country were stationary at first differencing. For instance, dataset of short term external debt for Pakistan was stationary at first differencing, in which its t-test value (-6.279) which is greater than its 5% critical value (-6.279).

**Table 4.9:** Augmented Dickey-Fuller Test for Tested Country Reserve of 16 Selected Asian Countries from 1980 to 2016

| No. | Country    | At Level |                   | At Differences |                   |
|-----|------------|----------|-------------------|----------------|-------------------|
|     |            | T-test   | 5% Critical value | T-test         | 5% Critical value |
| 1   | Bangladesh | 6.479    | -2.969            |                |                   |
| 2   | Bhutan     | 0.601    | -2.969            | -7.759         | -2.972            |
| 3   | China      | 0.776    | -2.969            | -3.613         | -2.972            |
| 4   | Indonesia  | 1.142    | -2.969            | -5.029         | -2.972            |
| 5   | India      | 1.488    | -2.969            | -5.061         | -2.972            |
| 6   | Jordan     | 0.511    | -2.969            | -5.356         | -2.972            |
| 7   | Laos PDR   | 0.240    | -2.969            | -5.459         | -2.972            |
| 8   | Myanmar    | -1.539   | -2.969            | -8.342         | -2.972            |
| 9   | Malaysia   | -0.514   | -2.969            | -3.817         | -2.972            |

|    |             |        |        |        |        |
|----|-------------|--------|--------|--------|--------|
| 10 | Nepal       | 8.850  | -2.969 |        |        |
| 11 | Pakistan    | -0.224 | -2.969 | -5.441 | -2.972 |
| 12 | Philippines | 1.602  | -2.969 | -2.891 | -1.692 |
| 13 | Sri Lanka   | -0.494 | -2.969 | -4.782 | -2.972 |
| 14 | Thailand    | 0.996  | -2.969 | -3.071 | -2.978 |
| 15 | Turkey      | 0.435  | -2.969 | -3.285 | -2.975 |
| 16 | Vietnam     | 0.626  | -2.969 | -3.674 | -2.975 |

Notes: For level, STATA (11) suggest that at lag 0. Meanwhile for first differencing, the lag goes to lag 1-4 at 5% critical values. In which lag 1=-1.692, lag 2=-2.975, lag 3=-2.978 and lag 4=-2.980.

Table 4.9 is presents the unit root test of country reserve results for these 16 Asian countries from period 1980 to 2016. The dataset country reserve of Sri Lanka was not stationary at level, but, stationary after first. Its t-values (-4.782) is greater than 5% critical value (-2.975) at the first differencing, in which, at this level the dataset of country reserve of Sri Lanka is stationarity status.

Meanwhile, the dataset of country reserve from these 16 countries were stationary at first differencing or better with its 5% critical values, -1.692 and -2.978 respectively, and its t-test values in the range between -8.342 to -2.891.

Lastly, in Table 4.10 presents stationary results of the other tested variables such as debt services, foreign direct investment, government expenditures, population, inflation and real interest rate for these 16 Asian countries from 1980 to 2016. All these variables were stationary at first differencing with its 5% critical values from -1.691 to -3.709 and its corresponding t-test values in the range; i.e. debt services (-12.448 to -1.747), current account balances (-13.608 to -1.727), foreign direct investment (-8.137 to -3.181), government expenditures (-6.818 to -1.800), population (-16.260 to -3.292), inflation (-7.176 to -2.382) and real interest rate (-13.535 to -3.010).

**Table 4.10:** Summaries of Augmented Dickey-Fuller Test for Other Tested Variables of 16 Selected Asian Countries from 1980 to 2016

| No. | Variables | T-test (range) | Critical value (range) |
|-----|-----------|----------------|------------------------|
|-----|-----------|----------------|------------------------|

|   |                           |                   |                  |
|---|---------------------------|-------------------|------------------|
| 1 | Debt Services             | -12.448 to -1.747 | -3.689 to -1.691 |
| 2 | Current Account Balances  | -13.608 to -1.727 | -2.969 to -1.691 |
| 3 | Foreign Direct Investment | -8.137 to -3.181  | -2.975 to -2.969 |
| 4 | Government Expenditures   | -6.818 to -1.800  | -2.975 to -1.692 |
| 5 | Population                | -16.260 to -3.292 | -3.709 to -2.969 |
| 6 | Inflation                 | -7.176 to -2.382  | -2.975 to -1.692 |
| 7 | Real Interest Rate        | -13.535 to -3.010 | -2.975 to -2.969 |

Notes: For level, STATA (11) suggest that at lag 0. Meanwhile for first differencing, the lag goes to lag 1-4 at 5% critical values. In which lag 1=-1.692, lag 2=-2.975, lag 3=-2.978 and lag 4=-2.980.

### 4.3.2 Kwiatkowski, Phillips, Schmidt and Shin (KPSS) Test

The unit root KPSS test of tested variables are represented in Table 4.11 to Table 4.16 for 16 selected Asian countries. The priori expectation of stationary status of tested variable with condition when the value of the test statistic is smaller than the 5% critical value.

Table 4.11 is depict the GDP unit root results for these 16 Asian countries from 1980 to 2016. The GDP variable for all country has consists of unit root at 5% critical value in level. However, the variable of GDP for all these 16 countries are stationary at first difference level. As resulted at this first difference level, i.e. GDP of Jordan is stationary in which it LM-test value (0.082) smaller than 5% critical value (0.463). The LM-test values range of other 15 countries are in between 0.052 to 0.139 in which smaller than it 5% critical value.

**Table 4.11:** KPSS Test for GDP of 16 Selected Asian Countries from 1980 to 2016

| No. | Country    | At Level<br>LM-test | At Differences<br>LM-test |
|-----|------------|---------------------|---------------------------|
| 1   | Bangladesh | 0.694               | 0.103                     |
| 2   | Bhutan     | 0.682               | 0.126                     |
| 3   | China      | 0.665               | 0.139                     |
| 4   | Indonesia  | 0.705               | 0.116                     |
| 5   | India      | 0.622               | 0.105                     |
| 6   | Jordan     | 0.683               | 0.082                     |

|    |             |       |       |
|----|-------------|-------|-------|
| 7  | Lao PDR     | 0.677 | 0.074 |
| 8  | Myanmar     | 0.644 | 0.091 |
| 9  | Malaysia    | 0.719 | 0.058 |
| 10 | Nepal       | 0.719 | 0.061 |
| 11 | Pakistan    | 0.726 | 0.078 |
| 12 | Philippines | 0.681 | 0.132 |
| 13 | Sri Lanka   | 0.692 | 0.136 |
| 14 | Thailand    | 0.721 | 0.052 |
| 15 | Turkey      | 0.708 | 0.085 |
| 16 | Vietnam     | 0.698 | 0.120 |

Notes: For Eviews 10 in KPSS test, the 1% critical value is 0.739. Meanwhile, 0.463 for 5% critical value and 0.347 for 10% critical value.

Table 4.12 is portray the external debt KPSS test results for these 16 Asian countries from 1980 to 2016. From the dataset, the results indicate that all these 16 Asian countries are not stationary at 5% critical value in level, and it means that residual series result for all these countries are not in stationarity status at 5% critical value in level. For instance, LM values of external debt for all these 16 Asian countries i.e. Bangladesh (0.691); Bhutan (0.631); China (0.552); Indonesia (0.639); India (0.609); Jordan (0.737); Lao PDR (0.605); Myanmar (0.621); Malaysia (0.619); Nepal (0.705); Pakistan (0.694); Philippines (0.714); Sri Lanka (0.599); Thailand (0.571); Turkey (0.639) and Vietnam (0.565), in which all are greater than 5% critical value (0.463). In contrast, external debt of all these 16 countries are stationary at first difference level. For instance, external debt of Bhutan is stationary at first difference level with LM-test value (0.068) smaller than 5% critical value (0.463). Meanwhile, the other 15 countries are stationary at first difference at 5% critical value with LM-test values in range of 0.050 to 0.172.

**Table 4.12:** KPSS Test for External Debt of 16 Selected Asian Countries from 1980 to 2016

| No. | Country    | At Level<br>LM-test | At Differences<br>LM-test |
|-----|------------|---------------------|---------------------------|
| 1   | Bangladesh | 0.691               | 0.102                     |

|    |             |       |       |
|----|-------------|-------|-------|
| 2  | Bhutan      | 0.631 | 0.068 |
| 3  | China       | 0.552 | 0.065 |
| 4  | Indonesia   | 0.639 | 0.095 |
| 5  | India       | 0.609 | 0.107 |
| 6  | Jordan      | 0.737 | 0.094 |
| 7  | Lao PDR     | 0.605 | 0.106 |
| 8  | Myanmar     | 0.621 | 0.058 |
| 9  | Malaysia    | 0.619 | 0.083 |
| 10 | Nepal       | 0.705 | 0.138 |
| 11 | Pakistan    | 0.694 | 0.050 |
| 12 | Philippines | 0.714 | 0.069 |
| 13 | Sri Lanka   | 0.599 | 0.123 |
| 14 | Thailand    | 0.571 | 0.052 |
| 15 | Turkey      | 0.639 | 0.124 |
| 16 | Vietnam     | 0.565 | 0.172 |

Notes: For Eviews 10 in KPSS test, the 1% critical value is 0.739. Meanwhile, 0.463 for 5% critical value and 0.347 for 10% critical value.

Table 4.13 is indicate the long term external debt unit root results for these 16 Asian countries from 1980 to 2016. For variable of long term external debt, all the LM test results are greater than 5% critical value in level, and it means that residual series result for all these countries are consists of unit root at 5% critical value in level. For instance, LM values for all these 16 Asian countries i.e. Bangladesh (0.696); Bhutan (0.607); China (0.635); Indonesia (0.648); India (0.636); Jordan (0.586); Lao PDR (0.601); Myanmar (0.583); Malaysia (0.671); Nepal (0.603); Pakistan (0.719); Philippines (0.644); Sri Lanka (0.622); Thailand (0.585); Turkey (0.624) and Vietnam (0.635), in which all are greater than 5% critical value.

Oppositely, at first difference level of long term external debt for all these countries indicates that all are in stationary status at 5% critical value. For example, long term external debt of China with LM-test value (0.145) smaller than 5% critical value (0.463), and other 15 countries with LM-test values in range of 0.071 to 0.145.

**Table 4.13:** KPSS Test for Long Term External Debt of 16 Selected Asian Countries from 1980 to 2016

| No. | Country     | At Level<br>T-test | At Differences<br>LM-test |
|-----|-------------|--------------------|---------------------------|
| 1   | Bangladesh  | 0.696              | 0.085                     |
| 2   | Bhutan      | 0.607              | 0.095                     |
| 3   | China       | 0.635              | 0.145                     |
| 4   | Indonesia   | 0.648              | 0.099                     |
| 5   | India       | 0.636              | 0.116                     |
| 6   | Jordan      | 0.586              | 0.072                     |
| 7   | Laos PDR    | 0.601              | 0.108                     |
| 8   | Myanmar     | 0.583              | 0.059                     |
| 9   | Malaysia    | 0.671              | 0.073                     |
| 10  | Nepal       | 0.603              | 0.145                     |
| 11  | Pakistan    | 0.719              | 0.089                     |
| 12  | Philippines | 0.644              | 0.130                     |
| 13  | Sri Lanka   | 0.622              | 0.136                     |
| 14  | Thailand    | 0.585              | 0.071                     |
| 15  | Turkey      | 0.624              | 0.129                     |
| 16  | Vietnam     | 0.635              | 0.141                     |

Notes: For Eviews 10 in KPSS test, the 1% critical value is 0.739. Meanwhile, 0.463 for 5% critical value and 0.347 for 10% critical value.

Table 4.14 is portray KPSS unit root test of short term external debt results for these 16 Asian countries from period 1980 to 2016. As resulted, most of dataset of short term external debt are not stationary at 5% critical value in level, except countries such as Lao PDR, Nepal, Pakistan and Philippines. It means that residual series result for other 12 countries are consists of unit root at 5% critical value in level.

However, all these 12 countries are stationary at first difference level in which all the LM-test values are smaller than it 5% critical value, i.e Bangladesh (0.132); Bhutan (0.135); China (0.059); Indonesia (0.080); India (0.083); Jordan (0.143); Myanmar (0.124); Malaysia (0.081); Sri Lanka (0.091); Thailand (0.062); Turkey (0.059), and Vietnam (0.115). The LM-test values of short term external debt for these 12 Asian countries with the range in between 0.059 to 0.143 in which lower than it 5% critical value.

**Table 4.14:** KPSS Test for Short Term External Debt of 16 selected Asian Countries from

1980 to 2016

| No. | Country     | At Level<br>LM-test | At Differences<br>LM-test |
|-----|-------------|---------------------|---------------------------|
| 1   | Bangladesh  | 0.635               | 0.132                     |
| 2   | Bhutan      | 0.347               | 0.135                     |
| 3   | China       | 0.511               | 0.059                     |
| 4   | Indonesia   | 0.567               | 0.080                     |
| 5   | India       | 0.518               | 0.083                     |
| 6   | Jordan      | 0.589               | 0.143                     |
| 7   | Laos PDR    | 0.407               |                           |
| 8   | Myanmar     | 0.640               | 0.124                     |
| 9   | Malaysia    | 0.545               | 0.081                     |
| 10  | Nepal       | 0.347               |                           |
| 11  | Pakistan    | 0.373               |                           |
| 12  | Philippines | 0.400               |                           |
| 13  | Sri Lanka   | 0.530               | 0.091                     |
| 14  | Thailand    | 0.491               | 0.062                     |
| 15  | Turkey      | 0.603               | 0.059                     |
| 16  | Vietnam     | 0.533               | 0.115                     |

Notes: For EvIEWS 10 in KPSS test, the 1% critical value is 0.739. Meanwhile, 0.463 for 5% critical value and 0.347 for 10% critical value.

Table 4.15 is present the KPSS unit root test of country reserve results for these 16 Asian countries from period 1980 to 2016. The variable of country reserve for all countries are consists of unit root at 5% critical value in level. LM-test values of country reserve for all these 16 Asian countries are not stationary at 5% critical value in level, i.e. Bangladesh (0.612); Bhutan (0.662); China (0.558); Indonesia (0.626); India (0.622); Jordan (0.634); Lao PDR (0.593); Myanmar (0.492); Malaysia (0.628); Nepal (0.673); Pakistan (0.645); Philippines (0.589); Sri Lanka (0.604); Thailand (0.611); Turkey (0.601) and Vietnam (0.635), in which all the LM-test values are greater than 5% critical value.

For example, the LM-test value (0.054) of country reserve for Vietnam is stationary at first difference level of 5% critical value (0.463). Meanwhile, the other 15 countries with it LM-test values in the range of 0.053 to 0.145 in which lower than it 5% critical value.

**Table 4.15:** KPSS Test for Country Reserve of 16 Selected Asian Countries from 1980 to 2016

| No. | Country     | At Level<br>LM-test | At Differences<br>LM-test |
|-----|-------------|---------------------|---------------------------|
| 1   | Bangladesh  | 0.612               | 0.145                     |
| 2   | Bhutan      | 0.662               | 0.075                     |
| 3   | China       | 0.558               | 0.095                     |
| 4   | Indonesia   | 0.626               | 0.053                     |
| 5   | India       | 0.622               | 0.082                     |
| 6   | Jordan      | 0.634               | 0.074                     |
| 7   | Lao PDR     | 0.593               | 0.091                     |
| 8   | Myanmar     | 0.492               | 0.061                     |
| 9   | Malaysia    | 0.628               | 0.106                     |
| 10  | Nepal       | 0.673               | 0.062                     |
| 11  | Pakistan    | 0.645               | 0.057                     |
| 12  | Philippines | 0.589               | 0.060                     |
| 13  | Sri Lanka   | 0.604               | 0.076                     |
| 14  | Thailand    | 0.611               | 0.060                     |
| 15  | Turkey      | 0.601               | 0.083                     |
| 16  | Vietnam     | 0.635               | 0.054                     |

Notes: For Eviews 10 in KPSS test, the 1% critical value is 0.739. Meanwhile, 0.463 for 5% critical value and 0.347 for 10% critical value.

Lastly, in Table 4.16 presents stationary results of the other tested control variables such as debt services, foreign direct investment, government expenditures, population, inflation and real interest rate for these 16 Asian countries from 1980 to 2016. Most of these variables were not stationary with its 5% critical value at level, and its corresponding LM-test values in the range; i.e. debt services (0.554-0.785), current account balances (0.444-0.641), foreign direct investment (0.476-0.609), government expenditures (0.554-0.719), population (0.707-0.735), inflation (0.635-0.730) and real interest rate (0.464-0.619).

However, all these control variables are stationary at first difference level in 5% critical value it corresponding ranges, i.e. debt services (0.050-0.139), current account balances (0.043-0.145), foreign direct investment (0.051-0.145), government expenditures

(0.046-0.137), population (0.044-0.193), inflation (0.056-0.141) and real interest rate (0.046-0.115).

**Table 4.16:** Summaries of KPSS Unit Root Test for Other Tested Variables of 16 Selected Asian Countries from 1980 to 2016

| No. | Variables                 | LM-test (range) | At Differences (range) |
|-----|---------------------------|-----------------|------------------------|
| 1   | Debt Services             | 0.554-0.785     | 0.050-0.139            |
| 2   | Current Account Balances  | 0.444-0.641     | 0.043-0.145            |
| 3   | Foreign Direct Investment | 0.476-0.609     | 0.051-0.145            |
| 4   | Government Expenditures   | 0.554-0.719     | 0.046-0.137            |
| 5   | Population                | 0.707-0.735     | 0.044-0.193            |
| 6   | Inflation                 | 0.635-0.730     | 0.056-0.141            |
| 7   | Real Interest Rate        | 0.464-0.619     | 0.046-0.115            |

Notes: For KPSS test, the 1% critical value is 0.739. Meanwhile, 0.463 for 5% critical value and 0.347 for 10% critical value.

In nutshell, the results from the KPSS test on other tested control variables of these 16 Asian countries have shown that most of these variables are not stationary in level for 5% critical value. Subsequently, when further tested the variables that containing unit root at first difference 5% critical value then these dataset becomes stationary. In returns, the control variables results at first difference reveals that they are in same order in fulfilled the priori expectation of stationary status at 5% critical value.

#### 4.4 Cointegration Test of Model

When confirmed that all variables are stationary after first differencing for all models, then Johansen-Juselius cointegration test applied to investigate the long run relationship between variables in models. If the residual series is stationary at  $I(0)$ , then there exists a long run relationship between two series. In Table 4.17 portray the results of Model 1 of economic growth on external debt, debt services, government expenditures, population and inflation in the selected Asian countries.

**Table 4.17:** Cointegration Test of Model 1 for 16 Selected Asian Countries from 1980 to 2016

| Country     | Trace Statistic<br>Rank ( $r \leq$ ) Lag [ ] |     | Maximum Eigenvalue Statistic<br>Rank ( $r \leq$ ) Lag [ ] |     |
|-------------|----------------------------------------------|-----|-----------------------------------------------------------|-----|
| Bangladesh  | (2)                                          | [2] | (2)                                                       | [2] |
| Bhutan      | (4)                                          | [2] | (3)                                                       | [2] |
| China       | (3)                                          | [2] | (4)                                                       | [2] |
| Indonesia   | (1)                                          | [2] | (1)                                                       | [2] |
| India       | (4)                                          | [2] | (4)                                                       | [2] |
| Jordan      | (3)                                          | [2] | (3)                                                       | [2] |
| Lao PDR     | (2)                                          | [2] | (3)                                                       | [2] |
| Myanmar     | (4)                                          | [2] | (3)                                                       | [2] |
| Malaysia    | (1)                                          | [2] | (1)                                                       | [2] |
| Nepal       | (2)                                          | [2] | (2)                                                       | [2] |
| Pakistan    | (3)                                          | [2] | (3)                                                       | [2] |
| Philippines | (1)                                          | [2] | (1)                                                       | [2] |
| Sri Lanka   | (3)                                          | [2] | (2)                                                       | [2] |
| Thailand    | (1)                                          | [2] | (1)                                                       | [2] |
| Turkey      | (2)                                          | [2] | (2)                                                       | [2] |
| Vietnam     | (1)                                          | [2] | (1)                                                       | [2] |

Note: Lag lengths for the cointegration tests are based on Akaike's information criterion. The Trace statistics, Maximum eigenvalue statistics and its corresponding 5% critical values result has been shown in Appendix IV.

The outcomes of trace and maximum eigenvalue statistics test indicated that the number of cointegrating vectors at 5% critical values. For instance, for Bangladesh, both trace and maximum eigenvalue values are smaller than the 5% critical values, that is, at the rank  $r \leq 2$ . These statistics tests tend to reveal the variables of these countries in this model were cointegrated, and have common trends. All these variables bound together for long run equilibrium relationship.

For determining the cointegration between variables in Model 2 which is related to economic growth on long run external debt, account balance, country reserve, foreign direct investment and real interest rate, the cointegration results are presented in Table 4.18.

**Table 4.18:** Cointegration Test of Model 2 for 16 Selected Asian Countries from 1980 to 2016

| Country     | Trace Statistic   |         | Maximum Eigenvalue Statistic |         |
|-------------|-------------------|---------|------------------------------|---------|
|             | Rank ( $r \leq$ ) | Lag [ ] | Rank ( $r \leq$ )            | Lag [ ] |
| Bangladesh  | (2)               | [2]     | (2)                          | [2]     |
| Bhutan      | (2)               | [2]     | (2)                          | [2]     |
| China       | (4)               | [2]     | (4)                          | [2]     |
| Indonesia   | (1)               | [2]     | (1)                          | [2]     |
| India       | (3)               | [2]     | (4)                          | [2]     |
| Jordan      | (1)               | [2]     | (1)                          | [2]     |
| Lao PDR     | (4)               | [2]     | (4)                          | [2]     |
| Myanmar     | (3)               | [2]     | (3)                          | [2]     |
| Malaysia    | (2)               | [2]     | (2)                          | [2]     |
| Nepal       | (2)               | [2]     | (2)                          | [2]     |
| Pakistan    | (2)               | [2]     | (3)                          | [2]     |
| Philippines | (1)               | [2]     | (1)                          | [2]     |
| Sri Lanka   | (3)               | [2]     | (3)                          | [2]     |
| Thailand    | (1)               | [2]     | (2)                          | [2]     |
| Turkey      | (3)               | [2]     | (2)                          | [2]     |
| Vietnam     | (1)               | [2]     | (1)                          | [2]     |

Note: Lag lengths for the cointegration tests are based on Akaike's information criterion. The Trace statistics, Maximum eigenvalue statistics and its corresponding 5% critical values result has been shown in Appendix IV.

In Table 4.18, all the in this model shows that the rank taken when the trace-statistic and maximum eigenvalue values were smaller than the 5% critical values, that is, variables are in status of cointegrated, and bound together by long run equilibrium relationship in model for each countries respectively. For instance, the variables of dataset from Bhutan show that both trace-statistic and maximum eigenvalue values are smaller than the 5% critical values with rank  $\leq 2$ . It means that variables in dataset of Bhutan was cointegrated and bound together by long run equilibrium relationship in this model.

Meanwhile, for the investigation on the cointegration between variables in Model 3 which is related to economic growth on short term external debt, current account balance, country reserve, foreign direct investment and real interest rate, and its cointegration results were stated in Table 4.19.

**Table 4.19:** Cointegration Test of Model 3 for 16 Selected Asian Countries from 1980 to 2016

| Country     | Trace Statistic<br>Rank ( $r \leq$ ) Lag [ ] |     | Maximum Eigenvalue Statistic<br>Rank ( $r \leq$ ) Lag [ ] |     |
|-------------|----------------------------------------------|-----|-----------------------------------------------------------|-----|
| Bangladesh  | (2)                                          | [2] | (2)                                                       | [2] |
| Bhutan      | (2)                                          | [2] | (2)                                                       | [2] |
| China       | (4)                                          | [2] | (4)                                                       | [2] |
| Indonesia   | (1)                                          | [2] | (1)                                                       | [2] |
| India       | (3)                                          | [2] | (4)                                                       | [2] |
| Jordan      | (1)                                          | [2] | (1)                                                       | [2] |
| Lao PDR     | (4)                                          | [2] | (4)                                                       | [2] |
| Myanmar     | (3)                                          | [2] | (3)                                                       | [2] |
| Malaysia    | (2)                                          | [2] | (2)                                                       | [2] |
| Nepal       | (2)                                          | [2] | (2)                                                       | [2] |
| Pakistan    | (2)                                          | [2] | (3)                                                       | [2] |
| Philippines | (2)                                          | [2] | (1)                                                       | [2] |
| Sri Lanka   | (3)                                          | [2] | (3)                                                       | [2] |
| Thailand    | (1)                                          | [2] | (2)                                                       | [2] |
| Turkey      | (3)                                          | [2] | (2)                                                       | [2] |
| Vietnam     | (1)                                          | [2] | (1)                                                       | [2] |

Note: Lag lengths for the cointegration tests are based on Akaike's information criterion. The Trace statistics, Maximum eigenvalue statistics and its corresponding 5% critical values result has been shown in Appendix IV.

Table 4.19 shows both trace and maximum eigenvalue values in this model are smaller the 5% critical values. For instance, dataset of China shows that both trace and maximum eigenvalue values are smaller than its critical values at 5% critical values at  $\text{rank} \leq 4$ . It means that variables for China was cointegrated, and bound together by long run equilibrium relationship in this model. In overall, these statistic tests tend to reveal that all these six variables are cointegrated and these variables are cointegrating with GDP in the long run economy equilibrium.

External debt sustainability which is based on the ability of a country's reserve in Model 4 is presented in Table 4.20. The cointegration test proceeded in order to identify relationship between external debt on CR-GDP ratio, CR-GDP ratio in squared, debt services, government expenditures and population.

**Table 4.20:** Cointegration Test of Model 4 for 16 Selected Asian Countries from 1980 to 2016

| Country     | Trace Statistic<br>Rank ( $r \leq$ ) Lag [ ] |     | Maximum Eigenvalue Statistic<br>Rank ( $r \leq$ ) Lag [ ] |     |
|-------------|----------------------------------------------|-----|-----------------------------------------------------------|-----|
| Bangladesh  | (4)                                          | [2] | (4)                                                       | [2] |
| Bhutan      | (4)                                          | [2] | (4)                                                       | [2] |
| China       | (5)                                          | [2] | (5)                                                       | [2] |
| Indonesia   | (5)                                          | [2] | (3)                                                       | [2] |
| India       | (4)                                          | [2] | (3)                                                       | [2] |
| Jordan      | (3)                                          | [2] | (3)                                                       | [2] |
| Lao PDR     | (5)                                          | [2] | (5)                                                       | [2] |
| Myanmar     | (5)                                          | [2] | (5)                                                       | [2] |
| Malaysia    | (1)                                          | [2] | (1)                                                       | [2] |
| Nepal       | (4)                                          | [2] | (4)                                                       | [2] |
| Pakistan    | (4)                                          | [2] | (2)                                                       | [2] |
| Philippines | (4)                                          | [2] | (4)                                                       | [2] |
| Sri Lanka   | (1)                                          | [2] | (1)                                                       | [2] |
| Thailand    | (3)                                          | [2] | (1)                                                       | [2] |
| Turkey      | (2)                                          | [2] | (2)                                                       | [2] |
| Vietnam     | (5)                                          | [2] | (4)                                                       | [2] |

Note: Lag lengths for the cointegration tests are based on Akaike's information criterion. The Trace statistics, Maximum eigenvalue statistics and its corresponding 5% critical values result has been shown in Appendix IV.

Accordingly, the trace and maximum eigenvalue test statistics depicted in Table 4.20 shows that the number of cointegrating variables confirmed as one. Both trace and maximum eigenvalue test statistics of Lao PDR are cointegrated at rank  $\leq 5$ , in which these statistic results are smaller than its 5% critical values. These results indicated that variables of dataset Lao PDR was cointegrated and bound together by long run equilibrium relationships. The same results are applied in other countries for this model. In other words, all these variables are bound together by long run equilibrium relationships.

For the model which is related to GDP and the debt turning point, the Johansen-Juselius cointegration test results are organized in Table 4.21.

**Table 4.21:** Cointegration Test of Model 5 for 16 Selected Asian Countries from 1980 to 2016

| Country     | Trace Statistic<br>Rank ( $r \leq$ ) Lag [ ] |     | Maximum Eigenvalue Statistic<br>Rank ( $r \leq$ ) Lag [ ] |     |
|-------------|----------------------------------------------|-----|-----------------------------------------------------------|-----|
| Bangladesh  | (5)                                          | [2] | (5)                                                       | [2] |
| Bhutan      | (4)                                          | [2] | (4)                                                       | [2] |
| China       | (3)                                          | [2] | (3)                                                       | [2] |
| Indonesia   | (5)                                          | [2] | (5)                                                       | [2] |
| India       | (3)                                          | [2] | (3)                                                       | [2] |
| Jordan      | (5)                                          | [2] | (5)                                                       | [2] |
| Lao PDR     | (5)                                          | [2] | (3)                                                       | [2] |
| Myanmar     | (2)                                          | [2] | (1)                                                       | [2] |
| Malaysia    | (4)                                          | [2] | (3)                                                       | [2] |
| Nepal       | (4)                                          | [2] | (3)                                                       | [2] |
| Pakistan    | (3)                                          | [2] | (3)                                                       | [2] |
| Philippines | (2)                                          | [2] | (1)                                                       | [2] |
| Sri Lanka   | (4)                                          | [2] | (3)                                                       | [2] |
| Thailand    | (2)                                          | [2] | (1)                                                       | [2] |
| Turkey      | (3)                                          | [2] | (2)                                                       | [2] |
| Vietnam     | (3)                                          | [2] | (3)                                                       | [2] |

Note: Lag lengths for the cointegration tests are based on Akaike's information criterion. The Trace statistics, Maximum eigenvalue statistics and its corresponding 5% critical values result has been shown in Appendix IV.

The Model 5 of external debt, debt services, government expenditures, population and inflation impact on economic growth in selected Asian countries. The outcomes of trace and maximum eigenvalue statistics test indicated that the number of cointegrating vectors when both trace and maximum eigenvalue values are smaller than its 5% critical values. In determining the debt threshold on growth, it is based on the utilized debt level in optimal level. The implication of debt-growth ratio after the optimum point, which is above the optimum debt threshold ratio, indicates the use of debt after the debt turning point will have a negative impact on growth.

In Table 4.21, both trace and maximum eigenvalue values reveal that variables are cointegrated at  $\text{rank} \leq 2$ . It means that variables are cointegrated, and all these variables are bound together for long run equilibrium relationships.

These statistics tests tend to reveal the variables of these countries are cointegrated, and have common trends, at which the variables are moving together with GDP in long run economic equilibrium. After determining whether the variables are cointegrated in this model, then, we can proceed with ECM to estimate the magnitude and significant among the variables.

#### **4.5 Error Correction Model (ECM) and Diagnostic Test**

The outcomes of ECM analysis with the results showing negative value in error term value and significant in  $p$ -value indicate that there is an existing long-run causality relationship among the tested variables. To determine whether the ECM model has auto correction on tested variables, then we need to proceed with ECM diagnostic test further through Lagrange-Multiplier test. If the result of the  $p$ -value of Lagrange-Multiplier test is less than 5% critical value, the model is auto correction at lag and consists of serial correlation. Therefore, we cannot accept this model as the model is not perfect from the statistical point of view. Consequently, we should redesign the model to ensure that the model should not have auto correction at lag. After that we need to check whether the residual is normally distributed or not by applying Jarque-Bera test. If the  $p$ -value of Jarque-Bera test is less than 5% critical value, then we can reject the null hypothesis (the residuals of the model are normally distributed) rather than accept the null hypothesis. It means that the residuals of the model are not normally distributed. Therefore, we need to fix the problem by redesign the model because residuals of the model should be normally distributed and the model is designable. These two diagnostic tests checking from Lagrange-Multiplier test and Jarque-Bera test would reflect how the tested models are as perfect as a whole.

#### **4.5.1 Error Correction Model**

##### **4.5.1.1. Model 1: Economic Growth and External Debt**

For the first model which is related to economic growth and external debt, the results coefficient and error correction term values of between economic growth and external debt for these 16 countries are shown in Table 4.22. The estimated coefficients of the variables in this model for these mentioned countries are relevance in terms of magnitude and sign values. For instance, Bangladesh with its coefficient of external debt is in negative magnitude (-3.69) and error correction term in negative value (-0.061).

Moreover, the coefficient and error correction term in this model are in negative values, and significant in 5% level for seven Asian countries. However, magnitude of coefficients for country such as China, Indonesia, India, Lao PDR, Malaysia, Pakistan, Sri Lanka, Thailand and Turkey are in positive. In other words, this model is significant and consider as an accepted model in generally.

Based on the Table 4.22, there are seven countries in line with the hypothesis that external debt is negative and significant in 5% level. These countries included Bangladesh, Bhutan, Jordan, Myanmar, Nepal, Philippines and Vietnam. For example, Bhutan with its external debt coefficient value, -0.86, is found to be influencing economic growth significantly and negatively. Utilize each unit increase of external debt borrowing in Bhutan will adversely generate 0.86% in economic output. This negative effect of external debt on economic growth indicates that these seven countries did not conduct its government fiscal expenses at the optimal level of their economic development activities.

**Table 4.22:** Model 1 of Estimated Coefficient and ECT Values of External Debt on GDP for 16 Selected Asian Countries

| Countries   | External Debt | Error Correction Term (ECT) |
|-------------|---------------|-----------------------------|
| Bangladesh  | -3.69*        | -0.061**                    |
| Bhutan      | -0.86**       | -0.193**                    |
| China       | 3.80**        | -0.019**                    |
| Indonesia   | 9.48*         | -0.013**                    |
| India       | 3.47**        | -0.013**                    |
| Jordan      | -11.45*       | -0.021*                     |
| Lao PDR     | 0.56**        | -0.022**                    |
| Myanmar     | -12.15*       | -0.015**                    |
| Malaysia    | 1.80**        | -0.508**                    |
| Nepal       | -11.57**      | -0.453**                    |
| Pakistan    | 0.63**        | -0.228**                    |
| Philippines | -1.18**       | -0.105**                    |
| Sri Lanka   | 8.24**        | -0.216*                     |
| Thailand    | 13.56**       | -0.353**                    |
| Turkey      | 10.30**       | -0.365*                     |
| Vietnam     | -1.62**       | -0.113**                    |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

Meanwhile, external debt coefficient values of Bangladesh and Myanmar are negatively and significant in 10% critical level. In terms of long run equilibrium, the magnitude range of the error correction terms are from -0.01 to -0.44, which reflects about 1 – 44% per annum adjustment towards the long run equilibrium. The findings for this first model are parallel with Rabia and Kamran (2012), who have studied the economic growth against external debt over a period of years from 1980 to 2010 and it was found to be inverse effect in the future economic. This negative and significant effect between economic growth and external debt might be resulted because of the circumstances of debt burden from debt accumulation and its debt servicing affects the growth of the economy (Kemal, 2001).

In contrast, the result from countries such as China, Indonesia, India, Lao PDR, Malaysia, Pakistan, Sri Lanka, Thailand and Turkey shows that their coefficients are significantly and positively related to external debt on economic growth. For instance, the utilization of every per cent increase of external debt borrowed in China generated 3.80%

in economic output. Similarly, the utilization of each per cent increase of external debt borrowed generated 9.48% in Indonesia, 3.47% in India, 0.56% in Lao PDR, 1.80% in Malaysia, 0.63% in Pakistan, 8.25% in Sri Lanka, 13.56% in Thailand, and 10.30% in Turkey respectively in economic output. These nine Asian countries' utilization of its external debts can be considered as useful fiscal tools in generating activating their economy sectors. In addition, there are still potential gap existing in these three countries' economy. The economic performances depend on the utilization of external debt wisely to assist in stimulating its productive economic sectors. Additionally, these countries must ensure less leaking in using of sources, and more importantly, the utilization of external debt must not be influenced by corruption.

In the past, some studies have been conducted concerning corruption issues that have resulted in inefficiency on the utilization of external debt in economic growth at optimal level. Such studies are done by Barr and Serra (2010), Forslund et al. (2011), Ivanyina et al. (2015), Akram (2014) and Kim (2017). In their studies they mentioned that in economics it is suggested that the optimal external debt to economic growth should be at zero level, but, the external debt that was unwisely utilized such as corruption in public sector projects and mismanagement of loan fund are the factors involved in crowding out government debt resources in both domestic and public capital. Consequently, productivity is reduced in total.

Subsequently Table 4.23 is depicted control variables impact on economic growth for these 16 selected Asian countries. The control variables such as external debt services [EDS], government expenditures [GE], inflation [INF] and population [POP].

**Table 4.23:** Model 1 of Estimated Coefficient of Control Variables on GDP for 16 Selected Asian Countries

| Countries | EDS | GE | INF | POP |
|-----------|-----|----|-----|-----|
|-----------|-----|----|-----|-----|

|             |       |        |        |        |
|-------------|-------|--------|--------|--------|
| Bangladesh  | 1.79  | 19.40  | -0.41  | -23.18 |
| Bhutan      | 0.78  | -0.01  | 0.71   | 2.23   |
| China       | 0.39  | 1.94   | 0.03   | -8.24  |
| Indonesia   | 0.17  | 26.72  | -0.78  | -33.70 |
| India       | 0.62  | 10.07  | -2.99  | -10.39 |
| Jordan      | 1.46  | 3.84   | -42.57 | 65.03  |
| Lao PDR     | -0.20 | -0.09  | 2.51   | -4.22  |
| Myanmar     | -0.01 | 0.49   | 1.78   | 9.88   |
| Malaysia    | 0.69  | 19.25  | 7.88   | -29.16 |
| Nepal       | 8.95  | -2.68  | -4.62  | 3.13   |
| Pakistan    | 0.45  | 5.04   | -17.87 | 17.29  |
| Philippines | 0.34  | 21.71  | -24.50 | 6.93   |
| Sri Lanka   | 0.49  | 0.44   | -7.69  | -2.02  |
| Thailand    | 0.14  | -14.36 | -33.45 | 34.26  |
| Turkey      | -1.98 | 0.55   | -3.97  | -10.50 |
| Vietnam     | -1.62 | 0.72   | -3.57  | 0.03   |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

In Model 1, external debt service is negatively impacted economic growth for four of the 16 selected Asian countries including Lao PDR, Myanmar, Turkey and Vietnam. Late payment of debt can increase costs on debt services. This resulted in the actual spending of the loan amount being depleted and reducing the amount of fiscal activities, eventually leading to reduce economic growth.

For variable of government expenditures revealed that also four countries have a negative impact on government expenditures and economic growth. The government's mismanagement of government spending would undoubtedly have an adverse effect on economic growth, including spending on fiscal activities that are not productive to the economy.

Meanwhile, inflationary factor also is negatively impacted economic growth for 11 countries. The increase in commodity prices has slowed economic growth in countries such as Bangladesh, Indonesia, India, Jordan, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Turkey and Vietnam. Subsequently, population factors negatively impact

economic growth for eight these selected Asian countries except Bhutan, Jordan, Myanmar, Nepal, Pakistan, Philippines, Thailand and Vietnam.

#### **4.5.1.2. Model 2: Economic Growth and Long Term External Debt**

Short term and long term external debt might give different impacts on any economies. These two types of external debt that vary in the length of time in paying back the amount of the loan borrowed will certainly have different effects on the economic growth of a country. This is because in general the short term debt is less prone to the risk of borrowing; however, it faces high lending rates.

In contrast, long term debt is more prone to loan risk as it takes a longer time to pay back as well as multiple repayments in arrears, or, it may face uncertainty of the countries own currencies as compared with its creditor countries in the long term. Therefore, the hypothesis in Model 2 is tested to examine whether long term external debt is negatively association with economic growth.

Table 4.24 shows the outcome of coefficient values in between long term external on economic growth for selected Asian countries. The coefficient value shown in Table 4.24 indicates that this model is significant as the error correction term is in negative sign and levels.

Out of these 16 selected Asian countries, there are eight countries with long term external debt against gross domestic product in negative coefficient values, and significant in which support the hypothesis for Model 2 of this study. These countries included Bangladesh, Indonesia, Jordan, Lao PDR, Myanmar, Malaysia, Pakistan and Philippines. It means that long term external debt has exhibited negative long run relationship with economic growth for these countries. Among these eight countries, Myanmar has the greatest negative coefficient value related to long term external debt on economic growth,

i.e. utilising every unit increase on long term external debt borrowing will reduce 13.01% on the country's economic values.

**Table 4.24:** Model 2 of Estimated Coefficient Values of Long Term External Debt on GDP for 16 Selected Asian Countries.

| Countries   | Long Term External Debt | Error Correction Terms |
|-------------|-------------------------|------------------------|
| Bangladesh  | -5.04**                 | -0.017**               |
| Bhutan      | 0.12**                  | -0.254**               |
| China       | 3.42*                   | -0.281*                |
| Indonesia   | -2.75**                 | -0.068**               |
| India       | 4.47**                  | -0.684**               |
| Jordan      | -3.07*                  | -0.050**               |
| Lao PDR     | -2.82*                  | -0.008**               |
| Myanmar     | -13.01*                 | -0.029*                |
| Malaysia    | -0.46**                 | -0.230**               |
| Nepal       | 1.97**                  | -0.022*                |
| Pakistan    | -3.65**                 | -0.073*                |
| Philippines | -10.16**                | -0.077**               |
| Sri Lanka   | 9.16**                  | -0.056**               |
| Thailand    | 6.63**                  | -0.007*                |
| Turkey      | 4.87**                  | -0.284**               |
| Vietnam     | 0.05**                  | -0.059**               |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

This long term external debt negative and significant impact on economic growth are in line with some past researchers findings, as stated that long term debt bring harmful effects on economic growth in the long run. For instance, long term debt increase governments' uncertainties payment premium (Alfaro and Kanczuk, 2009) and the long term debt repayment may be reducing future capital stock (Lin and Sosin, 2001), subsequently slowing down the development of productive economic sectors in the economy.

Furthermore, the negative effects of long term external debt on economic growth might be created due to the emerging market countries unable to issue long term local-

currency bonds and lack of credibility in both monetary and fiscal policy in issuing long term debt in their own currencies (Choong et al, 2010).

In contrary, the result shows there are eight countries that would proof to be beneficial from utilizing long term external debt which had contributed towards positive economic growth; namely Bhutan, China, India, Nepal, Sri Lanka, Thailand, Turkey, Vietnam. Whereby, utilizing each unit increase on long term external debt would generates economic values of 0.12%, 3.42%, 4.47%, 1.97%, 9.16%, 6.63%, 4.87% and 0.05% respectively in these eight countries.

Meanwhile, Table 4.25 is revealed control variables impact on economic growth for these 16 selected Asian countries. The control variables such as current account balance [CAB], foreign direct investment [FDI], real interest rate [RIR] and population [POP].

**Table 4.25:** Model 2 of Estimated Coefficient of Control Variables on GDP for 16 Selected Asian Countries

| Countries   | CAB    | FDI    | RIR   | POP   |
|-------------|--------|--------|-------|-------|
| Bangladesh  | -5.61  | 0.03   | 0.09  | 1.00  |
| Bhutan      | 0.25   | -0.01  | -0.02 | 2.15  |
| China       | 0.03   | 2.46   | 0.11  | -5.49 |
| Indonesia   | 0.03   | -0.07  | 0.58  | 4.33  |
| India       | -2.50  | 0.25   | 0.03  | -3.90 |
| Jordan      | -0.04  | 0.07   | 0.80  | 17.32 |
| Lao PDR     | -2.82  | -0.04  | 0.96  | -0.07 |
| Myanmar     | 2.27   | -1.80  | 0.17  | -0.81 |
| Malaysia    | 0.11   | -0.07  | 0.02  | 1.08  |
| Nepal       | 0.04   | -0.02  | -0.84 | -7.49 |
| Pakistan    | 0.08   | 1.61   | -0.06 | 6.45  |
| Philippines | -10.16 | -0.08  | -0.29 | 0.31  |
| Sri Lanka   | 9.16   | -0.01  | 1.09  | -0.05 |
| Thailand    | 0.11   | 0.21   | -0.85 | -7.02 |
| Turkey      | -4.32  | -13.99 | -0.07 | 0.20  |
| Vietnam     | 0.24   | -0.31  | -0.91 | -7.46 |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

In this Model 2, the result of coefficient values of the control variables indicated certain effects on economic growth. For example, current account balance has a positive impact on economic growth for ten countries; namely Bhutan, China, Indonesia, Myanmar, Malaysia, Nepal, Pakistan, Sri Lanka, Thailand and Vietnam.

In terms of foreign direct investment, most countries have a positive impact on economic growth excluding Bangladesh, China, India, Jordan, Pakistan and Thailand. Meanwhile, nine countries in which real interest rates have a positive impact on economic growth, namely, Bangladesh, China, Indonesia, India, Jordan, Lao PDR, Myanmar, Malaysia and Sri Lanka. In terms of population, there are eight countries that have a positive impact on economic growth. On the other hand, the population has played a role as human capital development in contribute to economic growth for countries such as Bangladesh, Bhutan, Indonesia, Jordan, Malaysia, Pakistan, Philippines and Turkey.

#### **4.5.1.3. Model 3: Economic Growth and Short Term External Debt**

As shown in Table 4.26, Model 3 is related to results for analysis to examine coefficient values of variable between GDP and short term external debt in 16 selected Asian countries. From the error corrections terms (ECT), it had revealed that this model is relevant since the values are in negative sign and significant in levels.

Almost all of the selected countries in this study confirmed the hypothesis that short term external debt influence economic growth positively. These countries included Bangladesh, China, Indonesia, India, Malaysia, Philippines, Sri Lanka, Thailand, Turkey and Vietnam. For instance, Thailand is among the highest positively affected countries in economic growth in terms of short term external debt, i.e. each unit of increase on borrowing in short term external debt would increase 9.18%. Meanwhile, Bhutan is the

lowest positively affected country in economic growth in terms of short term external debt (increase by 0.01%).

**Table 4.26:** Model 3 of Estimated Coefficient Values of Short Term External Debt on GDP for 16 Selected Asian Countries

| Countries   | Short Term External Debt | Error Correction Terms |
|-------------|--------------------------|------------------------|
| Bangladesh  | 1.05**                   | -0.002**               |
| Bhutan      | -0.01**                  | -0.234**               |
| China       | 0.53**                   | -0.008**               |
| Indonesia   | 4.75**                   | -0.026**               |
| India       | 2.08**                   | -0.877**               |
| Jordan      | -1.40**                  | -0.047**               |
| Lao PDR     | -0.01*                   | -0.068**               |
| Myanmar     | -0.16*                   | -0.076**               |
| Malaysia    | 2.42**                   | -0.127**               |
| Nepal       | -0.01**                  | -0.003**               |
| Pakistan    | -0.34**                  | -0.043**               |
| Philippines | 2.47**                   | -0.014**               |
| Sri Lanka   | 0.38**                   | -0.020**               |
| Thailand    | 8.90**                   | -0.133**               |
| Turkey      | 9.18**                   | -0.125*                |
| Vietnam     | 0.01**                   | -0.022*                |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

These significant positive relationships are similar to Moki (2012) who has stated that public debt in term of short term is an important indicator as stimulus for economic growth in Africa, and as the findings by Kibui (2012) in Kenya and Colombo and Longoni (2009) for 61 developing countries which covered a period from 1970 to 2000.

Oppositely, there are six countries namely Bhutan, Jordan, Lao PDR, Myanmar, Nepal and Pakistan which has shown negatively coefficient and significant in 5% critical levels. These negative coefficient values had revealed that each unit increase borrowing in short term external debt would decline 0.01% in Philippines, 1.40% in Jordan, 0.01% in Lao PDR, 0.16% in Myanmar, 0.01% in Nepal and 0.34% in Pakistan in terms of

economic value added. Often, short term debt is usually exposed to market sentiment in credit rates float at which it directly affects the creditworthiness. Alforo and Kancsuk (2009) expressed that when economy is attacked by increases in interest rates, it may cause extra step down in the economic growth due to the service in extra interest of debt payment.

Meanwhile, Table 4.27 is studied the controller variables impact on economic growth for these 16 selected Asian countries. The control variables such as current account balance [CAB], foreign direct investment [FDI], real interest rate [RIR] and population [POP].

Table 4.27 is depicted the coefficient of the control variables effects on economic growth. In terms of current account balance, it is negative impact economic growth for countries such as Bangladesh, China, India, Jordan, Lao PDR, Philippines, Sri Lanka, and Thailand.

**Table 4.27:** Model 3 of Estimated Coefficient of Control Variables on GDP for 16 Selected Asian Countries

| Countries   | CAB   | FDI   | RIR   | POP    |
|-------------|-------|-------|-------|--------|
| Bangladesh  | -7.31 | -0.04 | -0.08 | -5.23  |
| Bhutan      | 0.24  | -0.01 | -0.02 | 2.23   |
| China       | -0.04 | 2.28  | 0.03  | -4.80  |
| Indonesia   | 0.02  | -0.08 | 0.49  | -3.88  |
| India       | -0.22 | 0.21  | 0.16  | -2.06  |
| Jordan      | -0.04 | 0.35  | 0.62  | 13.83  |
| Lao PDR     | -0.04 | 0.96  | -0.02 | -3.54  |
| Myanmar     | 0.11  | -0.17 | -1.02 | -0.84  |
| Malaysia    | 0.07  | -0.03 | 0.02  | -1.75  |
| Nepal       | 0.03  | -0.01 | -0.76 | -6.70  |
| Pakistan    | 0.07  | 1.67  | -0.08 | 3.33   |
| Philippines | -0.03 | 0.15  | 0.35  | 2.66   |
| Sri Lanka   | -0.01 | 0.91  | -0.16 | 1.28   |
| Thailand    | -0.19 | -0.05 | -0.41 | -9.70  |
| Turkey      | 0.13  | -0.16 | 0.64  | -15.30 |
| Vietnam     | 0.29  | -0.60 | 0.20  | -9.63  |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

In term of investment, foreign direct investment has a negative impact on economic growth for countries such as Bangladesh, Bhutan, Indonesia, Myanmar, Malaysia, Nepal, Thailand, Turkey and Vietnam. Foreign direct investment that has a negative impact reflects the net foreign direct investment deficit that exists in the country.

In addition, real interest rates also have a negative impact on economic growth in eight countries. Real interest rates have been a hindrance to fiscal activities that have slow down economic growth. For instance, each unit increase in real interest rest would lead to 0.02% in economic growth for Lao PDR.

For the control variable of the population, it has a negative impact on economic growth as the dependency on spending of the population on the welfare that has been spending heavily. Only five of the selected Asian countries in which population factor have a positive impact on economic growth, namely Bhutan, Jordan, Pakistan, Philippines and Sri Lanka.

#### **4.5.1.4. Model 4: External Debt Reserve Threshold and External Debt-Country Reserve Ratio in Examine Debt Sustainability**

Typically, economic policy makers may use the maximum point ratio of external debt to country reserve (debt-reserve threshold) as the benchmark of debt sustainability measurement, especially in addressing the issue of debt sustainability in low-income countries. This debt-reserve threshold is a useful guideline for debt sustainable measure, and a tool for economic policy makers in reacting to its optimal debt-reserve level adjustment to be able to manage and control the limits in utilization of external borrowing.

In Model 4 which is related to impact of debt-reserve ratio on economic growth, the results coefficient debt-reserve and error correction term values of between economic growth and external debt for these 16 countries are shown in Table 4.28.

**Table 4.28:** Model 4 of Estimated Coefficient Values of External Debt on Country Reserve for 16 Selected Asian Countries.

| Countries   | Debt-Reserve | Error Correction Terms |
|-------------|--------------|------------------------|
| Bangladesh  | -0.27**      | -0.089**               |
| Bhutan      | -4.15**      | -0.163**               |
| China       | -0.34**      | -0.958**               |
| Indonesia   | -0.56**      | -0.209**               |
| India       | -0.19**      | -0.024*                |
| Jordan      | -0.36**      | -0.615**               |
| Lao PDR     | -0.04**      | -0.452**               |
| Myanmar     | -0.05*       | -0.736**               |
| Malaysia    | -0.16*       | -0.194**               |
| Nepal       | -0.33**      | -0.592**               |
| Pakistan    | -0.72**      | -0.229**               |
| Philippines | -0.57**      | -0.281**               |
| Sri Lanka   | -0.26*       | -0.193**               |
| Thailand    | -0.90**      | -0.204*                |
| Turkey      | -0.09**      | -0.975**               |
| Vietnam     | -6.01**      | -0.267**               |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

In Table 4.28, the estimated coefficients of the variables in this model for these 16 countries are relevance in terms of magnitude and sign values. For instance, Malaysia with its coefficient of debt-reserve value is -0.16, and error correction term of -0.194. Similarly, the coefficient error terms in this model are in negative values and significant in 5% level for other 15 Asian countries. Generally, this model is significant and consider as an accepted model.

According to the external debt-reserve ratio reveals that each unit over spending from debt-reserve threshold would reduce its country reserve. For instance, Thailand with

its debt-reserve coefficient -0.90 indicates that utilize exceeded debt-reserve threshold by every unit increase on external debt would reduce 0.90% on country reserve.

An alternative benchmark measurement needs to be taken into account as a measurement of debt being used and in guarantees at an optimum level and undermining economic growth. For example, the ratio approach of debt-to-reserve can provide an indication of the effective use of debt levels, and as a preliminary reminder to a country in order to ensure that in utilizing its debt, it must be not exceed the debt-reserve threshold. In relation to this issue, the results of this study in the relevant Model 4 can be explained in Table 4.29.

In Table 4.29, the model is related to construct external debt-country reserve threshold for these 16 countries that are statistically significant in levels based on its error correction terms and negative coefficient.

**Table 4.29:** Model 4 of Debt Sustainable of External Debt on Country Reserves for 16 Selected Asian Countries

| Countries   | Coefficient              |                                         | Debt-Reserve Threshold |
|-------------|--------------------------|-----------------------------------------|------------------------|
|             | ED/CR<br>[ $\lambda_1$ ] | (ED/CR) <sup>2</sup><br>[ $\lambda_2$ ] |                        |
| Bangladesh  | -0.269                   | 0.002                                   | 91.68                  |
| Bhutan      | -4.154                   | 0.034                                   | 61.72                  |
| China       | -0.345                   | 0.002                                   | 77.66                  |
| India       | -0.186                   | 0.002                                   | 53.24                  |
| Indonesia   | -0.562                   | 0.017                                   | 16.61                  |
| Jordan      | -0.358                   | 0.004                                   | 46.63                  |
| Lao PDR     | -0.400                   | 0.002                                   | 97.47                  |
| Myanmar     | -0.047                   | 0.001                                   | 17.86                  |
| Malaysia    | -0.159                   | 0.007                                   | 11.62                  |
| Nepal       | -0.330                   | 0.005                                   | 31.66                  |
| Pakistan    | -0.715                   | 0.007                                   | 53.80                  |
| Philippines | -0.510                   | 0.019                                   | 14.95                  |
| Sri Lanka   | -0.258                   | 0.007                                   | 17.72                  |
| Thailand    | -0.902                   | 0.017                                   | 27.12                  |
| Turkey      | -0.086                   | 0.004                                   | 9.75                   |
| Vietnam     | -6.005                   | 0.434                                   | 6.92                   |

Source: World Bank (2018).

To construct the optimum debt-to-reserve level, the coefficients of debt-to-reserve [ $\lambda_1$ ] and debt-to-reserve in square values [ $\lambda_2$ ] are relevant. The coefficients of these two variables such as external debt and country reserves for each country are significant at 5% level. For determine the external debt on country reserve, the derivation on quadratic equation approach was applied for calculate the debt-reserve turning point<sup>13</sup>. The debt-reserve threshold<sup>14</sup> ranges from 6.92% to 97.47%.

The percentages of debt sustainability are different from each other countries because it is based on the capacity in each country in terms of the country's reserves and the external debt that was borrowed respectively. For instance, Lao PDR with high external debt between their country's reserve gap definitely will have debt sustainable at high level (97.47%). Following by is Bangladesh as the second higher in percentage in terms of debt sustainability (91.68%). Meanwhile, country such as Vietnam and Turkey are muted levels<sup>15</sup> in debt sustainability, i.e. 6.92% and 9.75%, respectively. The low values in the ratio of debt-reserve indicate that the ability of these two countries to secure loan funds from abroad is relative low. In other words, countries with high debt-reserve ratio are countries with the high ability to borrow loans from abroad, and vice versa.

As a whole, external debt is negatively related to a country's reserve statistically at levels and in condition of its external debt-to-reserve ratio exceeding the country's optimal debt-reserve threshold.

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<sup>13</sup>Debt-reserve turning point can be calculates as two times of coefficient of debt-reserve divided by coefficient of debt-reserve in square.

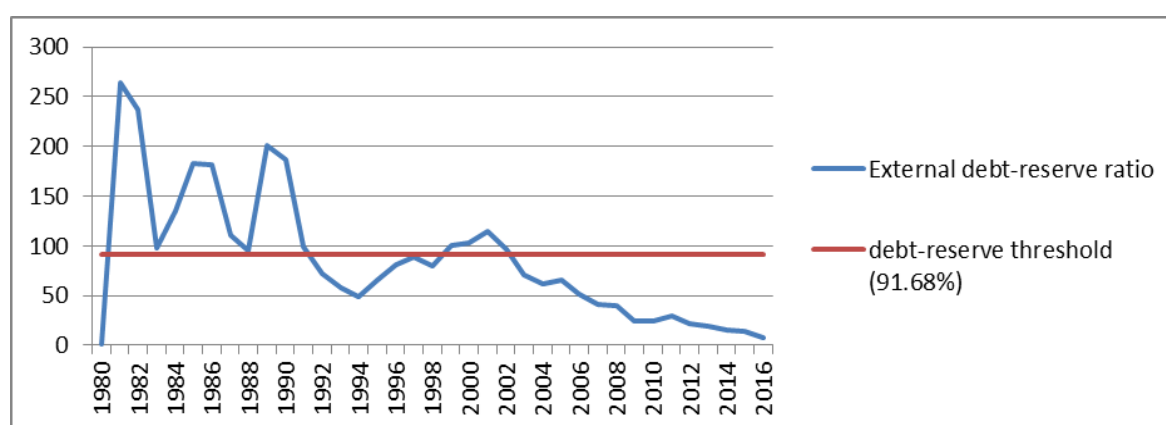
<sup>14</sup> The debt-reserve threshold is calculated as negative of coefficient debt-reserve [ $\lambda_1$ ] value divided by twice coefficient value of debt-reserve in square [ $\lambda_2$ ].

<sup>15</sup>In Belhocine and Erba (2013) found that the impact of debt sustainability is eliminated when debt is below 25%. They concluded that debt sustainable when debt level started from 35%.

Subsequently, Figure 4.1-Figure 4.16 portrays the external debt-reserve threshold positions for these 16 Asian countries. External debt has negative impacts on a country's reserve statistically. It means that a country's reserve will be declining while utilization of external debt increases. The highest debt-reserve threshold is the better ability of a country to pay up its external debt borrowing.

Figure 4.1 provides external debt to reserve (EDR) and debt-reserve threshold (DRT) of Bangladesh from 1980 to 2016. The gap between EDR and DRT reflects how sustainable external debt as regard to the country's reserve is. When gaps EDR below DRT, then utilize external debt is related to sustainable.

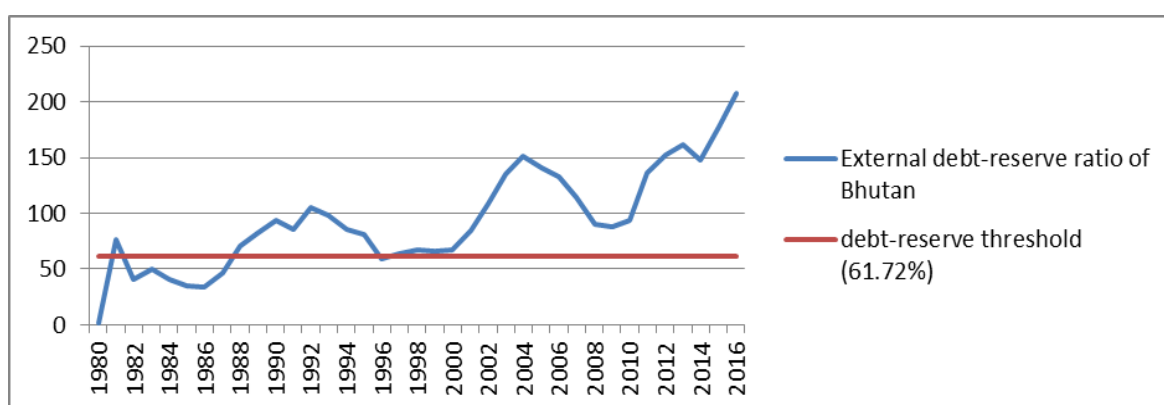
Figure 4.1 indicates that the external debts in Bangladesh were sustainable during 1991 to 1999 and 2002 to 2016. During these periods, Bangladesh had ability to meet its debt obligations through its country reserve by provided enough finance to settle the current year's external debt. On the other hand, during these periods Bangladesh had the ability to increase external borrowings to finance their fiscal expenses activities that based on the gap of debt-reserve ratio differences with the optimal debt-reserve threshold.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.1:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Bangladesh from 1980 to 2016.

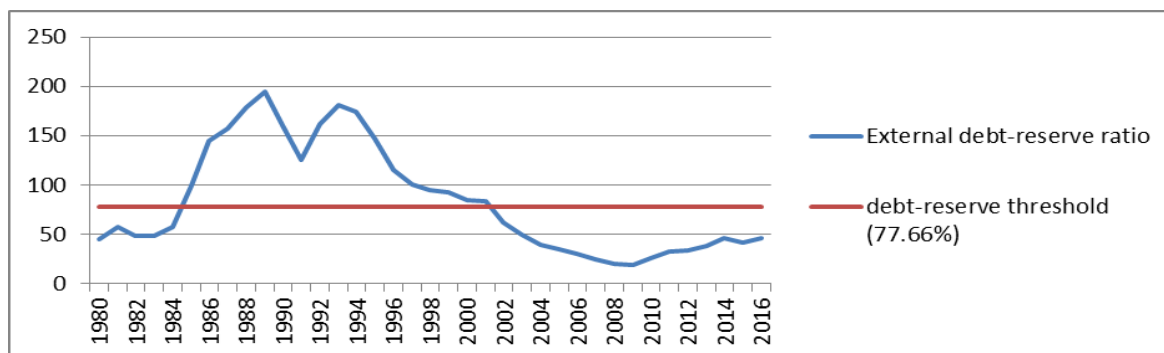
Figure 4.2 shows external debts in Bhutan were sustainable during 1981-1988 and 1996-2000. During these periods, external debt to reserve ratio were below debt-reserve (61.72%). However, started year 2000 Bhutan has used external debt beyond the capability limit, where the ratio of debt-reserve ratios has surpassed the allowed debt-reserve threshold. In addition, external debt increased significantly during the 2000-2016 period, which reflected the occurrence of debt unsustainable.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.2:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Buhtan from 1980 to 2016.

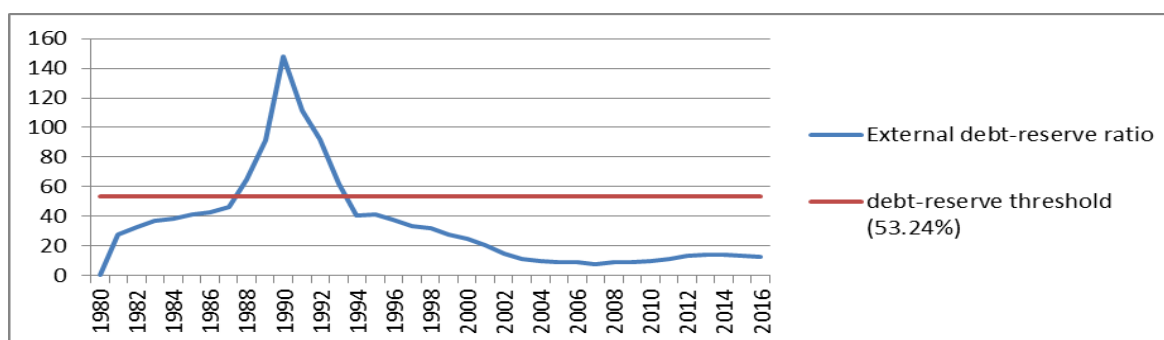
For China (in Figure 4.3), external debt was sustainable after year 2001 onwards. Its external debt-reserve ratios were below the debt-reserve threshold (77.66%). This means that China have adequate country reserve to pay up expenses on external debt during these periods.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.3:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of China from 1980 to 2016.

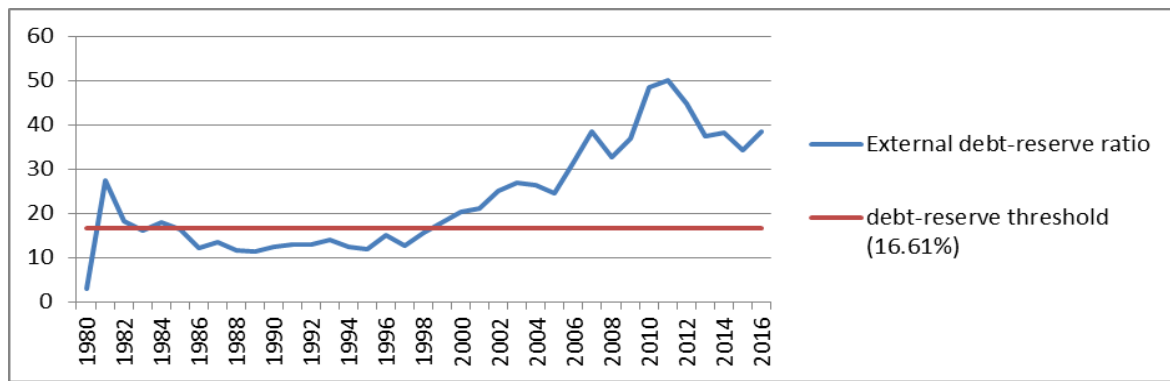
Meanwhile, external debts of India (in Figure 4.4) were sustainable except year 1988 to 1994. From 1995 onwards, India's external debt-reserve ratios were below debt-reserve threshold (53.24%).



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.4:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of India from 1980 to 2016.

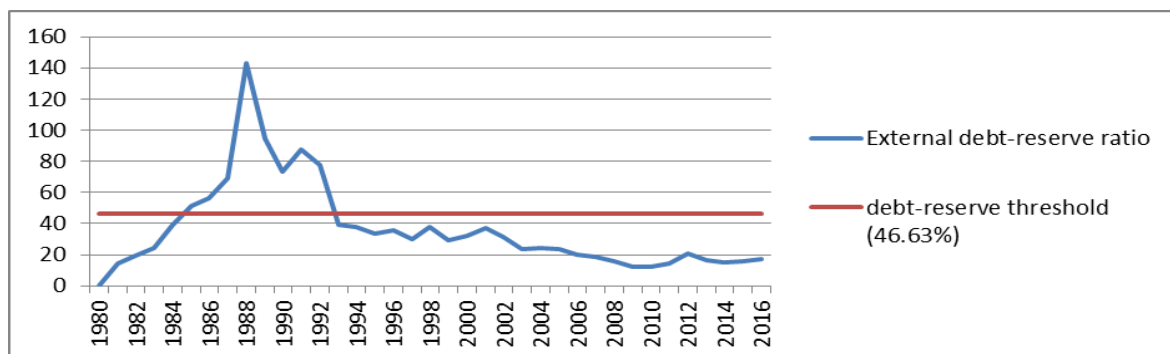
Figure 4.5 shows that external debt to reserve (EDR) ratios and debt-reserve threshold (DRT) of Indonesia from 1980 to 2016. The differences of gap between DRT and EDR reveal that Indonesia's external debts were unsustainable from 1998 to 2016.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.5:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Indonesia from 1980 to 2016.

The external debt-reserve threshold of Jordan from 1980 to 2016 was 46.63% (in Figure 4.6). These external debts were sustainable in the early 1980s.

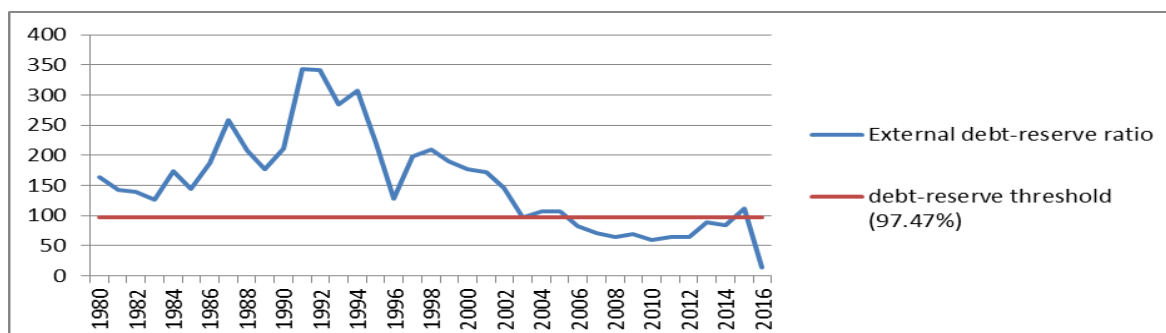


Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.6:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Jordan from 1980 to 2016.

However, from 1985 to 1992, this country might over use its external debt such that it was burdened and the debts were unsustainable. Starting from 1993, Jordan's external debt ratio became better that is nearer to and below debt-reserve threshold.

For Lao PDR (Figure 4.7), its external debt-reserve ratio was above debt-reserve threshold (97.47%).

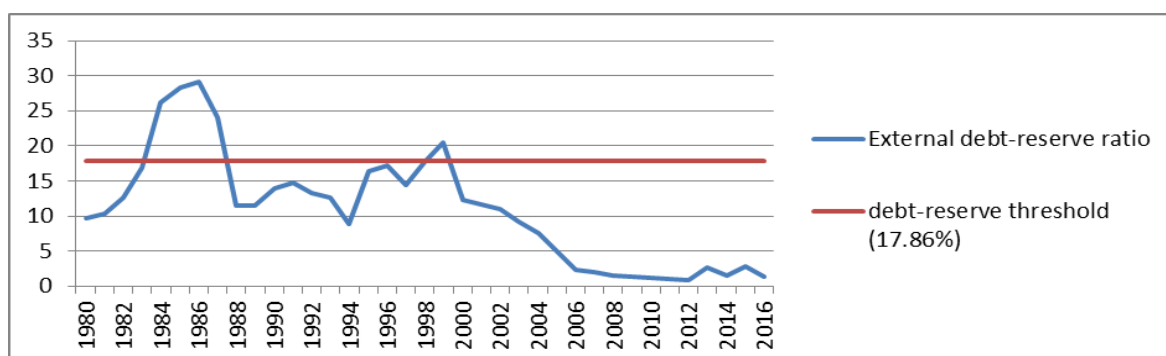


Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.7:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Lao PDR from 1980 to 2016.

This means that from 1980 to 2003 Lao PDR was in external debt unsustainable status. After the year 2003, this country's external debt to reserve ratio becomes better and is less than debt-reserve threshold.

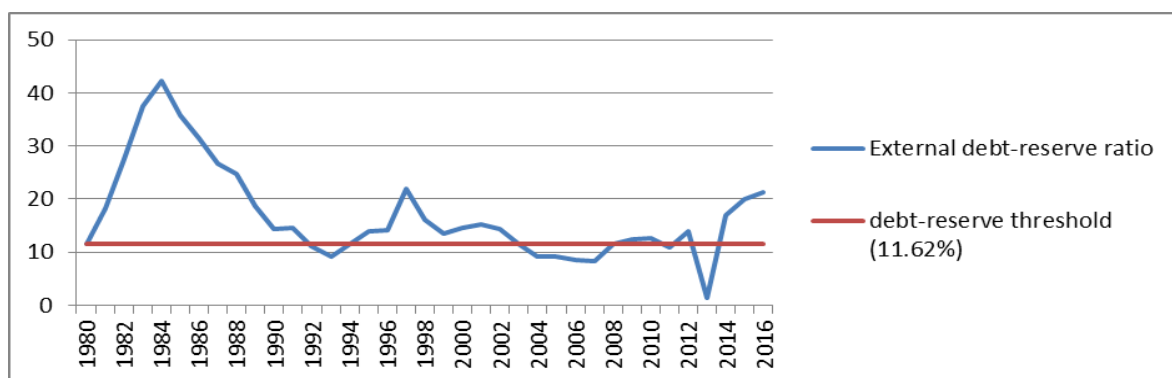
Meanwhile, external debt for Myanmar (in Figure 4.8) was unsustainable from 1984 to 1988 and from 1998 to 1989. For the other durations, Myanmar was on the path of external debt sustainable whereby its external-reserve ratios did not exceed its debt-reserve threshold (17.86%).



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.8:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Myanmar from 1980 to 2016.

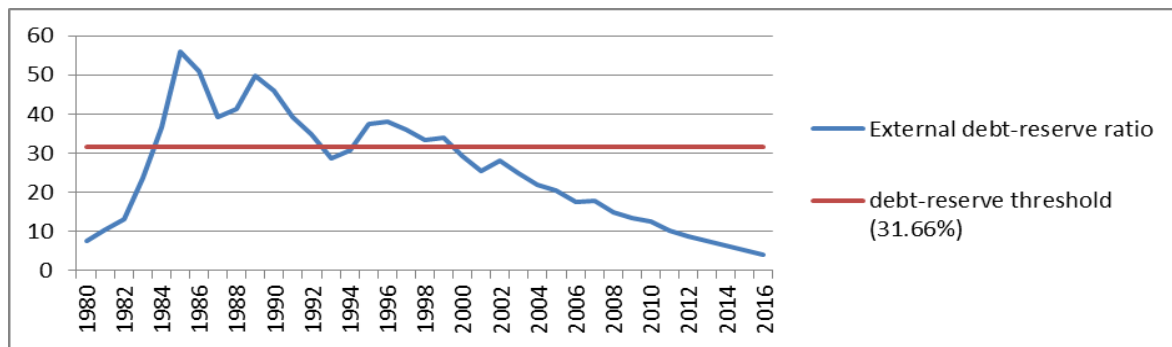
For Malaysia (Figure 4.9), its external debt-reserve ratios were consistent. It means that Malaysia had applied its optimal external debt-reserve ratio for most of the timeframe after the year 1991, and depicts a concave or inverted U-shaped from the year 2007 to 2011 (external debt-reserve ratio touched optimal external debt-reserve threshold, 11.62%).



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.9:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Malaysia from 1980 to 2016.

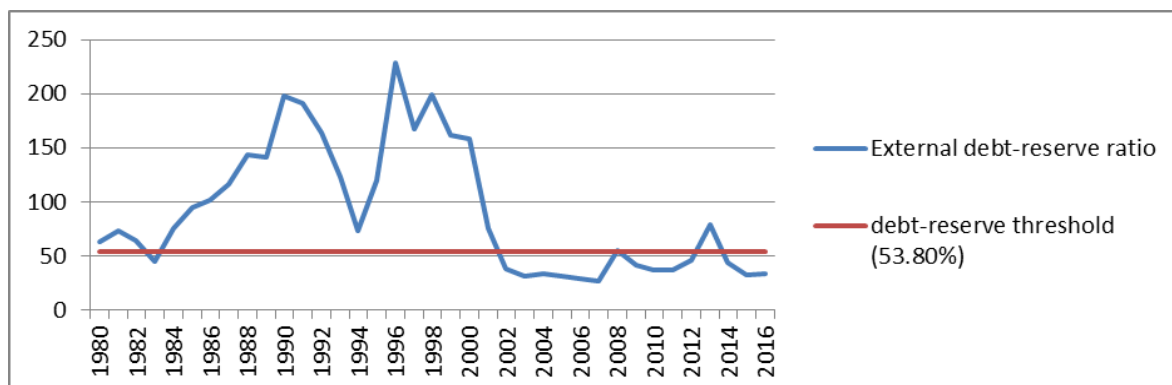
The pattern analyses of external debt-reserve ratios and debt-reserve threshold on Nepal covered for the period 1980-2016 presented in Figure 4.10. The external debt-reserve turning point reveals that Nepal was achieved optimal external debt-reserve ratio (31.66%) in the year 1984, 1992, and 1994 and in the year 2000.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.10:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Nepal from 1980 to 2016.

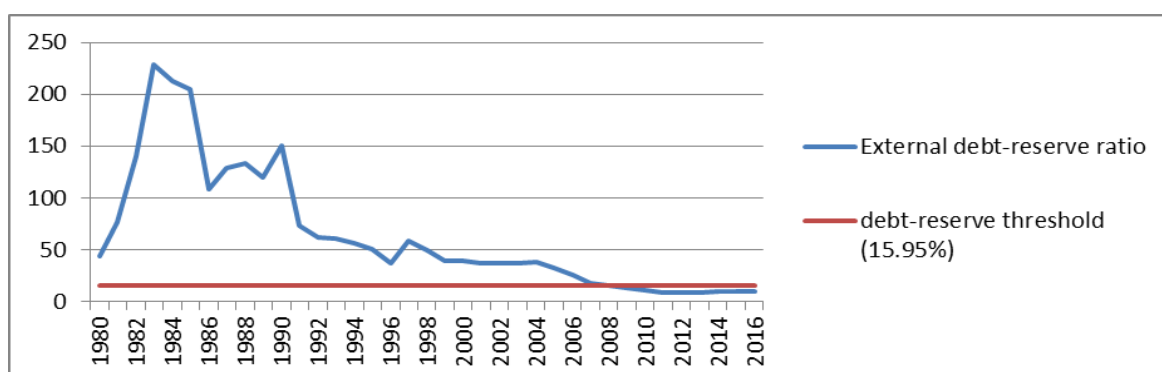
For Pakistan (in Figure 4.11), its external debt-reserve ratios were beyond its debt-reserve threshold (53.80%) from period 2002-2016. Before year 2001, Pakistan's external debt-reserve was above it optimal debt-reserve threshold and is in external debt unsustainable status for these periods.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.11:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Pakistan from 1980 to 2016.

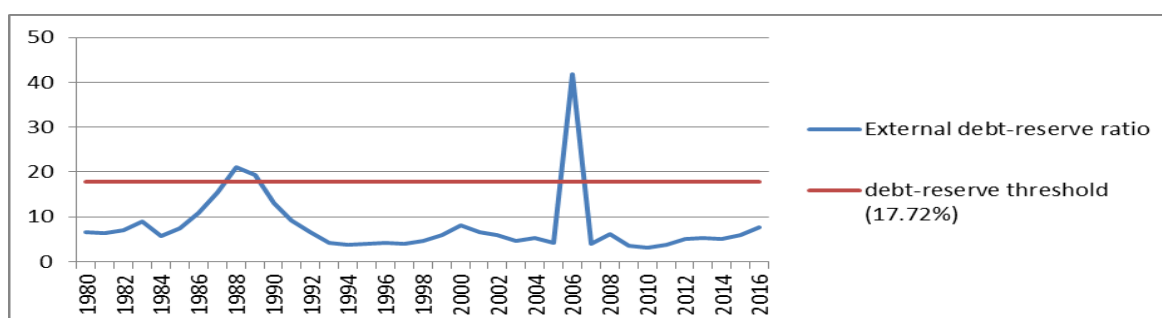
Figure 4.12 shows that this country, Philippines was in unsustainable external debt during the period of 1980-2005. The debt-reserve threshold was at the turning point in the year 2009 and external debt remains sustainable in the next ten years.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.12:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Philippines from 1980 to 2016.

Sri Lanka faced external debt unsustainable in year 2005-2007 (in Figure 4.13). However, Sri Lanka has applied optimal external debt level during the period 2007-2016. Its external debt-reserve ratios were nearest to the suggested debt-reserve threshold (17.72%).

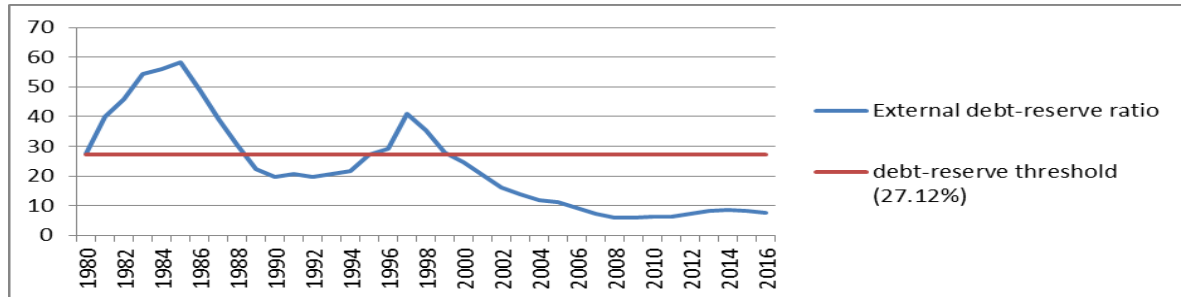


Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.13:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Sri Lanka from 1980 to 2016.

Figure 4.14 shows that Thailand's external debt-reserve turning points were in the year 1988, 1995 and 1999. This country's external debt was sustainable starting from the

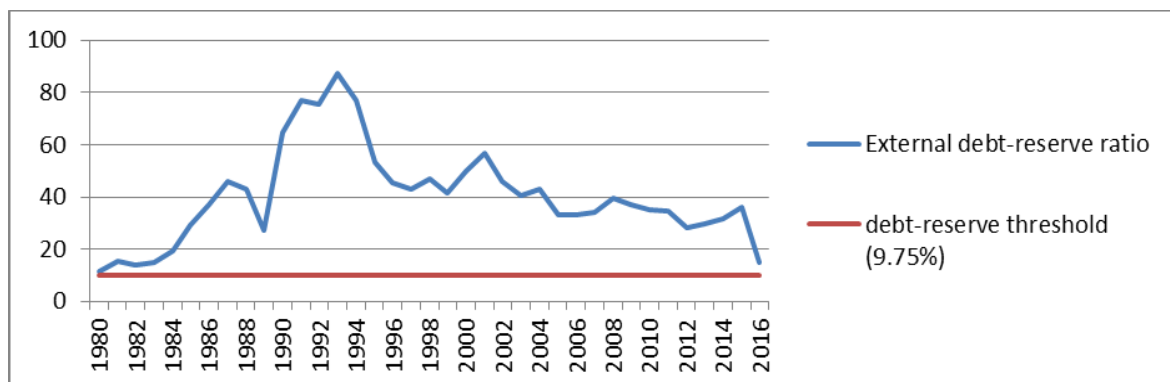
early 2000s until recently. It means that during this period (1999-2016), Thailand attained this sustainable external debt status based on consolidation in its country's reserves.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.14:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Thailand from 1980 to 2016.

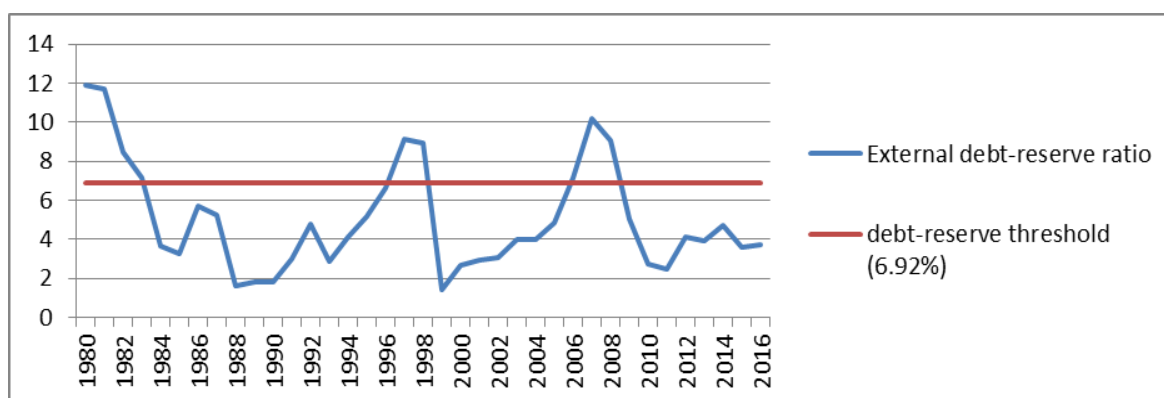
Figure 4.15 shows the external debt-reserve ratio is above debt-reserve threshold at all times in Turkey. Turkey remained unsustainable in its external debt for these 36 years; however, the external debt unsustainable status has improved recently.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.15:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Turkey from 1980 to 2016.

Figure 4.16 shows Vietnam's external debts were sustainable except for the year 1980-1982, 1997-1998 and 2006-2009. From the year 2009-2016, it reveals that external debt was not being over used from its optimal external debt level.



Note: The red line is the calculated debt-reserve threshold from Table 4.20. Meanwhile, the blue line is the ratio of external debt on country reserve for each year. Debt sustainable occur (the gap in between these two lines) when external debt-reserve ratio line not exceeding debt-reserve threshold line.

**Figure 4.16:** External Debt to Country Reserve Ratio and Debt-Reserve Threshold of Vietnam from 1980 to 2016.

According to Waheed (2017), a country's reserves may serve as an alternative tool to address the issue of external debt in terms of fiscal resources. Moreover, Qin (2017) emphasized that international reserves function as to safeguard financial stability throughout the duration until the maturity of external debt. They added that how stronger are marginal effects of international reserves, will be related and depend on how longer is the maturity on external debts. Subsequently, Table 4.30 summarized the impact of control variables on economic growth for selected Asian countries. These control variables in this model included external debt services [EDS], government expenditures [GE] and population [POP]. Table 4.30 shows the effects of these control variables on economic growth via the coefficient value. For instance, external debt services show a negative impact on economic growth for eight of these selected Asian countries.

**Table 4.30:** Model 4 of Estimated Coefficient of Control Variables on GDP for 16 Selected Asian Countries

| Countries   | EDS   | GE    | POP   |
|-------------|-------|-------|-------|
| Bangladesh  | -1.58 | 9.53  | -1.54 |
| Bhutan      | 0.72  | -0.84 | 0.01  |
| China       | 0.87  | 3.59  | 9.47  |
| Indonesia   | 3.70  | -3.80 | 1.60  |
| India       | -0.14 | 5.70  | 3.18  |
| Jordan      | -2.18 | -3.09 | 0.01  |
| Lao PDR     | -0.05 | 0.29  | 2.70  |
| Myanmar     | 0.05  | -0.03 | 7.37  |
| Malaysia    | 0.05  | 0.03  | -0.01 |
| Nepal       | -0.04 | 8.50  | 3.87  |
| Pakistan    | 0.01  | -2.06 | -3.03 |
| Philippines | -0.03 | -0.03 | 0.01  |
| Sri Lanka   | 0.03  | 0.03  | -0.01 |
| Thailand    | 0.07  | 0.02  | -0.01 |
| Turkey      | -1.03 | 2.03  | -6.09 |
| Vietnam     | -1.55 | 4.08  | -3.99 |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

Meanwhile, expenditures on interest debt payment have consumed a portion of the loan amount that should have been used for fiscal activities. The government's intention in spending is to mobilize other economic sectors to generate high aggregate demand in the economy. The positive impact of government expenditures on economic growth has occurred in ten countries except Bhutan, Indonesia, Jordan, Myanmar, Pakistan and the Philippines. In terms of population, there are nine of these selected Asian countries in which this control variable drives their economic growth. This factor indicates that the population provides a high-skilled and sufficient workforce for firms to produce output.

Subsequently, the similar derivation method of quadratic equation is applied in Model 5 which is relating external debt on economic growth by constructing each country's debt threshold.

#### **4.5.1.5. Model 5: Economic Growth and External Debt in Compute Debt Threshold**

For the fifth model which is related to economic growth and external debt threshold, the results coefficient and error correction term values of between economic external debt-GDP ratios for these 16 countries are shown in Table 4.31.

The estimated coefficients of the variables in this model for these mentioned countries are relevance in terms of magnitude and sign values. For instance, China with its coefficient of external debt-GDP is in negative magnitude (-0.78) and error correction term in negative value (-0.459) in which significant in 5% level for Asian countries.

**Table 4.31:** Model 5: Estimated Coefficient Values of External Debt-GDP for Model in Normalizing Cointegration Vector for 16 Selected Asian Countries

| Countries   | External Debt-GDP | Error Correction Terms |
|-------------|-------------------|------------------------|
| Bangladesh  | -0.28**           | -0.584**               |
| Bhutan      | -0.51**           | -0.154**               |
| China       | -0.78**           | -0.459**               |
| Indonesia   | -0.86**           | -0.509**               |
| India       | -0.98**           | -0.018*                |
| Jordan      | -0.45**           | -0.219*                |
| Lao PDR     | -0.28*            | -0.430*                |
| Myanmar     | -1.91**           | -0.029*                |
| Malaysia    | -0.37**           | -0.486**               |
| Nepal       | -0.07*            | -0.211**               |
| Pakistan    | -0.40**           | -0.559**               |
| Philippines | -1.29**           | -0.730**               |
| Sri Lanka   | -0.27**           | -0.640**               |
| Thailand    | -0.14**           | -0.114**               |
| Turkey      | -0.49**           | -0.387*                |
| Vietnam     | -1.37**           | -0.008**               |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

Meanwhile, Indonesia with its external debt-GDP coefficient value, that is, -0.86 significant in 5% critical level, is found to be influencing economic growth significantly and negatively. Every unit increase of external debt borrowing in Indonesia will adversely generate 0.86 per cent in economic output when external debt-GDP ratio exceeded its optimal debt threshold. Meanwhile, error correction term of Indonesia is 0.509, which reflects 50.9 % per annum adjustment towards the long run equilibrium.

Subsequently, Table 4.32 shows the outcome of external debt on economic growth (debt threshold) of Asian countries from 1980-2016. Their error correction terms (ECT) are all in negative signs and significant in levels. These ECTs confirmed that this model is well specified and designable. In addition, the coefficient of variables, such as external debt growth (ED-GDP) and external debt growth squared (ED-GDP)<sup>2</sup> are statistically significant in level. It means that the external debt has negative effects on economic growth when the debt-to-growth ratio is above the optimal debt threshold for each country.

**Table 4.32:** Model 5: Estimated Coefficient Values for Debt Threshold for 16 Selected Asian Countries

| Countries   | Coefficient               |                                          | Debt Threshold <sup>16</sup> (%) |
|-------------|---------------------------|------------------------------------------|----------------------------------|
|             | ED/GDP<br>[ $\lambda_1$ ] | [ED/GDP] <sup>2</sup><br>[ $\lambda_2$ ] |                                  |
| Bangladesh  | -0.281                    | 0.004                                    | 31.96                            |
| Bhutan      | -0.510                    | 0.005                                    | 50.96                            |
| China       | -0.779                    | 0.010                                    | 38.25                            |
| India       | -0.979                    | 0.020                                    | 24.38                            |
| Indonesia   | -0.860                    | 0.022                                    | 19.23                            |
| Jordan      | -0.453                    | 0.019                                    | 12.28                            |
| Lao PDR     | -0.276                    | 0.009                                    | 15.62                            |
| Myanmar     | -1.911                    | 0.071                                    | 13.43                            |
| Malaysia    | -0.371                    | 0.002                                    | 78.07                            |
| Nepal       | -0.071                    | 0.006                                    | 6.48                             |
| Pakistan    | -0.402                    | 0.048                                    | 4.16                             |
| Philippines | -1.290                    | 0.103                                    | 6.29                             |

<sup>16</sup> The debt threshold value is calculated from the coefficient of debt-growth [ $\lambda_1$ ] value divided by twice of negative coefficient value of debt-growth in square [ $\lambda_2$ ].

|           |        |       |        |
|-----------|--------|-------|--------|
| Sri Lanka | -0.274 | 0.012 | 11.30  |
| Thailand  | -0.142 | 0.001 | 103.68 |
| Turkey    | -0.494 | 0.038 | 6.51   |
| Vietnam   | -1.372 | 0.009 | 75.71  |

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The debt threshold percentage ranges from 6.21% to 103.68%. The results for debt thresholds are as follows respectively, namely; Bangladesh (31.96%), Bhutan (50.96%), China (38.25%), Indonesia (19.23%), India (24.38%), Jordan (12.28%), Lao PDR(15.62%), Myanmar(13.43%), Malaysia (78.07%), Nepal (6.48%), Pakistan (4.16%), Philippines (6.29%), Sri Lanka (11.30%), Thailand (103.68%), Turkey (6.51%) and Vietnam (75.71%).

In categorizing external debt threshold in range, countries with 0-30% debt threshold are Indonesia, India, Jordan, Lao PDR, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka and Turkey. Countries with moderate debt threshold range of 30-60% include Bangladesh, Bhutan and China whereas countries with moderate-high debt threshold range of 60-90% include Malaysia and Vietnam. Meanwhile, Thailand is considered to be in high debt threshold with its debt threshold above 90%.

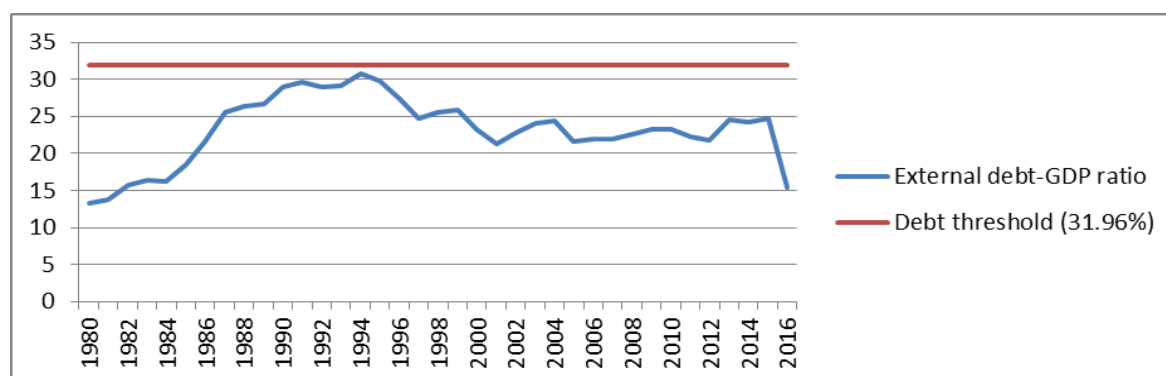
Furthermore, Thailand with the highest debt threshold indicates that below 103.68% of debt threshold will be a safety benchmark for this country to utilize external debt to generate economic growth. Meanwhile, Malaysia with moderate high debt threshold might set a target on debt threshold below 78.07%, so that this ratio becomes suitable indicator for debt borrowing and as debt awareness such that the government should not exceed its ability of debt borrowing.

Additionally, Bhutan with moderate debt threshold (50.96%) corresponded to moderate debt threshold for a developing country. This moderate debt threshold ratio might serve as a suitable guideline for Bhutan in utilizing debt to spur economic growth. Other than that, debt threshold of other developing countries are below 50%. Hereby, these

developing countries should follow its optimal debt threshold benchmark, to prevent from the risks of debt overhang.

Subsequently, Figure 4.17 to Figure 4.32 portrays the external debt-GDP ratio compares to the calculated debt thresholds for these 16 Asian countries. First, Figure 4.17 presents comparison of the external debt-GDP ratio against debt threshold of Bangladesh from 1980 to 2016.

The debt threshold for Bangladesh for this period is 31.96%. As from the result shown, GDP-external debt ratios were below its debt threshold for all the timeframe. It means that Bangladesh had applied external debt for the country's expenses within its abroad loan borrowing ability.

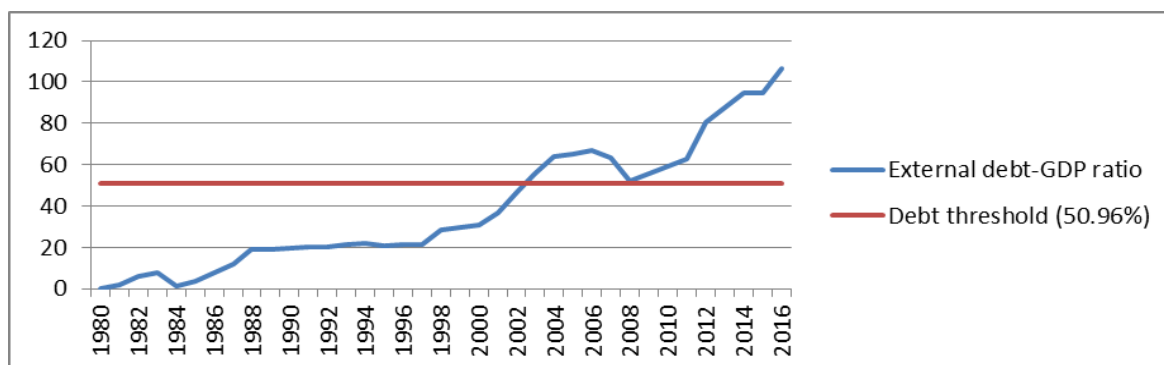


Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.17:** External Debt to GDP Ratio and Debt Threshold of Bangladesh from 1980 to 2016.

Further, Figure 4.18 provides information about the differences between GDP-external debts on debt threshold of Bhutan from 1980 to 2016. The GDP-external debt turning point reached 50.96% in the year 2002 and 2008. However, started from the year 2008 onwards, external debt-GDP ratios were above debt threshold. It means that from the

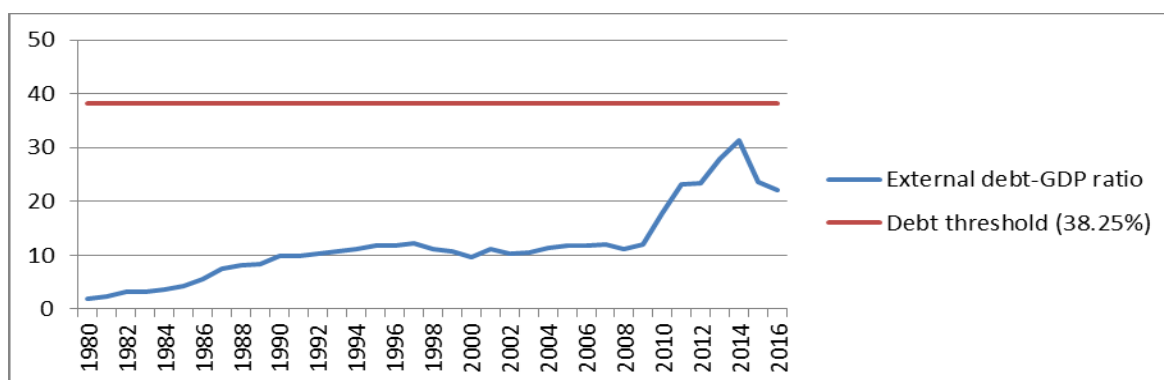
year 2008 to 2016, external debt had negative impacts on GDP. Thus, during this period, the utilized external debt is related to economic growth slowing down in Bhutan.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.18:** External Debt to GDP Ratio and Debt Threshold of Bhutan from 1980 to 2016.

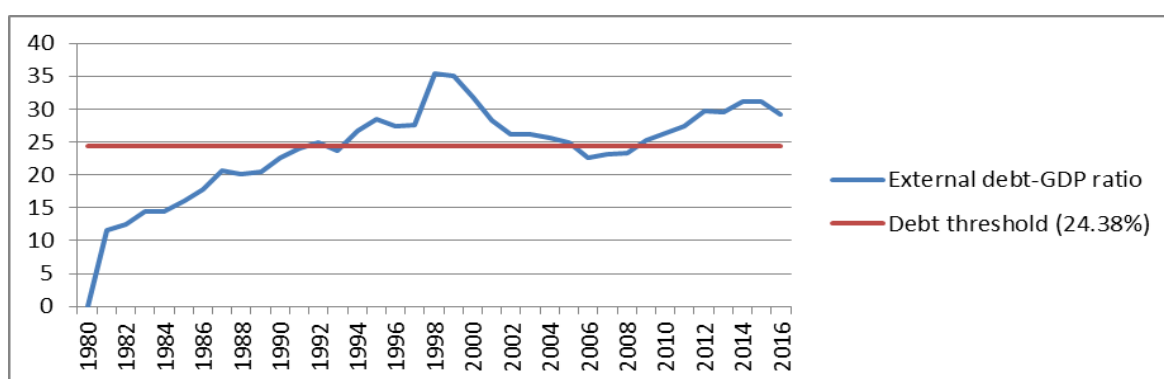
Figure 4.19 represents how China had applied its external debt as compared to its country's debt threshold from 1980 to 2016. The debt threshold for China is 38.25% and its GDP-external debt ratios were below and beyond this debt threshold for 36 years. It means China utilized external debt did not exceed its optimal level and had contributed to the country's economic growth.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.19:** External Debt to GDP Ratio and Debt Threshold of China from 1980 to 2016.

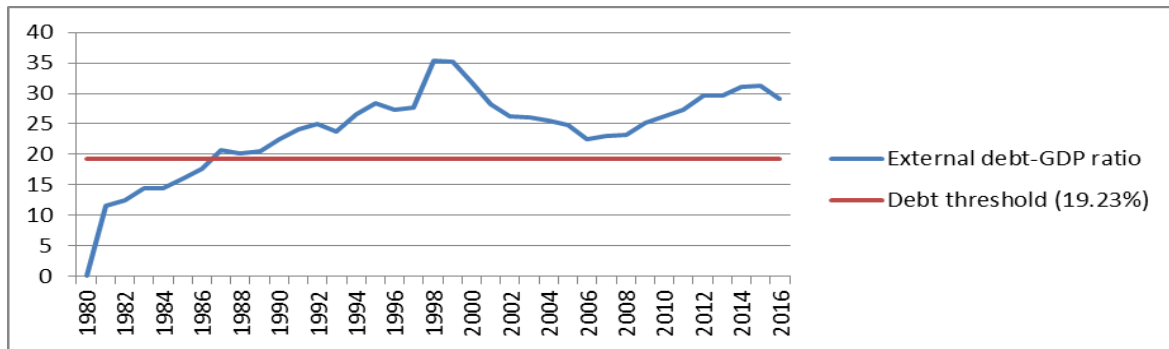
Subsequently, the impact of external debt on GDP in India from the year 1980 to 2016 is represented in Figure 4.20. India's debt threshold is 24.38% for this period. GDP-external debt ratio of India was above its optimal debt threshold from the year 1995-2005 and continued from the year 2009 to 2016. The Implication for the later period is that India might be trapped in negative economic growth.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assist in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.20:** External Debt to GDP Ratio and Debt Threshold of India from 1980 to 2016.

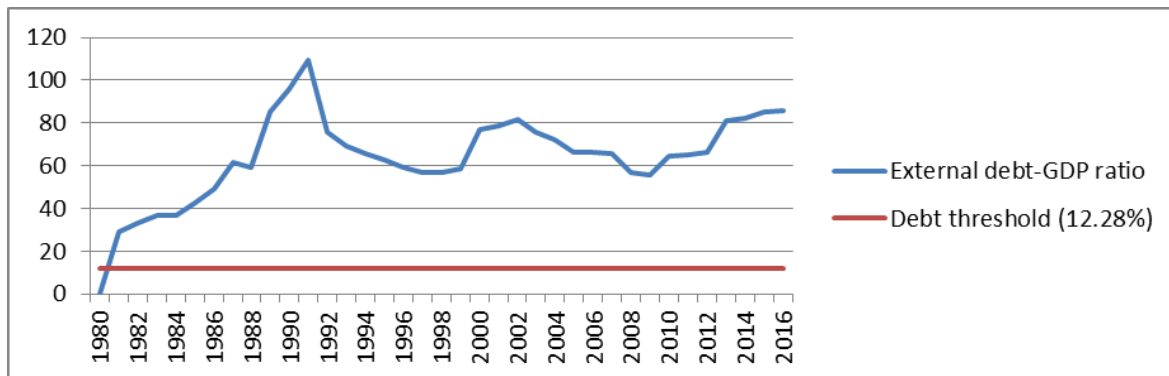
Figure 4.21 shows debt-GDP ratios on debt threshold of Indonesia for the period of year 1980-2016. From 1987 until 2016, its external debt-GDP ratios were exceeding the debt threshold. Therefore, utilized external debt in Indonesia for the period of year 1987-2016 is related to negative economic growth in the country.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.21:** External Debt to GDP Ratio and Debt Threshold of Indonesia from 1980 to 2016.

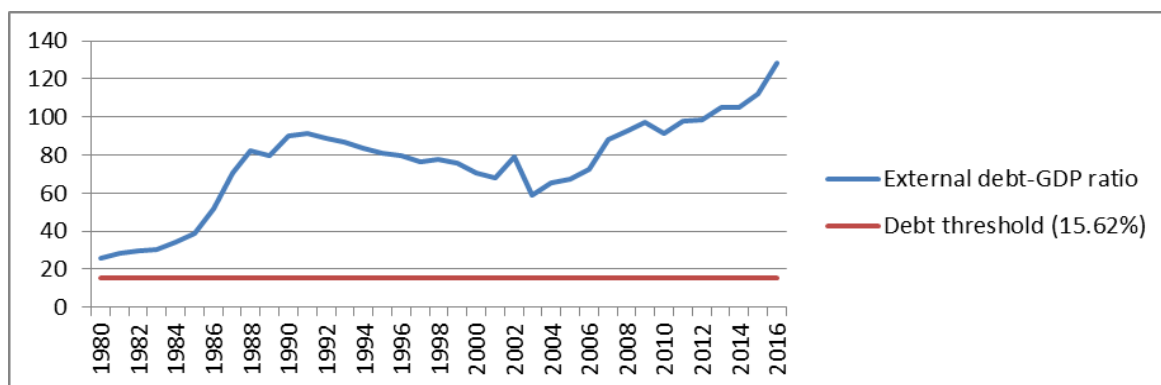
Figure 4.22 shows debt-GDP ratios on debt threshold of Jordan for the period of year 1980-2016. The gap between external debt-GDP ratio and debt threshold was depicted in Figure 4.22. The result shows that Jordan utilized its external debt beyond allowable capability. Thus, this result reflects that the use of massive external debt could be attributed to negative economic growth of Jordan for the period 1980-2016.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.22:** External Debt to GDP Ratio and Debt Threshold of Jordan from 1980 to 2016.

Subsequently, the impact of external debt on GDP in Lao PDR from the year 1980 to 2016 is represented in Figure 4.23. Lao PDR's debt threshold is 15.62% for this period.

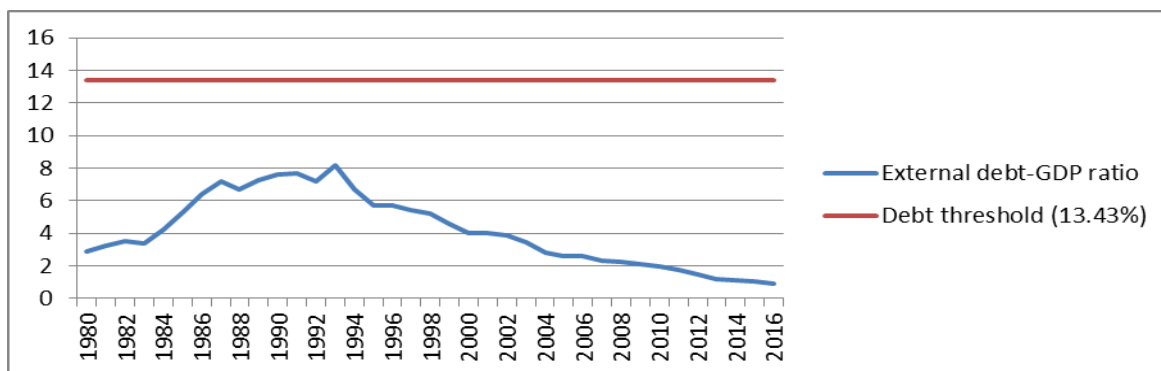


Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assist in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.23:** External Debt to GDP Ratio and Debt Threshold of Lao PDR from 1980 to 2016.

From the Figure 4.23, we can conclude that for a period of 36 years (1980 to 2016), there is no single year in which debt-GDP ratios is below its suggested debt threshold. The government of Lao PDR should take efforts to reduce external debt and manage it wisely, so that external debt-ratio would decline and meet its debt threshold consistently.

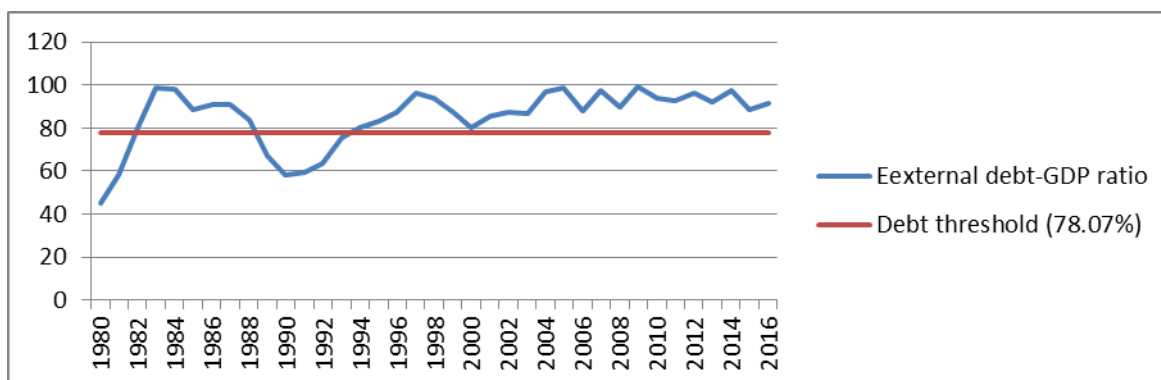
The most striking observation in Figure 4.24 (Myanmar) is the decreasing external debt-GDP ratios starting from the year 1994 until 2016. Myanmar achieved external debt-GDP turning point (8.19%) in 1993. The external debt-GDP ratio is less than debt threshold (14.43%) over the time. Thus, Myanmar's external debt might have assisted in positive economic growth during these 36 years.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.24:** External Debt to GDP Ratio and Debt Threshold of Myanmar from 1980 to 2016.

Meanwhile, Figure 4.25 illustrates that Malaysia achieved its debt turning point in 1982, 1988, 1993 and 2000. Starting from 2001 until 2016, Malaysia's utilized external debt exceeded its optimal debt threshold. It means that during this period, the utilized external debt might have impact on slowing down of economic growth.

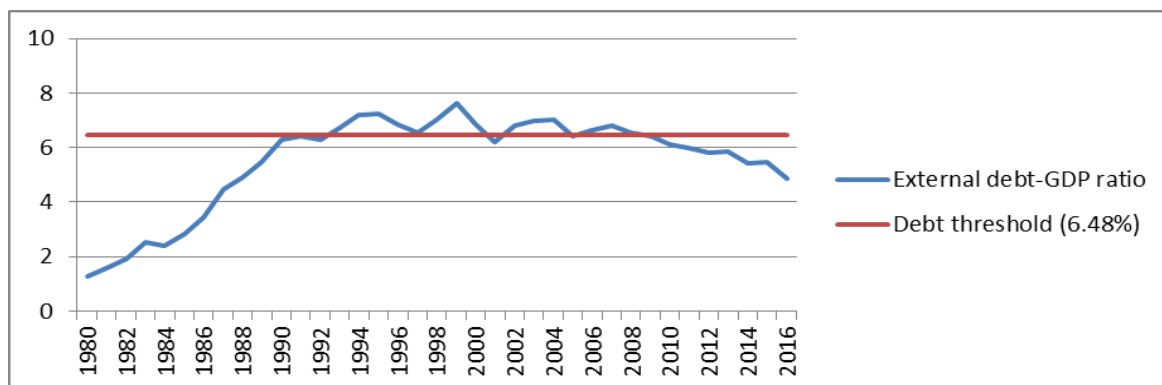


Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.25:** External Debt to GDP Ratio and Debt Threshold of Malaysia from 1980 to 2016.

The impact of external debt on GDP in Nepal from the year 1980 to 2016 is represented in Figure 4.26. Nepal's debt threshold is 6.48% for this period. Figure 4.26

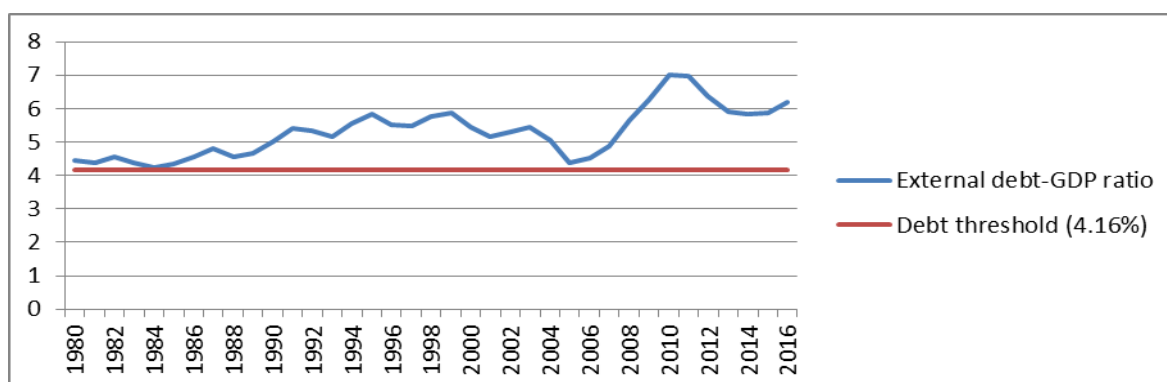
depicts a situation where external debt-GDP ratios were consistent to its debt threshold of Nepal over the time. This country utilized external debt according to its ability and optimal debt-GDP ratio. Therefore, Nepal has achieved better economic growth during 1980-2016.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.26:** External Debt to GDP Ratio and Debt Threshold of Nepal from 1980 to 2016.

The results of external debt-GDP ratios and debt threshold for Pakistan the period of 1980-2016 are represented in Figure 4.27. From the results, external debt-GDP ratio in Pakistan is above its suggested debt threshold over time. Hence, utilized external debt might have brought negative impacts on economic growth in Pakistan from 1980 to 2016.

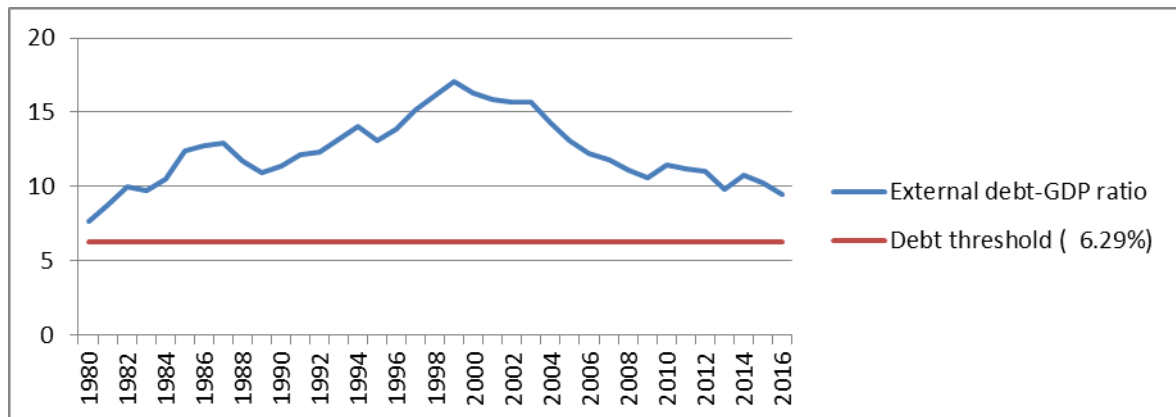


Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.27:** External Debt to GDP Ratio and Debt Threshold of Pakistan from 1980 to

2016.

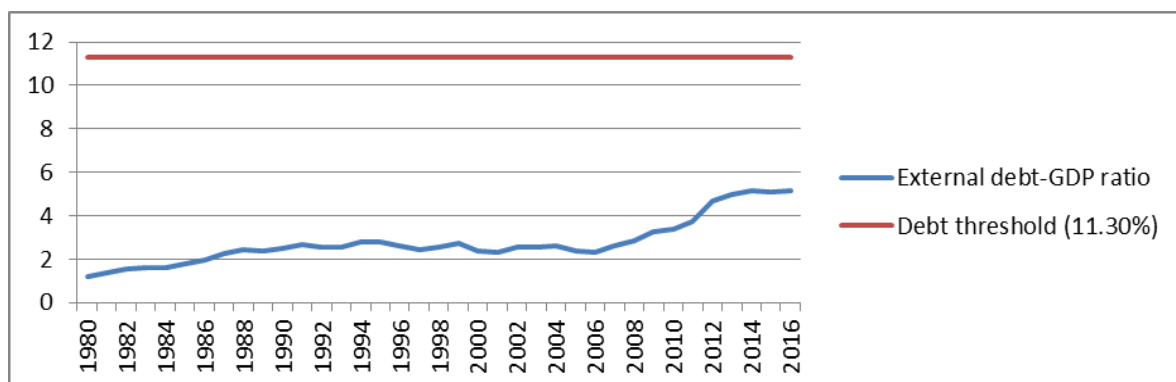
Additionally, Figure 4.28 indicates that external debt-GDP ratios exceeded the debt threshold at all times in Philippines. However, starting from the year 2013 onwards, the external debt-GDP ratio in Philippines is much nearer to the suggested debt threshold.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assist in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.28:** External Debt to GDP Ratio and Debt Threshold of Philippines from 1980 to 2016.

In contrast, the external debt-to-GDP ratios of Sri Lanka were less than the debt threshold all of the time (in Figure 4.29).

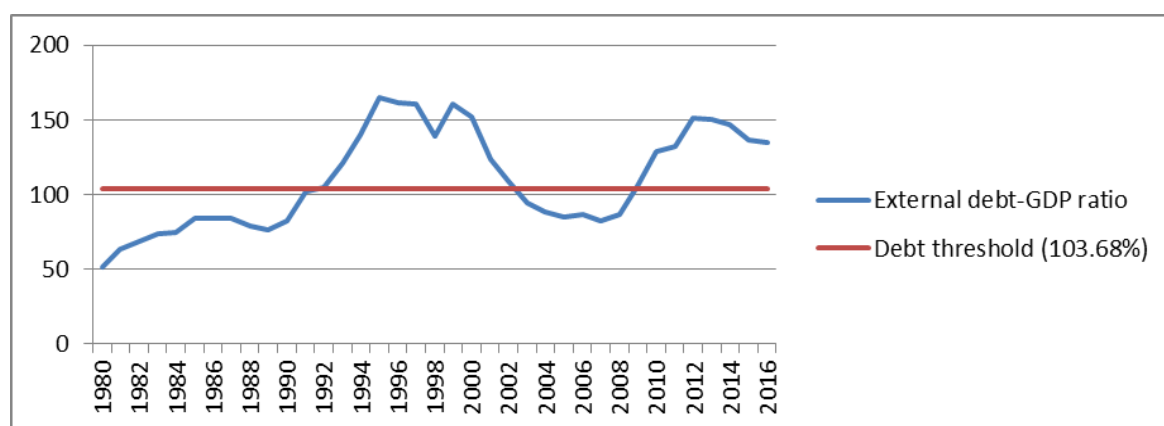


Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assist in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.29:** External Debt to GDP Ratio and Debt Threshold of Sri Lanka from 1980 to 2016.

In Sri Lanka, the external debt-GDP turning point is 5.17%, thus, it had not reached its optimal ratio (11.30%). Consequently, the gap between external debt-GDP and debt threshold will have a stimulating impact on economic growth. During the period of 1980-2016, the external debt being utilized might have contributed to positive economic growth in the Sri Lanka.

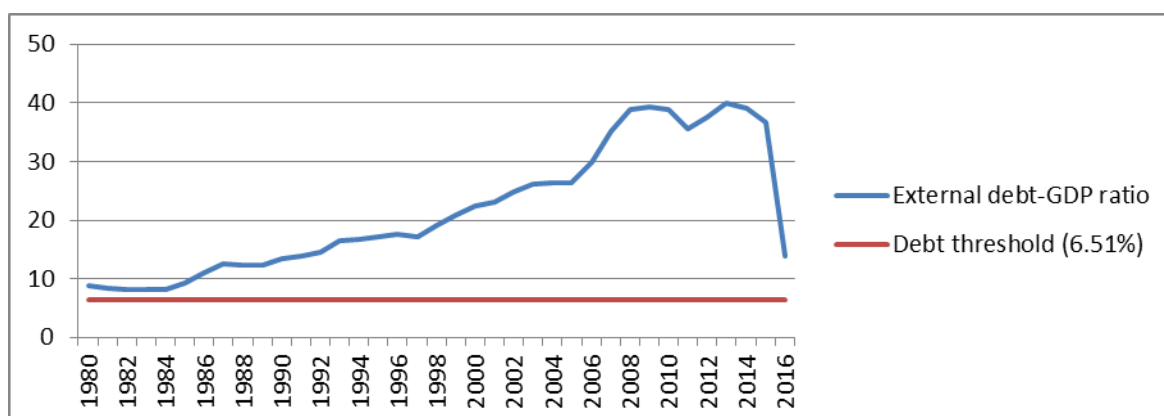
While, Figure 4.30 shows the evolution of external debt-GDP ratios compares to debt threshold of Thailand for the period of 1980-2016. The government in Thailand had taken efforts in reducing its external debt burden for the period of 2002-2009 in which the external debt-GDP ratios were below its debt threshold. External debt on GDP ratios has increased during the period of 1992-2002 and 2009-2016 for Thailand. These two periods might have absolutely brought negative impacts on economic growth in Thailand.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assists in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.30:** External Debt to GDP Ratio and Debt Threshold of Thailand from 1980 to 2016.

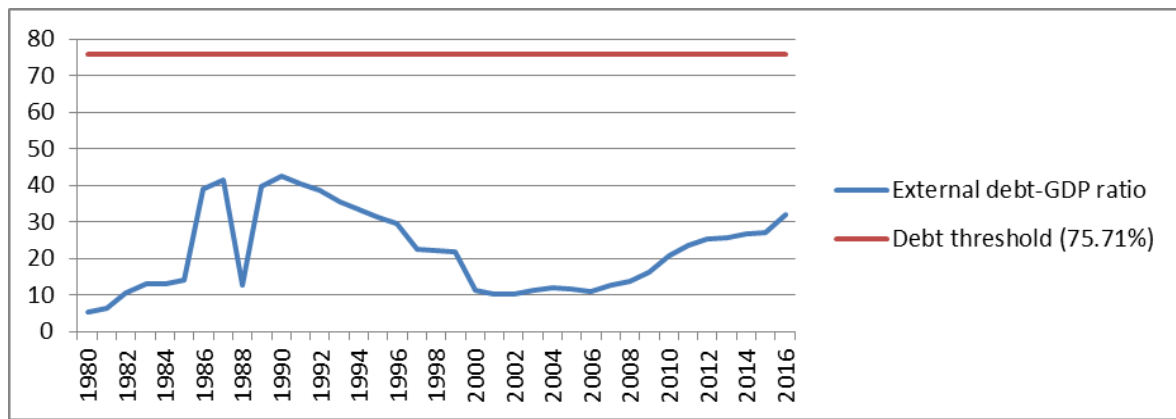
Subsequently, Figure 4.31 depicts a situation where external debt had exceeded its optimal external debt-GDP ratio at all times in Turkey. Massive external debts that are being utilized beyond GDP ability limit would bring negative impacts on economic growth. Thus, Turkey should take some measures to reduce the amount of external debt consistently.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assist in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.31:** External Debt to GDP Ratio and Debt Threshold of Turkey from 1980 to 2016.

Lastly, Figure 4.32 represents the trends in external debt on GDP as compare to debt threshold over the past 36 years in Vietnam. It shows that external debt as a percentage of GDP had been decreasing during the period of 1990 till 1999.



Note: The red line is the calculated debt threshold from Table 4.25. Meanwhile, the blue line is the ratio of external debt on GDP for each year. External debt would assist in spurs economic growth (the gap in between these two lines) when external debt-GDP ratio line not exceeding debt threshold line.

**Figure 4.32:** External Debt to GDP Ratio and Debt Threshold of Vietnam from 1980 to 2016.

From the year 2000 to 2006 external debt had almost remained constant. Vietnam's external debt-GDP ratio has been increasing for the recent ten years (2006-2016). However, Vietnam still has the potential to achieve greater positive economic growth based on the gap between its external debt ratios and its debt threshold.

These negative and significant debt threshold values of 16 Asian selected countries are parallel with most of the past findings (Greenidge et al., 2012; Ncube & Brixiona, 2013; and Egert, 2015). According to Jacobo and Jalile (2017), they suggested that additional debt might stimulate impact on economic growth but decreases to nearly zero when debt-to-growth ratios are nearest to debt threshold. Similarly, Maghyreh et al. (2002) argued that economic growth will be declining if external debt has step-in an excessive debt threshold level. Nevertheless, these debt thresholds may act as benchmarks for each country to decide the most suitable external debt-to growth ratio level of external debt borrowing. This is to safeguard a country's fiscal expenses from utilising external debt beyond the optimal debt threshold level and as a measure in preventing from the dilemma of debt overhang.

Subsequently, Figure 4.1 to 4.16 that indicates the status of external debt-reserve ratios and debt-GDP ratios for the recent ten years of 16 selected Asian countries. To examine debt sustainability, external debt-reserve ratios are compared to debt-reserve thresholds in the sixteen selected Asian countries. By comparison, it shows that most of these Asian countries are on the sustainable paths of external debt except Bhutan, Indonesia and Turkey.

In terms of external debt's impact on economic growth, the external debt-GDP ratios are compared to debt thresholds in the sixteen selected Asian countries. In Table 4.33 shows that 10 countries are found to have external debt-GDP ratios exceeding the countries' debt thresholds.

**Table 4.33:** Summarizes of External Debt-Reserve Threshold and Debt Threshold Status in 2007-2016 for Selected Asian Countries (from Figure 4.1 to 4.32)

| No | Country     | Exceeded Debt-Reserve Threshold | Exceeded Debt Threshold |
|----|-------------|---------------------------------|-------------------------|
| 1  | Bangladesh  | No                              | No                      |
| 2  | Bhutan      | Yes                             | Yes                     |
| 3  | China       | No                              | No                      |
| 4  | India       | No                              | Yes                     |
| 5  | Indonesia   | Yes                             | Yes                     |
| 6  | Jordan      | No                              | Yes                     |
| 7  | Lao PDR     | No                              | Yes                     |
| 8  | Myanmar     | No                              | No                      |
| 9  | Malaysia    | No                              | Yes                     |
| 10 | Nepal       | No                              | No                      |
| 11 | Pakistan    | No                              | Yes                     |
| 12 | Philippines | No                              | Yes                     |
| 13 | Sri Lanka   | No                              | No                      |
| 14 | Thailand    | No                              | Yes                     |
| 15 | Turkey      | Yes                             | Yes                     |
| 16 | Vietnam     | No                              | No                      |

Source: Own synthesis.

These countries included Bhutan, India, Indonesia, Jordan, Lao PDR, Malaysia, Pakistan, Philippines, Thailand and Turkey. Thus, external debt has negative impacts on

economic growth when external debt-GDP ratio is exceeding its debt threshold. Generally, this phenomenon is related to mismanagement in utilizing external debt wisely. Nonetheless, some countries were sustainable in external debt in this period with its external-debt ratios not exceeded its debt threshold respectively.

In over all, countries in which both external debt-reserve and debt-GDP ratios are not exceeded its debt-reserve and debt thresholds are including Bangladesh, China, Myanmar, Sri Lanka and Vietnam. These countries might have enough international reserve and always awareness on its optimal debt threshold during this period.

Despite the major impact of external debt on economic growth, control variables such as external debt services, government expenditures and population also influence economic growth in Asian countries.

Table 4.34 is presented the coefficient of control variables on economic growth for selected Asian countries. These control variables in this model included external debt services [EDS], government expenditures [GE], and population [POP].

The control variables also play an important role in influencing economic growth. In Table 4.34 shows the coefficient values of control variables on economic growth would be negative or positive. For instances, the external debt services is negatively for five countries such as China, Malaysia, Nepal, Pakistan and Turkey.

**Table 4.34:** Model 5 of Estimated Coefficient of Control Variables on GDP for 16 Selected Asian Countries

| Countries   | EDS   | GE    | POP   |
|-------------|-------|-------|-------|
| Bangladesh  | 0.01  | -1.31 | 0.10  |
| Bhutan      | 0.06  | -4.52 | -0.03 |
| China       | -3.78 | 0.32  | 0.87  |
| Indonesia   | 0.53  | 9.42  | -0.06 |
| India       | 4.39  | -1.77 | -0.03 |
| Jordan      | 1.51  | 1.04  | -0.07 |
| Lao PDR     | 0.08  | 0.02  | -0.01 |
| Myanmar     | 0.01  | 0.01  | -0.03 |
| Malaysia    | -0.08 | -0.03 | 1.24  |
| Nepal       | -4.99 | 1.54  | 0.07  |
| Pakistan    | -1.32 | 6.94  | -0.02 |
| Philippines | 1.50  | 1.82  | -0.07 |
| Sri Lanka   | 2.64  | -2.27 | 0.03  |
| Thailand    | 4.32  | 0.91  | -0.04 |
| Turkey      | -4.46 | 3.45  | -0.07 |
| Vietnam     | 0.61  | 9.94  | 0.06  |

Note: The asterisks \*, \*\*, \*\*\*, denote significant at 10, 5 and 1% levels respectively.

This negative effect indicated that the accumulation costs of interest rate payment was greater than the total values of marginal output. In term of government expenditures, most countries recognize the benefits of fiscal spending for productive sectors of the economy except countries such as Bangladesh, Bhutan, India, Malaysia and Sri Lanka. Meanwhile, the population has a negative impact on economic growth in nine countries. This effect can be linked to costly unproductive welfare spending such as pensions, as well as increased expenditure costs of a country.

#### 4.5.2 ECM Diagnostic Test

In the first model related to external debt on economic growth (Table 4.35), the Lagrange-multiplier tests show that 15 countries have indicated model designable for 5% critical value, while only Pakistan indicated model designable for 1% critical value.

**Table 4.35:** VECM Diagnostic Checking for Lagrange-Multiplier and Jarque-Bera Test of 16 Asian Countries in Model 1: External Debt on Economic Growth

| Country     | Lagrange-Multiplier Test<br>(lags 2) p-value | Jarque-Bera Test<br>(lags 2) p-value |
|-------------|----------------------------------------------|--------------------------------------|
| Bangladesh  | 0.693                                        | 0.616                                |
| Bhutan      | 0.484                                        | 0.651                                |
| China       | 0.217                                        | 0.024                                |
| Indonesia   | 0.892                                        | 0.015                                |
| India       | 0.234                                        | 0.919                                |
| Jordan      | 0.047                                        | 0.746                                |
| Lao PDR     | 0.067                                        | 0.076                                |
| Myanmar     | 0.057                                        | 0.012                                |
| Malaysia    | 0.067                                        | 0.001                                |
| Nepal       | 0.757                                        | 0.794                                |
| Pakistan    | 0.027                                        | 0.269                                |
| Philippines | 0.082                                        | 0.364                                |
| Sri Lanka   | 0.322                                        | 0.010                                |
| Thailand    | 0.110                                        | 0.356                                |
| Turkey      | 0.102                                        | 0.236                                |
| Vietnam     | 0.237                                        | 0.013                                |

Source: From research data.

Meanwhile, the Jarque-Bera tests have indicated that the residuals in the model are normally distributed for 5% critical value in ten countries, and the other six countries are also normally distributed for 5% critical value.

Therefore, this model in over all countries is performing in moderate strong designable relating economic growth to external debt.

For the model long term external debt on economic growth (depicted in Table 4.36), countries with strong p-value for Lagrange-multiplier and Jarque-Bera test are such as Bangladesh, China, India, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Turkey and Vietnam.

In other words, this model is well designable for these countries. However, this model applies to the other four countries in condition of moderate designable.

**Table 4.36:** VECM Diagnostic Checking for Lagrange-Multiplier and Jarque-Bera Test of 16 Asian Countries in Model 2: Long Term External Debt on Economic

### Growth

| Country     | Lagrange-Multiplier Test<br>(lags 2) p-value | Jarque-Bera Test<br>(lags 2) p-value |
|-------------|----------------------------------------------|--------------------------------------|
| Bangladesh  | 0.164                                        | 0.852                                |
| Bhutan      | 0.001                                        | 0.044                                |
| China       | 0.056                                        | 0.499                                |
| Indonesia   | 0.117                                        | 0.000                                |
| India       | 0.109                                        | 0.959                                |
| Jordan      | 0.260                                        | 0.000                                |
| Lao PDR     | 0.002                                        | 0.113                                |
| Myanmar     | 0.486                                        | 0.987                                |
| Malaysia    | 0.542                                        | 0.031                                |
| Nepal       | 0.267                                        | 0.258                                |
| Pakistan    | 0.545                                        | 0.313                                |
| Philippines | 0.102                                        | 0.692                                |
| Sri Lanka   | 0.453                                        | 0.811                                |
| Thailand    | 0.214                                        | 0.212                                |
| Turkey      | 0.103                                        | 0.594                                |
| Vietnam     | 0.631                                        | 0.900                                |

Source: From research data.

Subsequently, the outcome of Lagrange-multiplier and Jarque-Bera test on the short term external debt sustainable effect which is related to economic growth is shown in Table 4.37.

This model is well specified for countries in overall for 1% critical value and is better. It means that the model with their dependent variable is free from serial auto-correlation and the residual of error correction terms are normally distributed. Therefore this model is designable.

**Table 4.37:** VECM Diagnostic Checking for Lagrange-Multiplier and Jarque-Bera Test of

16 Asian Countries in Model 3: Short Term External Debt on Economic Growth

| Country     | Lagrange-Multiplier Test<br>(lags 2) p-value | Jarque-Bera Test<br>(lags 2) p-value |
|-------------|----------------------------------------------|--------------------------------------|
| Bangladesh  | 0.198                                        | 0.641                                |
| Bhutan      | 0.052                                        | 0.226                                |
| China       | 0.658                                        | 0.554                                |
| Indonesia   | 0.598                                        | 0.011                                |
| India       | 0.015                                        | 0.756                                |
| Jordan      | 0.351                                        | 0.623                                |
| Lao PDR     | 0.065                                        | 0.985                                |
| Myanmar     | 0.295                                        | 0.033                                |
| Malaysia    | 0.018                                        | 0.260                                |
| Nepal       | 0.584                                        | 0.920                                |
| Pakistan    | 0.128                                        | 0.083                                |
| Philippines | 0.092                                        | 0.517                                |
| Sri Lanka   | 0.246                                        | 0.580                                |
| Thailand    | 0.333                                        | 0.440                                |
| Turkey      | 0.161                                        | 0.806                                |
| Vietnam     | 0.027                                        | 0.691                                |

Source: From research data.

Meanwhile, the debt sustainable effects which is related to external debt on country reserve (depicted in Table 4.38).

The p-values for Lagrange-multiplier and Jarque-Bera test are good in Bangladesh, India, Jordan, Lao PDR, Myanmar, Pakistan, Philippines and Turkey. However, the other eight countries are in moderate model designable.

**Table 4.38:** VECM Diagnostic Checking for Lagrange-Multiplier and Jarque-Bera Test of 16 Asian Countries in Model 4: External Debt Sustainable on Economic Growth

| Country     | Lagrange-Multiplier Test<br>(lags 2) p-value | Jarque-Bera Test<br>(lags 2) p-value |
|-------------|----------------------------------------------|--------------------------------------|
| Bangladesh  | 0.275                                        | 0.656                                |
| Bhutan      | 0.561                                        | 0.001                                |
| China       | 0.054                                        | 0.000                                |
| Indonesia   | 0.002                                        | 0.397                                |
| India       | 0.022                                        | 0.387                                |
| Jordan      | 0.196                                        | 0.049                                |
| Lao PDR     | 0.273                                        | 0.326                                |
| Myanmar     | 0.424                                        | 0.122                                |
| Malaysia    | 0.028                                        | 0.603                                |
| Nepal       | 0.430                                        | 0.042                                |
| Pakistan    | 0.902                                        | 0.547                                |
| Philippines | 0.104                                        | 0.789                                |
| Sri Lanka   | 0.763                                        | 0.136                                |
| Thailand    | 0.260                                        | 0.001                                |
| Turkey      | 0.380                                        | 0.764                                |
| Vietnam     | 0.409                                        | 0.039                                |

Source: From research data.

Lastly, for the model which is related to economic growth on external debt threshold (depicted in Table 4.39), the Lagrange-multiplier test are significant for 5% critical value in fifteen countries, except Indonesia with the model significant for 1% critical value.

In terms of residual normally distributed, the Jarque-Bera test was applied and the results in this model showed that Malaysia and Vietnam are in significant for 1% critical value while the other 14 countries are significant for 5% critical value. This means that this model is considered well specified designable.

**Table 4.39:** VECM Diagnostic Checking for Lagrange-Multiplier and Jarque-Bera Test of 16 Asian Countries in Model 5: Debt Threshold on Economic Growth

| Country     | Lagrange-Multiplier Test<br>(lags 2) p-value | Jarque-Bera Test<br>(lags 2) p-value |
|-------------|----------------------------------------------|--------------------------------------|
| Bangladesh  | 0.871                                        | 0.587                                |
| Bhutan      | 0.240                                        | 0.168                                |
| China       | 0.522                                        | 0.916                                |
| Indonesia   | 0.037                                        | 0.347                                |
| India       | 0.784                                        | 0.802                                |
| Jordan      | 0.713                                        | 0.937                                |
| Lao PDR     | 0.296                                        | 0.153                                |
| Myanmar     | 0.370                                        | 0.226                                |
| Malaysia    | 0.468                                        | 0.001                                |
| Nepal       | 0.994                                        | 0.871                                |
| Pakistan    | 0.144                                        | 0.403                                |
| Philippines | 0.094                                        | 0.467                                |
| Sri Lanka   | 0.408                                        | 0.724                                |
| Thailand    | 0.405                                        | 0.183                                |
| Turkey      | 0.681                                        | 0.804                                |
| Vietnam     | 0.150                                        | 0.587                                |

Source: From research data.

## 4.6 Discussions

### 4.6.1 Economic Growth and External Debt

The negative outcomes of external debt on economic growth of this study indicate that these selected Asian countries manage its external debt finance unwisely within its fiscal space expenses. At the same time they would face crowding-out matter in private investment whereby these circumstances are possibly lead to debt overhang problems. The negative effect of external debt on economic growth might be incurred from uncertainty factors which were unforeseen and unexpected by the policy makers. For instance, this might happen because of the impact from regional financial crisis which

would drag to sudden increases in external debt stock and resulted in additional debt existing in an economy.

In contrast, external borrowing is essential to sustain economic growth for most of these developing countries due to the fact that they are incapable to provide funds and fulfil their domestic saving gap. Therefore, when the governments are facing with the problem of using current fund borrowing, they ought to intervene with instant action by restructuring it and cut off some of the less productive fiscal activities. By then, the use of this fund is able to create a marginal opportunity for positive economic growth that seeks to reduce the amount of funds borrowing from abroad.

The financial capital of borrowing resources can have a positive impact on economic growths if the sources of these borrowed loans for capital are well managed which include the adoption value added in the productive sectors. However, the impact would be negative if these sources such as the external debts are expensing in fiscal expenses which do not lead to values added for an economy. These include financial borrowed loans solely to repay old loans, or even economic leakage factors such as the significant corruption phenomenon in a country, resulting in multiple country debts. Therefore, in relation to the hypothesis of external debt impact on economic growth, it is supported by seven Asian countries; namely Bangladesh, Bhutan, Jordan, Myanmar, Nepal, Philippines and Vietnam. The findings are in line with the past researchers who stated that debt and growth have inverse relationships in which the effect of debt is more on negative effects rather than its positive effects. Furthermore, this source of loan is usually not managed properly which ultimately brings about the risk of prolonged debt from year-to-year.

#### **4.6.2 Economic Growth and Long Term External Debt**

By detailing the external debt in terms of the timeframe, then the lending period might results in unequal outcomes on economic growth. In any economy, a government is more concern in ensuring long run economic sustainability, whereby the impact of long term external debt on economic growth needs to be determined namely the extent to which long term external debt which is being used would bring either positive or negative impact on the country's economic growth. The findings of this study found that eight of these selected Asian countries supported this hypothesis in which long term external debt generated negative impact on economic growth. The findings of this hypothesis reflect that long term external debt would reduce economic growth of an economy. This statement also shows the negative effects of long term external debt faced by most countries in the global economy because it involves the impact of rolling interest from year to year.

In addition, Djulius (2018) emphasized that long term external debt is more prone to the diversity of the types of loan risks, and poses many long term problems which involve economic and political burdens to some developing countries. These include the political instability of a country (Ahmad, 2015), the after effect of global financial crisis (IMF, 2018), the risk of currency investment (Pegkas, 2018) and so on and so forth. For instance, Chen and Kang (2018) stated that global financial crises might help output growth when it is supported by credit booming. However, they added that credit booming carries risk and economy might face dangerous trajectory.

Indeed, a country might slip into obtaining long term loans from abroad as the final choice of most policy makers to sustain its country's fiscal expenses. In deciding and dealing with debt options for a period of time, some governments prefer the long term period rather than the short term period. This is because the interest rate for long term external debt is usually much lower than the short term debt.

Furthermore, the interest for the amount of payment on long term debt may be lower than the short term debt. However, long term external borrowings have burdened most countries in debts indirectly and are at risk of facing debt overhang if the country is unable to manage existing loan funds. This is conceptualized as a negative long term external debt impact on economic growth and for instance, Silva (2018) mentioned that external debt passively influenced the gross value added and the total factor productivity in aggregate supply.

#### **4.6.3 Economic Growth and Short Term External Debt**

Subsequently, the hypothesis which is related to the short term external debt with its positive effect on economic growth is supported by the majority of selected Asian countries in this study. It means that the statement of short term external debt also has a significant positive impact on growth is justified. This short term external debt positive effect on economic growth also reflects that it is not necessary true that all the usages of the short term external debt would be detrimental to economic activities.

In contrast, there are six selected Asian countries have not supported the hypothesis statement in this study. Countries such as Bhutan, Jordan, Lao PDR, Myanmar, Nepal and Pakistan have shown a negative relationship between the short term external debt and the economic growth.

The negative effect between short term debt and growth may be triggered by current float credit rates or factors such as sudden increase in interest rates. This negative effect also reflects the use of short term external debt which is detrimental to the local financial operations and less helpful in promoting activities that activates certain economic sector. This is because most of the loans are reused to cover the previous financing for debt payment, which may be inadequate to cover for the needs in fiscal expenses. The process is

so repetitive that the short term external debt function also has an undesirable effect that would bring the economy to a deteriorating economy, financial system plummeting and so on. Eventually, there is also a negative impact between short term external debt and economic growth.

Many researchers and economists agree that loans should be well managed, i.e. the use of loans as well as repayment of loans should be in smooth processes and should be channelled to productive sectors to generate profit margins that exceed the loan interest. Thus, short term external debt tends to have more positive effects than its negative effects on economic growth for developing countries.

#### **4.6.4 Economic Growth and Sustainable Debt**

The sustainable debt is related to the international reserve owned by the country, where the country's reserve can be an option to cover the external debt that needs to be settled immediately. Thus, by comparing debt-reserve threshold with debt-reserve ratio allows policymakers to assess the status of debt sustainability of their country. If the debt reserve ratio has not exceeded the country's optimal debt-reserve ratio, the country has the strength of the country's reserve to bear the external debt repayment requirement. For instance, most of countries are in debt sustainable status during 2007-2016, in which its debt-reserve ratios below debt-reserve threshold.

On the other hand, a country is rated not sustainable debt when the country reserve does not has the ability to bear the current external debt, where the debt-reserve ratio has exceeded the optimal limit of the country's debt-reserve threshold, i. e. Bhutan, Indonesia and Turkey.

In the case of debt not sustainable, the country should reduce the amount of external debt gradually to the extent that the value of the debt-reserve ratio equals the

proposed debt-reserve threshold for that country. In this study which distinguishes the full external debt and the types of external debt separately shows that all have negative effects which are uniform across these selected developing Asian countries. With regards to debt-reserve ratio and debt threshold might function as a guide to determine the suitability of loan amounts in line with the economic growth ratio. This means the accepted economic growth depends largely on the extent of the ratio of debt-reserve and debt to GDP.

#### **4.6.5 Economic Growth and Debt Threshold**

Policy makers might use debt threshold point as a benchmark for utilizing external debt, and should always be aware that the foreign debt poses burden on economic growth in the long run. In short, before reaching the debt threshold point, the economic growth rates are highly dependent on the size of external debt, namely the larger the utilization of external debt loans, the greater the ratio of external debt to GDP.

Thus, external debt and economic growth relations can be reflected in inverted U shape graph. This inverted U shape graph as the non-linear relationship between external debt and economic growth and it indicates that at a lower level of external debt, the impact on economic growth is positive, but, when exceeding the debt threshold point, there is a negative impact for the same period.

Low levels of debt can trigger economic stimulus due to the better impact of a marginal increase in debt, but, after reaching its maximum debt point, the use of each external debt unit is associated with a viable effort in economic growth, such if that its external debt is to be continued, it will lead to the country falling into debt overhang. This means the accepted economic growth for a country depends largely on the extent of the ratio of debt-GDP and debt threshold.

Furthermore, debt overhang that is generated from excess debt lending will reduce investment from global investors, as they assume that local output will lose competition in capturing the global market opportunities. Barbiero, Povov and Wolski (2018) are of the opinion that the marginal positive increase in utilizing debt on investment efficiency will disappear if the amount of debt borrowing is excessive. Therefore, the study suggests that the purpose of external debt lending should be focusing towards the important and efficiency in debt utilization such as channelling it exactly towards marginal positive increase in an economy. Akinwunmi and Adekoya (2018) emphasized that debt borrowing is considered as a serious matter and the fund needs to be channelled wisely and efficiently.

Kharusi and Ada (2018) also mentioned that channelling external debt in productive use might bring marginal increase in productivity and generate positive growth. The government should adhere to the requirement and purpose of external debt lending in order to bring positive impacts for the targeted economic growth in the long term and sustainability of the economy in the future.

#### **4.7 A Remark**

In order to determine the effects of external debt on economic growth, the variables are tested for unit root test for stationary dataset. In general, the variables in the dataset are stationary at level and the first differencing. After confirming the variables are stationary, then proceed for cointegration test in order to investigate the long run association and relationship between the variable in lag order. This cointegration is based on trace and maximum eigenvalue tests probability values with less than the 5% critical value and better. In the five models that are designed, and all are well specified. For the outcome of the models, as was shown in the results, external debt, and long term external debt have

negatively and significant on economic growth in these 16 selected Asian countries. Meanwhile, short term external debt has positive impact on economic growth. In the model which is relating to the effects on debt sustainability, the finding reveals that external debt growth is negative and significant on external debt-to-country reserve ratio. Moreover, the results of economic growth on debt-to-GDP ratio are negatively related and significant when debt-to-growth is exceeding the country's optimal debt threshold. This negative effect reflects that the utilization of external debt is less productive and has lesser contribution towards overall economic growth. In terms of the difference in the period when the external fund was being used, the results also indicate the same negative effects.

Hence, both external debt and long term external debts have shown the same effects of reducing economic growth in the selected Asian countries. A country's reserve is also closely linked to debt sustainability, in which the ability of borrowing abroad depends on the existing reserves in a country. However, it is bound to the debt-reserve ratio turning point to be the benchmark of an allowable limit on the use of external debt. Likewise the optimal debt threshold allows utilization of foreign loan borrowed and additionally, the need for gap of fiscal spaces.

In nutshell, this chapter explained the descriptive statistics of variables, unit root test results, cointegration test results, error correction model results, error correction diagnostic test results of five models. The implication of this study, recommendation, limitation of this research and conclusion are explained in the next chapter.

## **CHAPTER 5**

### **CONCLUSION**

#### **5.1 Introduction**

The current research aims to assess the impact of external debt on economic growth. There were five hypotheses to reveal the impact of external debt against economic growth. First, we investigated the total effect of external debt on GDP. Within this, the research also has examined the effects of short and long term external debt on economic growth in separately.

For the investigation on sustainable debt levels, the reserve-GDP ratio was applied to determine its impact on economic growth. The calculated debt-reserve threshold value was compared to debt-reserve ratio to determine its status of debt trajectory.

Lastly, debt thresholds were calculated through its debt-GDP and debt-GDP in squared values for each selected Asian countries. By then, these debt thresholds would give real answer whether its support the argument debt threshold of 90% or not.

Subsequently, the constructed debt threshold was compared to its debt-GDP ratio from 1980 to 2016. The differences between debt threshold and debt-GDP ratio indicate how seriously the impacts of external debt on GDP were during 1980 to 2016 for each selected Asian countries.

Generally, the datasets obtained for this study reveal that all these hypotheses indicate that external debt brings negative and significant effects on growth of selected Asian countries. This result is consistent with the empirical studies of Chudik et al (2018); Ehmer (2018); Ndieupe (2018); and Pegkas (2018) who have found that external debt would bring adverse outcomes on economic growth statistically.

Furthermore, the calculated debt threshold values for these Asian countries reflected that all the countries not with debt threshold of 90% as proposed by Reinhart and Rogoff (2010).

Whereby, 15 of these Asian countries below 90% of debt threshold and only Thailand was exceeded this debt threshold with 103.68%. It means that the statement of debt threshold level above 90% bring harmful effects support to the Thailand economy.

## **5.2 Summary of the Main Findings**

### **5.2.1 Economic Growth and External Debt**

As finding in this study, impacts of external debt was negatively influent economic growth in Asian countries (as depicted in Table 4.22). The total amount of external debt would burden the economic growth when it optimal external-debt to economic growth.

The coefficient of external debt to economic growth indicates utilize a unit of external debt in contribute economic growth for a country. For instance, utilize over every percentage point increase of spending from its optimal level on external debt in Bangladesh would slowdown 3.69% on economic growth. Similarly, for other Asian countries, i. e. Bhutan (-0.86%), Jordan (-11.45%), Myanmar (-12.15%), Nepal (-11.57%), Philippines (-1.18%) and Vietnam (-1.62%) were slowdown in economic growth when utilizes external debt exceeded its optimal external-debt to economic growth level.

Whilst when an economy is not fully employed and still has resource spaces for stimulating economic growth. The findings from China (3.80%), Indonesia (9.48%), India (3.47%), Lao PDR (0.56%), Malaysia (1.80%), Pakistan (0.63%), Sri Lanka (8.25%), Thailand (13.56%) and Turkey (10.30%) indicate that external debt is a useful tool for spurring economic growth for these nine countries.

### **5.2.2 Economic Growth and Long Term External Debt**

In terms of external debt which involves long term repayments, its impact also affects economic growth in Asian countries. The results show that long term external debt has a negative impact on eight Asian countries. Meanwhile, eight countries show that long term external debt has a positive impact on economic growth in their country. The effect of long term external debt is different when compared to total external debt to economic growth. For example, Bangladesh's long term external debt has a negative impact of 5.04% in its every percentage point increase use that exceeded optimal long term external debt on GDP ratio. In this sense, the negative impact of long term debt is lower than the total external debt impact on economic growth in Bangladesh (as depicted in Table 4.24).

Subsequently, every percentage point increase of long term external debt utilizing the optimal long term external debt-GDP ratio also has a different negative impact on other Asian countries. For example, the impact of utilizing long term external debt exceeding the optimal level in Indonesia is slow down 2.75% on its economic growth, as well as Jordan (-3.07%), Lao PDR (-2.82%), Myanmar (-13.01%), Malaysia (-0.046%), Pakistan (-3.64%) and Philippines (-10.16%). On the other hand, utilizing each unit of long term external debt exceeding the optimal long term external debt-GDP ratio also had different positive effects on eight other Asian countries, that is, Bhutan (0.12%), China (3.42%), India (4.47%), Nepal (1.97%), Sri Lanka (9.6%), Turkey (4.87%) and Vietnam (0.05%).

### **5.2.3 Economic Growth and Short Term External Debt**

External borrowing which involves short term periods also plays a role in influencing the economic growth of a country. In the study found that short term external debt tended to have a positive impact on economic growth in Asian countries (as depicted in Table 4.26). The study found that 10 countries that utilize on short term external debt can have a positive impact on their country's economic growth, namely Bangladesh (1.05%), China (0.53%), Indonesia (4.75%), India (2.08%), Malaysia (2.42%), Philippines (2.47%), Sri Lanka (0.38%), Thailand (8.90%), Turkey (9.18%) and Vietnam (0.01%). For example, utilize every percentage point increase of short term external debt could bring in 2.47% in the Philippines and 0.01% in Vietnam in the country's economic growth. This shows that short term external debt in assisting in the fiscal spaces in Philippines still has the potential to generate higher economic growth compared to Vietnam.

However, there are six Asian countries in which the impact of short term external debt on economic growth was negatively. In Bhutan, utilizing every percentage point increase of short term external debt above the optimal level of short term external debt-GDP ratio tends to shrink 0.01% on economic growth within the country. In such a situation, Asian countries who also receive a negative impact of short term external debt on economic growth included Jordan (-1.40%), Lao PDR (-0.01%), Myanmar (-0.16%), Nepal (-0.01%) and Pakistan (-0.34%).

### **5.2.4 Economic Growth and Sustainable Debt**

In considering debt sustainability, the external debt-reserve ratio can be used as a measure of how the country's reserves are able to sustain external debt payments borrowed by a country.

The findings from the study of the Asian debt sustainability level are as follows (as depicted in Table 4.28): Bangladesh (91.68%), Bhutan (61.72%), China (77.72%), India (53.24%), Indonesia (16.16%), Jordan (46.63%), Lao PDR (97.47%), Myanmar (17.86%), Malaysia (11.62%), Nepal (31.66%), Pakistan (53.80%), Philippines (14.95%), Sri Lanka (17.72% %), Thailand (27.12%), Turkey (9.75%), and Vietnam (6.92%).

The higher the external debt-reserve ratio is the higher ability the country's debt to sustain when the country's reserve is its indicator. This means that countries with high debt sustainability levels such as Bangladesh, Bhutan, China, India, Lao PDR and Pakistan. Meanwhile, the rest of Asian countries are at moderate and low levels of debt sustainability.

#### **5.2.5 Economic Growth and Debt Threshold.**

In this study also found that debt thresholds in Asian countries are not at 90% of debt threshold that was argued by Reinhart and Rogoff (2010). The debt thresholds of these 16 Asian countries are as follows (as depicted in table 4.32): Bangladesh (31.96%), Bhutan (50.96%), China (38.25%), India (24.38%), Indonesia (19.23%), Jordan (12.28%), Lao PDR (15.62%), Myanmar (13.43%), Malaysia (78.07%), Nepal (6.48%), Pakistan (4.16%), Philippines (6.29%), Sri Lanka (11.30%), Thailand (103.68%), Turkey (6.51%) and Vietnam (75.71%). Thus, the mean debt threshold for these 16 Asian countries is 31.14%. The finding of debt threshold reveals that country with low level threshold (below 30%) are from India, Indonesia, Jordan, Lao PDR, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka and Turkey. Meanwhile, Bangladesh, Bhutan, and China are categorized in middle-low level (30-60%) of debt threshold. For Middle-high level (60-90%) of debt threshold covered Malaysia and Vietnam. Lastly, only Thailand is in high level (above 90%) of debt threshold.

Based on the results of the debt threshold of these Asian countries, this study found that debt threshold for lower income countries are between the range 6.48 to 31.96%. For middle income Asian countries, the debt threshold range in between 38.25% to 50.96%.

Meanwhile, there are three middle income countries almost nearest to 90% of debt threshold, i.e. Malaysia, Thailand and Vietnam. Therefore, we can conclude that debt threshold in upper middle income Asian countries are between the range of  $\pm 15\%$  from debt threshold of 90% proposed by Reinhart and Rogoff (2010). Thus, the tested hypothesis indicates that utilizing beyond 90% of external debt would bring negative impact on economic growth in upper middle income of Asian countries.

### **5.3 Implication on Policy and Recommendation**

#### **5.3.1 Implication on Policy**

In general, external debt is more prone to unforeseen problems such as currency exchange, global financial crises, loan terms, so on and so forth that are non-beneficial to the indebted countries. Therefore, the impact of external debt on economic growth would implicate the country's fiscal and monetary policy in safeguard the stability of economy in long run.

##### **(i). Fiscal Policy**

The negative impact of external debt on economic growth in terms of wise fiscal expenses would implicate fiscal spaces in countries such as Bangladesh, Bhutan, Jordan, Myanmar, Nepal, Philippines and Vietnam are well fulfilled through structural reforms, so that investors would not lose faith on fiscal policy and push up the funding costs. As emphasized by Cheng and Pitterle (2018) the government should adopt an approach on a

comprehensive actual fiscal space in its economy to suit its own country's sustainable debt level.

Furthermore, external debt tends to bring harmful effects on economic growth for Bangladesh, Bhutan, Jordan, Myanmar, Nepal, Philippines and Vietnam in which implicate an improvements in their existing lending policies from time to time so that their external debt levels are always maintain at a stable and safe level, that is, below it debt threshold. For instance, the negative impact of external debt on economic growth in Bangladesh would implicate adjustment on it utilize external debt against gross domestic product below the optimal debt threshold of 31.96%, similarly in Bhutan (below 50.96%), Jordan (below 12.28%), Myanmar (below 13.43%), Nepal (below 6.48%), Philippines (below 6.29%), and Vietnam (below 75.71%) on its debt threshold respectively. It is more than the immediate stimulus of their policymakers to act on a lending policy, so that the external debts in under control, and to ensure not to be trapped in debt overhang problems in the future.

For countries such as China, Indonesia, India, Lao PDR, Malaysia, Pakistan, Sri Lanka, Thailand and Turkey in which their external debt bring positive impact on economic growth implicate to their government implement expenditures expand in their fiscal policies has greatly influenced economic growth which indirectly reduces external debt through marginal value added. However, those countries with their government expenditures negative impact on economic growth (as depicted in Table 4.23), i.e. Bhutan (-0.01%), Lao PDR (-0.09), Nepal (-2.68) and Thailand (-14.36%) in which unproductive fiscal activities generated inherent diminishing returns on economic growth in the long run. Subsequently, the finding implicate that these countries are attempts to reduce their financial assistance to the poor people, goods subsidy or other fiscal expenditures which are costly and considerably need to be cut-off. Fiscal expenses decline in these four

countries in terms of government expenditures that are less productive significantly and undoubtedly would reduce the country's burden of debt from the existing debt rapidly.

Consequently, implication on countries with current account balance impact negative on economic growth (as depicted in Table 4.25) lead to reform in macroeconomic activities such as producing more outputs to meet global demand which will lead to increase of export in goods. Bangladesh, India, Jordan, Lao PDR, Philippines and Turkey will undoubtedly take advantage of the external debt lending whereby one unit of marginal utility increase of output is more than one unit marginal utility increase of debt. The macroeconomic structural reforms and measures taken for these six countries from time to time will enable the repayment of debt on time, and therefore, debts can be reduced and are under control.

Countries with low level on debt sustainable in term of country reserve (as depicted in Table 4.28), i.e. Indonesia, Myanmar, Malaysia, Philippines, Sri Lanka, Turkey and Vietnam may reinforce the lending policy in debt adjustment at a stable and sustainable level so that public or private loans from abroad in under control. This means that the loans are for the purpose of implementing economic activities that will benefit these seven countries. The role of a dedicated finance department of these seven countries to ensure that every loan approval needs to be done with a funded loan proposal for the purpose of preventing financial speculation. Thus, increases in debt burden can be prevented to add on to the next generation.

Furthermore, in order to reduce foreign borrowing government should encourage local lending. This is because local borrowing is less prone to uncertainty risk. In the meantime, the positive impact of interest rate on economic growth in countries such as Bangladesh, China, Indonesia, India, Jordan, Lao PDR, Myanmar, Malaysia, and Si Lanka (as depicted in Table 4.25) entail reasonable interest rate to encourage local savings.

In term of foreign direct investment positive impact on economic growth, countries such as Bangladesh, China, India, Jordan, Pakistan and Thailand (as depicted in Table 4.25) would implicate stimulate economic via investment strategies, i.e. provide high profit incentives for investors especially foreign investors and to convince them to increase in local investment. By this measure taken by these six countries, most of the expenses will be borne by the investors absolutely and at the same time the borrowing of funds for the country is not needed. Thus, it can helps these six countries in reducing their existing debt stock problems indirectly, and there is a win-win situation to bridge its resources gap in term of debt problems. Even though this high profit incentives scheme provided for investors may produce less marginal incomes to the country, but, the marginal multiplier effects on aggregate demand in the long run can certainly help in lowering the burden of their nation's debt continuously and effectively. The governments of these six countries may addresses debt problem through local investment primarily and from foreign investment to fill the local saving gap for the implementation of economic activities. Therefore, it is not necessary for these six countries to borrow from abroad and thereby will not increase the existing external debt. Thus, foreign direct investment positive impact on economic growth lead to government of these six countries control their external debt levels through encouraging the foreign investors to invest in the local market.

In contrast, countries such as Bhutan, Indonesia, Myanmar, Malaysia, Nepal, Philippines, Sri Lanka, Turkey and Vietnam (as depicted in Table 4.25) with foreign direct investment negative impact on economic growth would lead to policy makers intent to change the investment strategies via privatized the investment activities that contributes less in marginalized profits on properties, so that some of the fiscal expenses are borne by private investors eventually reduce debt burden of these countries.

## **(ii). Monetary Policy**

On the other hand, the high negative effects of external debt on economic growth would influence countries such as Jordan, Myanmar and Nepal (as depicted in Table 4.22) to deal with debt burden through its monetary policy. The negative from utilize external debt implicate the government of these three countries react quickly to the fluctuation in the circumstances. Baccetta (2017) stated that sovereign debt would inspire policymakers to implement monetary policy for smoothing bumpy economic conditions. However, Benes and Kumhof (2012) emphasized that it is much dependent on the money supply for the government to buy back mortgage and debt. Therefore, such intervention taken by these three countries can lead to decline in their interest rate in attempts to encourage and stimulate local investment, in return, increasing local investment values added in which spurs economic growth.

An increase in the amount of external debt is also associated with the issuance of loan lending from foreigners for immediate profitability. With this, it would implicate countries (seven countries as depicted in Table 4.22) that trap-in negative impact of external debt on economic growth would take immediate action by stringent their financial policies. For instance, such countries would implement capital control in attempts to stabilize credit loans from abroad. The governments of these countries would ensure the external borrowing control measures are implemented accordingly via limiting the minimum duration of capital withdraws by foreigners to avoid crucial capital flight problems.

In addition, governments of these seven countries would react the negative impact of external debt on economic growth through monitoring every credit loan from abroad in order to avoid sudden credit disbursements from speculative activities in which it possible lead to shortages in external loan. With such a shortage of borrowing, it certainly causes

the need for a new external loan, and certainly a higher loan interest will be deducted from the previous amount. This indirectly results in an increase in the amount of existing external debt. In short, the negative impact of external debt on economic growth implies financial policy is crucial in stabilizing the amount of external debt from rising dramatically.

The countries that external debt impact negatively on economic growth implicate their monetary policy adjustment. Countries such as Bangladesh, Bhutan, Jordan, Myanmar, Nepal, Philippines and Vietnam would raising the money supply sufficient financial for the domestic market in order to reduce foreign loans. These countries would applies money supply on money M2 and M3 to ensure the financial demand does not suffer from shortage problems. Sufficient money supply in the market can stop borrowing and relying solely on the loans from abroad, especially in desperate circumstances for business capital rounds or national projects which are costly.

In addition, local bonds can generate necessary funds needed for the fiscal activities. Furthermore, government of these six countries might stimulus their local investment through their monetary policy by giving incentives to the foreign investors. Moreover, foreign saving inflows into the economy could create multiplier effects, and add to the domestic savings gap or shortage (Makrelov et al., 2018).

Through this measure in monetary policy, it can help in debt reduction without relying on the existing external debt. In other words, countries that with negative impact of external debt on their economic growth would react instant measure in their monetary policy to ensure the recent debt burden will not be carried forward to the future generations.

### **5.3.2 Recommendation**

The findings from the study show that external debt has a negative impact on economic growth exactly. In addition, both of long term external debt and short term external would have negative impact on economic growth.

Therefore, external debt reduction measures need to be taken into account in prevent such countries are not involved in debt overhang. With this, there are several recommendations to be deal with the impact of external debt on economic growth, particularly for Asian countries.

**(i). Financial Institutes Consolidation**

Countries that with high negative coefficient in between external debt and gross domestic product should prioritize domestic credit rather than external credit. These countries particularly includes Jordan, Myanmar and Nepal (as depicted in Table 4.22) should prefer local loans. In order to meet local credit in adequate, countries that with high negative significant between external debt and gross domestic product should strengthen local financial institutions in terms of capital formation, such that it has local saving power to meet the capital demands for local expenditures. The government should consolidate small finance institutions in efforts to accumulate an adequate sum of capital or adequate funds that can cater local credit demand need in running its fiscal expenses. Likewise, it can assist such countries in reducing the loan which is funded from abroad to decrease the external debt of a country. Therefore, Asian countries that much depends on external credit should take efforts to consolidate the local financial institutions in order to address the problems in fulfilling shortage source gap of domestic fiscal spaces.

**(ii). Fixed Currency Exchange Rate**

External debt problems are difficult to deal because loans from abroad are subjected to credit risk which includes lending transactions stated in currency exchange rates and loan interest rates. The governments in Asian countries which involved current account deficits such as Bangladesh, India, Jordan, Lao PDR, Philippines and Turkey (depicted in Table 4.25) should have a fixed currency exchange rate agreement between creditor countries and debtor countries to cope with the fluctuation of currency exchange rate risks. This is to avoid the uncertainty occurs during international trading via currency exchange rate in payment. The fluctuation in currency exchange can cause the value of external debt by debtor countries to increase from its original external debt value. In this way, this fixed currency exchange rate applied in transactions amongst debtor and creditor country can assist in stabilizing the value of the loan from abroad. Thus, fixed currency exchange helps those current account deficit countries to maintain the existing exact value of the actual amount of debt that needs to be settled. For instance, the global financial organization such as the Asian Development Bank (ADB) can play an important role in controlling the currencies exchange rates in Asian Countries that would be beneficial to both creditor and debtor countries. Besides that, ADB can also take the necessary measures to set a fixed rate on loan within a certain periods of time for Asian countries. With these ideal efforts from ADB, it might help in reducing the value of an external debt that is being under controlled. Additionally, it also helps those current account deficit countries in preventing their recent external debt amount from increase dramatically due to unpredictable currency exchange rate factor.

### **(iii). Financial Isolation Power**

A perfect external debt management can help in restricting its financial risk exposure and utilizing its capital resources with low borrowing costs. Therefore, the

government should monitor all their external liabilities explicitly to ensure these external borrowing of resources are solely used for the purpose of generating productivity and outputs, thereby ensuring that these resources are not wasted when it is utilized.

In addition, the government needs to ensure that all these external loans are not leaked during its implementation in government expenditures, and prevent these resources from being in the interests of personal or certain parties. Countries with high negative coefficient in between government expenditure and gross domestic product are related misuse of expenditure by irresponsible parties. Therefore, countries such as Bhutan, Lao PDR, Nepal and Thailand (as depicted in Table 4.23) such as should formulate a policy to implement financial credit reforms such as doctrine of isolation of powers in terms of credit lending from abroad in order to prevent these external loans to fall prey into the hands of irresponsible parties for personal purposes, so on and so forth.

With the government's proper intervention and perfect management in dealing with external debt, it can certainly help these four countries in reducing their external debt burden. Perhaps the implementation of external debt efficiently and effectively in these countries can lead to sustainable economic growth in the future.

#### **(iv). Loan Diversification**

The role of external debt over the period of credit lending affects economic growth. The findings from this empirical study reflects that the positive impact of long term or short term external debt on economic growth.

Countries that with positive effects of long term external debt on economic growth such as Bhutan, China, India, Nepal, Sri Lanka, Thailand, Turkey and Vietnam (depicted in Table 4.24) are recommended to prioritize the use of long term external debt instead of short term external debt. These eight countries are compatible with the usage of long term

external debt to finance their productive fiscal activities in pursuit of marginal output in their economy.

Short term external economic activity could also have a positive effect on economic growth, i.e. as-well-as the results of the study found that Bangladesh, China, Indonesia, India, Malaysia, Philippines, Sri Lanka, Thailand, Turkey and Vietnam (as depicted in Table 4.26) were able to give rise to economic growth as resulted from an additional use of each unit of short term external debt.

Therefore, these 10 countries are recommended to use short term external debt instead of long term external debt in managing their country's external debt sources. This is because the use of short term external debt to finance fiscal activities in these countries tends to result in higher marginal returns on output to repay the loan interest rates over a period of time.

**(v). Strengthen Country Reserve**

In order to reduce the existing external debt, the government can also implement the use of the foreign exchange reserve as a safeguard financial credit measure rather than continuing to make loans from abroad. This is because external borrowing involves debt service costs and other risks that may be unforeseen by the debtor country.

Hence, the role of the foreign exchange reserve helps in outperforming some of the external debt. In addition, countries with high external debt services such as Bangladesh, India, Jordan, Lao PDR, Nepal, Philippines, Turkey and Vietnam (depicted in Table 4.28) should take efforts in strengthen their country reserve in order to repay the critical external debt when necessary. For example, if the amount of external loans used is exceeding the

debt threshold limit, it needs to be addressed immediately so that such external debt is not multiplied in the future which will burden the economy of a country.

In addition, the ratio between external debts on foreign reserve exchange threshold can be used as a benchmark to determine the level of limit on the use of external debt which is permitted based on the current capacity of foreign reserve exchange.

The measures apply by the government in the role of foreign reserve exchange and an awareness of debt-reserve threshold in managing external debt matters to produce positive value added in output, enhancing and eventually generating economic growth in the long run.

#### **(vi). Debt Threshold Benchmark**

Based on the country's debt threshold, it is useful as a warning measure for government to prevent external borrowing from exceeding the allowable loans limit. Moreover, this measure can be taken to ensure that the government's utilization of external borrowing does not exceed the external borrowing capability in terms of debt repayment.

Therefore, countries with high negative coefficient between external debt and gross domestic product particularly in Jordan, Myanmar and Nepal (as depicted in Table 4.22) need to be cautious and take precautions on its own countries debt threshold and applying the debt threshold as a benchmark on borrowing limits from overseas. Within this, when policy makers of these three countries found that the ratio between external debt and economic growth is reaching or going beyond its country's debt threshold, then external borrowing controls need to be taken immediately. For instance, the government of these three countries should ensure that external loans are applicable, and with the conditions that these loans are purposely spent in productive sectors which generate values added in the economy.

Furthermore, external loans should be efficient in expenses, such as reduction in some of the necessities in fiscal expenses and to utilize the loan resources in productively, and eventually assisting in reducing the amount of external debt.

For developing countries that have the potential to use external debt for economic growth, the government (13 countries with positive coefficient in between external debt and gross domestic product as depicted in Table 4.22) should modify and implement the use of an external debt level that equals the optimal debt threshold at which the countries' consolidation in institutional capital and management capacity of external borrowing have been enhanced. With such actions, this optimal debt threshold for these 13 countries should be implemented for a higher level of growth in output in ratio the between debts on economic growth. This means that a country that has not yet fully reaching the potential of utilizing external debt for economic growth is empowered to the needs and daring to spend on external loans, so that the debt-growth ratio is approaching the proposed debt threshold point.

In other words, external debt has significant positive impacts on economic growth at certain debt threshold levels. These positive impacts are necessity for the government to perform well in order to generate output at a higher level. Ultimately the returns from utilizing external debt to a higher level can stimulate overall economic growth.

#### **5.4 Research Limitation and Suggestion**

There are some limitations presented in this study due to the selected time frame that is considered in accordance with the datasets corresponding to independent and dependent variables of Asian countries, in which only 16 Asian countries are selected eventually that had satisfied the requirements of hypotheses for this study. The Asian

countries in which datasets are incomplete for the duration of this study have been dropped.

For a comprehension analysis of the impact of external debt on economic growth, it seems appropriate that future researchers may be conducted a study that can cover more countries as represents each zone of Asian countries. In such a study, the similar geographical location can reflect regional countries in terms of similarity in financial risks, fiscal activities and other social economic factors, in which it would influencing the impact of external debt on economic growth in accurately. Thus, the outcome of the findings can certainly strengthen on the real effects of external debt on economic growth in Asian countries.

## **5.5 A Remark**

Most of the developing countries are carrying massive debt burden particularly on external debt. These developing countries have to apply external debt in order to fulfil the shortage of domestic fund for instant fiscal expenses, or government prefer external loans rather than domestic funds, so that government can ensure that the local businesses have adequate local funds or capital to smoothly operate in the business cycle. Besides, external debt is much dependent on the country's leaders to intervene whereby instant funds are needed from abroad to maintain their political choice in winning the next coming election, or other factors such as funds leaking, corruption, etc. These are amongst the factors that have contributed to significant negative impacts on economic growth by using external debt as a source of fund in Asian countries.

Governments must handle debt matters seriously and should be more concerned about the excessive amount of debt accumulation in which the huge amount of debts would lead to debt overhang. Therefore, policymakers need to refer to debt threshold point as a

benchmark for assessing sustainable external debt, and cut off some unnecessary fiscal expenses for instant solution to debt problems.

Furthermore, the external funding needs to fulfil comprehensive fiscal expenses. This measure is to ensure that all the recent productive sectors have enough funds to generate positive marginal output in assisting economic growth in aggregate. Therefore, the government needs to allocate funding fairly for fiscal spaces. This will help to strengthen the recent economy through well management of external funds, hence, as a better condition to assure investors from abroad to invest or inject saving in the domestic financial institution. Consequently, investment saving from abroad in the local market might help to solve the problem of not to be solely dependent on external funds, yet, it also brings adequate sources to stimulate productive economic sectors which can contribute to better economic growth in the long run.

In contrary, there might be other factors that influence economic growth besides channelling wrong matched fiscal space, i.e. by stealing most of the funds to own finance account by irresponsible leader of the country. These leaking funds cause shortage of funding to the real productive sectors and could not satisfy expected economic growth as expected. As a result, the overall study on the use of external debt verses economic growth is more likely to be a negative impact. This negative effect is the failure in distributing those funds borrowed as well as poor monitoring on funds in terms of implementation of fiscal spaces.

Therefore, the government needs to ensure that funds borrowing are corresponding to the financial needs for the fiscal space gap as well as free from the centralization of power of the country's leader. Measures can be taken by separating donor powers in terms of distribution on funds, monitoring on efficient utilization of funds, and most importantly

by setting a law that can prevent any party from having full control over the amount of funds borrowed.

Hereby, dealing with debt problems in the best possible way has become a challenge for policy makers to ensure that the path towards sustainable growth is maintained. It is hoped that these external funds can bring targeted economic growth. As a matter in fact, the economic growth in Asian countries will continue to move forward and can be an aspiration to countries in other zones to enhance values added to their economies globally.

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## APPENDICES

### APPENDIX I

**Table: The Performance of Debt to GDP ratio in Asian Countries**

| Country    | Percent (%) | Year |
|------------|-------------|------|
| Bangladesh | 33.9        | 2014 |

|                      |       |      |
|----------------------|-------|------|
| Bhutan               | 107.5 | 2014 |
| Brunei               | 2.6   | 2012 |
| Burma                | 47.5  | 2012 |
| Cambodia             | 29.5  | 2014 |
| Hong Kong            | 32.4  | 2012 |
| India                | 66.8  | 2012 |
| Indonesia            | 24.0  | 2012 |
| Iran                 | 10.7  | 2012 |
| Iraq                 | 34.2  | 2012 |
| Israel               | 69.6  | 2014 |
| Japan                | 237.9 | 2012 |
| Jordan               | 79.6  | 2012 |
| Kazakhstan           | 12.3  | 2012 |
| Korea, North*        | 0.4   | 2007 |
| Korea, South         | 33.7  | 2012 |
| Kuwait               | 7.3   | 2012 |
| Kyrgyzstan           | 48.9  | 2012 |
| Laos                 | 53.1  | 2012 |
| Lebanon              | 139.5 | 2012 |
| Malaysia             | 55.5  | 2012 |
| Maldives             | 77.5  | 2012 |
| Nepal                | 33.1  | 2012 |
| Oman                 | 6.1   | 2012 |
| Pakistan             | 62.1  | 2012 |
| China                | 41.1  | 2014 |
| Philippines          | 41.9  | 2012 |
| Russia               | 10.9  | 2012 |
| Singapore            | 111.0 | 2012 |
| Sri Lanka*           | 81.0  | 2012 |
| Syria*               | 44.0  | 2012 |
| Taiwan               | 40.9  | 2012 |
| Tajikistan           | 32.5  | 2012 |
| Thailand             | 44.3  | 2012 |
| Turkmenistan         | 15.8  | 2012 |
| United Arab Emirates | 17.6  | 2012 |
| Uzbekistan           | 8.6   | 2012 |
| Vietnam              | 52.1  | 2012 |
| Yemen                | 46.7  | 2012 |

*Source: IMF, CIA Statistic, World Bank.*

*Note: \* refers to CIA Statistic 2007, 2012 or 2014.*

## APPENDIX II: Summary of Statistic

Country: Bangladesh

| Variable      | Obs | Mean     | Std. Dev. | Min      | Max      |
|---------------|-----|----------|-----------|----------|----------|
| GDP           | 37  | 550.8635 | 193.9007  | 351.3761 | 1029.578 |
| External Debt | 37  | 1.69E+10 | 8.88E+09  | 3.80E+09 | 3.86E+10 |

|                           |    |           |          |           |          |
|---------------------------|----|-----------|----------|-----------|----------|
| Long-run External Debt    | 37 | 1.51E+10  | 7.32E+09 | 3.17E+09  | 3.04E+10 |
| Short-run External Debt   | 37 | 1.12E+09  | 1.72E+09 | 4.98E+07  | 6.88E+09 |
| Debt services             | 37 | 7.59E+08  | 4.26E+08 | 1.97E+08  | 1.80E+09 |
| Account Balances          | 37 | 2.46E+08  | 1.11E+09 | -1.10E+09 | 3.56E+09 |
| Country Reserves          | 37 | 5.29E+09  | 7.85E+09 | 1.60E+08  | 3.23E+10 |
| Foreign Direct Investment | 37 | -5.30E+08 | 8.74E+08 | -3.33E+09 | -247908  |
| Government Expenditures   | 37 | 3.61E+09  | 2.04E+09 | 1.36E+09  | 8.66E+09 |
| Population                | 37 | 1.25E+08  | 2.53E+07 | 8.15E+07  | 1.63E+08 |
| Inflation                 | 37 | 58.73553  | 4.00E+01 | 7.88E+00  | 151.5835 |
| Real Interest Rate        | 37 | 5.817613  | 4.314784 | -5.481336 | 14.82143 |

Country: Bhutan

| Variable                  | Obs | Mean      | Std. Dev. | Min       | Max      |
|---------------------------|-----|-----------|-----------|-----------|----------|
| GDP                       | 37  | 1288.839  | 707.8899  | 403.6577  | 2751.213 |
| External Debt             | 37  | 4.92E+08  | 6.27E+08  | 297000    | 2.34E+09 |
| Long-run External Debt    | 37  | 4.27E+08  | 5.31E+08  | 297000    | 1.95E+09 |
| Short-run External Debt   | 37  | 6.04E+07  | 3.25E+08  | 0         | 1.98E+09 |
| Debt services             | 37  | 2.86E+07  | 4.23E+07  | 1822      | 1.38E+08 |
| Account Balances          | 37  | -1.74E+08 | 2.01E+08  | -6.20E+08 | 1.02E+08 |
| Country Reserves          | 37  | 3.90E+08  | 3.82E+08  | 1.00E+07  | 1.25E+09 |
| Foreign Direct Investment | 37  | -3.27E+07 | 8.93E+07  | -5.41E+08 | -203     |
| Government Expenditures   | 37  | 4.67E+08  | 1.99E+09  | 9241555   | 1.22E+10 |
| Population                | 37  | 588503.5  | 114920.3  | 409172    | 797765   |
| Inflation                 | 37  | 67.25718  | 39.28495  | 13.94179  | 152.5143 |
| Real Interest Rate        | 37  | 7.592584  | 2.788129  | 0.2619419 | 14.53742 |

Country: China

| Variable                | Obs | Mean     | Std. Dev. | Min      | Max      |
|-------------------------|-----|----------|-----------|----------|----------|
| GDP                     | 37  | 2288.946 | 1974.763  | 347.8874 | 6894.464 |
| External Debt           | 37  | 3.53E+11 | 4.90E+11  | 5.80E+09 | 1.77E+12 |
| Long-run External Debt  | 37  | 1.43E+11 | 1.46E+11  | 4.91E+09 | 5.71E+11 |
| Short-run External Debt | 37  | 2.08E+11 | 3.50E+11  | 8.84E+08 | 1.24E+12 |

|                           |    |           |          |           |          |
|---------------------------|----|-----------|----------|-----------|----------|
| Debt services             | 37 | 2.89E+10  | 3.16E+10 | 1.74E+09  | 1.24E+11 |
| Account Balances          | 37 | 8.71E+10  | 1.17E+11 | -1.16E+10 | 4.21E+11 |
| Country Reserves          | 37 | 9.32E+11  | 1.34E+12 | 1.01E+10  | 3.90E+12 |
| Foreign Direct Investment | 37 | -5.45E+10 | 6.73E+10 | -2.32E+11 | 4.66E+10 |
| Government Expenditures   | 37 | 3.69E+11  | 3.79E+11 | 2.58E+10  | 1.29E+12 |
| Population                | 37 | 1.21E+09  | 1.22E+08 | 9.81E+08  | 1.38E+09 |
| Inflation                 | 37 | 57.28483  | 32.21088 | -0.06296  | 102      |
| Real Interest Rate        | 37 | 2.081523  | 3.401533 | -7.97742  | 7.348127 |

Country: Indonesia

| Variable                  | Obs | Mean      | Std. Dev. | Min       | Max      |
|---------------------------|-----|-----------|-----------|-----------|----------|
| GDP                       | 37  | 2284.208  | 781.6411  | 1230.84   | 3974.059 |
| External Debt             | 37  | 1.22E+11  | 7.71E+10  | 2.09E+10  | 3.09E+11 |
| Long-run External Debt    | 37  | 1.00E+11  | 6.42E+10  | 1.82E+10  | 2.67E+11 |
| Short-run External Debt   | 37  | 1.90E+10  | 1.27E+10  | 2.78E+09  | 4.61E+10 |
| Debt services             | 37  | 1.79E+10  | 1.24E+10  | 3.08E+09  | 5.57E+10 |
| Account Balances          | 37  | -2.61E+09 | 9.83E+09  | -2.91E+10 | 1.09E+10 |
| Country Reserves          | 37  | 3.74E+10  | 3.77E+10  | 4.56E+09  | 1.16E+11 |
| Foreign Direct Investment | 37  | -3.18E+09 | 5.13E+09  | -1.51E+10 | 4.55E+09 |
| Government Expenditures   | 37  | 4.20E+10  | 2.10E+10  | 1.73E+10  | 8.53E+10 |
| Population                | 37  | 2.05E+08  | 3.37E+07  | 1.47E+08  | 2.61E+08 |
| Inflation                 | 37  | 12.2875   | 12.06194  | 2.253772  | 75.27117 |
| Real Interest Rate        | 37  | 6.733457  | 7.601421  | -24.6002  | 18.81387 |

Country: India

| Variable                | Obs | Mean     | Std. Dev. | Min      | Max      |
|-------------------------|-----|----------|-----------|----------|----------|
| GDP                     | 37  | 8.46E+02 | 4.27E+02  | 3.90E+02 | 1.86E+03 |
| External Debt           | 37  | 1.54E+11 | 1.37E+11  | 2.07E+10 | 4.80E+11 |
| Long-run External Debt  | 37  | 1.28E+11 | 1.06E+11  | 1.84E+10 | 3.92E+11 |
| Short-run External Debt | 37  | 2.30E+10 | 3.11E+10  | 1.27E+09 | 9.33E+10 |

|                           |    |           |          |           |           |
|---------------------------|----|-----------|----------|-----------|-----------|
| Debt services             | 37 | 1.77E+10  | 1.80E+10 | 1.40E+09  | 9.22E+10  |
| Account Balances          | 37 | -1.34E+10 | 2.10E+10 | -9.15E+10 | 8.77E+09  |
| Country Reserves          | 37 | 1.10E+11  | 1.28E+11 | 5.64E+09  | 3.62E+11  |
| Foreign Direct Investment | 37 | -8.36E+09 | 1.10E+10 | -4.63E+10 | -7.35E+07 |
| Government Expenditures   | 37 | 1.05E+11  | 6.43E+10 | 3.07E+10  | 2.73E+11  |
| Population                | 37 | 1.01E+09  | 1.93E+08 | 6.97E+08  | 1.32E+09  |
| Inflation                 | 37 | 56.71739  | 41.95118 | 10.06374  | 154.9534  |
| Real Interest Rate        | 37 | 6.161497  | 2.219967 | -0.59685  | 9.191247  |

Country: Jordan

| Variable                  | Obs | Mean      | Std. Dev. | Min       | Max      |
|---------------------------|-----|-----------|-----------|-----------|----------|
| GDP                       | 37  | 3086.6    | 392.7501  | 2357.231  | 3786.533 |
| External Debt             | 37  | 1.03E+10  | 6.23E+09  | 1.87E+09  | 2.57E+10 |
| Long-run External Debt    | 37  | 6.23E+09  | 2.61E+09  | 1.38E+09  | 1.31E+10 |
| Short-run External Debt   | 37  | 3.75E+09  | 3.78E+09  | 3.31E+08  | 1.09E+10 |
| Debt services             | 37  | 8.35E+08  | 4.94E+08  | 2.09E+08  | 2.87E+09 |
| Account Balances          | 37  | -9.03E+08 | 1.36E+09  | -4.71E+09 | 1.20E+09 |
| Country Reserves          | 37  | 5.10E+09  | 5.08E+09  | 4.14E+08  | 1.66E+10 |
| Foreign Direct Investment | 37  | -7.74E+08 | 9.85E+08  | -3.68E+09 | 2.56E+07 |
| Government Expenditures   | 37  | 3.73E+09  | 1.14E+09  | 2.38E+09  | 6.09E+09 |
| Population                | 37  | 5100400   | 2009667   | 2374422   | 9455802  |
| Inflation                 | 37  | 65.35725  | 29.49755  | 23.20813  | 117.425  |
| Real Interest Rate        | 37  | 4.827286  | 4.264852  | -9.04454  | 12.78056 |

Country: Lao PDR

| Variable               | Obs | Mean     | Std. Dev. | Min      | Max      |
|------------------------|-----|----------|-----------|----------|----------|
| GDP                    | 37  | 757.8953 | 363.1412  | 344      | 1642.749 |
| External Debt          | 37  | 3.29E+09 | 2.94E+09  | 3.53E+08 | 1.16E+10 |
| Long-run External Debt | 37  | 3.14E+09 | 2.76E+09  | 3.35E+08 | 1.09E+10 |

|                           |    |           |          |           |          |
|---------------------------|----|-----------|----------|-----------|----------|
| Short-run External Debt   | 37 | 1.16E+08  | 2.45E+08 | 2000      | 8.33E+08 |
| Debt services             | 37 | 9.92E+07  | 1.23E+08 | 2276000   | 3.98E+08 |
| Account Balances          | 37 | -3.59E+08 | 1.19E+09 | -6.96E+09 | 1.39E+08 |
| Country Reserves          | 37 | 3.55E+08  | 4.45E+08 | 216272.7  | 1.27E+09 |
| Foreign Direct Investment | 37 | -1.42E+08 | 2.40E+08 | -1.08E+09 | 498000   |
| Government Expenditures   | 37 | 3.03E+12  | 4.26E+12 | 4.66E+09  | 1.48E+13 |
| Population                | 37 | 5056707   | 1079886  | 3258144   | 6758353  |
| Inflation                 | 37 | 45.5715   | 46.55975 | 1.428121  | 127.7126 |
| Real Interest Rate        | 37 | 5.966665  | 16.59185 | -42.099   | 28.544   |

Country: Sri Lanka

| Variable                  | Obs | Mean      | Std. Dev. | Min       | Max      |
|---------------------------|-----|-----------|-----------|-----------|----------|
| GDP                       | 37  | 1896.38   | 851.799   | 927.1346  | 3759.23  |
| External Debt             | 37  | 1.33E+10  | 1.26E+10  | 1.85E+09  | 4.66E+10 |
| Long-run External Debt    | 37  | 1.09E+10  | 9.83E+09  | 1.24E+09  | 3.93E+10 |
| Short-run External Debt   | 37  | 1.68E+09  | 2.33E+09  | 1.85E+08  | 7.59E+09 |
| Debt services             | 37  | 9.84E+08  | 1.17E+09  | 1.80E+08  | 6.36E+09 |
| Account Balances          | 37  | -1.01E+09 | 1.13E+09  | -4.62E+09 | 878908.6 |
| Country Reserves          | 37  | 2.57E+09  | 2.50E+09  | 2.48E+08  | 8.21E+09 |
| Foreign Direct Investment | 37  | -2.78E+08 | 2.78E+08  | -8.96E+08 | 1.77E+07 |
| Government Expenditures   | 37  | 2.71E+09  | 1.52E+09  | 1.05E+09  | 5.96E+09 |
| Population                | 37  | 1.82E+07  | 1860994   | 1.47E+07  | 2.12E+07 |
| Inflation                 | 37  | 47.51429  | 42.09264  | 4.570851  | 134.0502 |
| Real Interest Rate        | 37  | 2.735732  | 4.631585  | -11.0174  | 12.74    |

Country: Myanmar

| Variable      | Obs | Mean     | Std. Dev. | Min      | Max      |
|---------------|-----|----------|-----------|----------|----------|
| GDP           | 37  | 539.2496 | 402.8591  | 190.9118 | 1420.485 |
| External Debt | 37  | 5.63E+09 | 1.76E+09  | 1.73E+09 | 8.22E+09 |

|                           |    |           |          |           |          |
|---------------------------|----|-----------|----------|-----------|----------|
| Long-run External Debt    | 37 | 5.00E+09  | 1.38E+09 | 1.61E+09  | 6.67E+09 |
| Short-run External Debt   | 37 | 5.15E+08  | 3.77E+08 | 198000    | 1.19E+09 |
| Debt services             | 37 | 1.16E+08  | 1.61E+08 | 1993000   | 9.43E+08 |
| Account Balances          | 37 | -3.95E+08 | 1.20E+09 | -4.30E+09 | 1.57E+09 |
| Country Reserves          | 37 | 1.79E+09  | 2.44E+09 | 1.16E+08  | 8.84E+09 |
| Foreign Direct Investment | 37 | -9.72E+08 | 1.93E+09 | -8.30E+09 | 780000   |
| Government Expenditures   | 37 | 1810.803  | 2794.237 | 96.10222  | 10100    |
| Population                | 37 | 4.48E+07  | 5582176  | 3.41E+07  | 5.29E+07 |
| Inflation                 | 37 | 40.11617  | 46.9383  | 0.569371  | 138.9    |
| Real Interest Rate        | 37 | -2.25265  | 11.22859 | -31.5088  | 12.48097 |

Country: Malaysia

| Variable                  | Obs | Mean      | Std. Dev. | Min       | Max      |
|---------------------------|-----|-----------|-----------|-----------|----------|
| GDP                       | 37  | 6639.188  | 2366.47   | 3317.312  | 11028.19 |
| External Debt             | 37  | 6.55E+10  | 6.19E+10  | 6.61E+09  | 2.02E+11 |
| Long-run External Debt    | 37  | 4.36E+10  | 3.32E+10  | 5.26E+09  | 1.15E+11 |
| Short-run External Debt   | 37  | 2.15E+10  | 2.89E+10  | 1.36E+09  | 9.26E+10 |
| Debt services             | 37  | 6.42E+09  | 3.27E+09  | 9.34E+08  | 1.36E+10 |
| Account Balances          | 37  | 7.98E+09  | 1.25E+10  | -8.64E+09 | 3.89E+10 |
| Country Reserves          | 37  | 4.75E+10  | 4.42E+10  | 4.44E+09  | 1.40E+11 |
| Foreign Direct Investment | 37  | -5.29E+08 | 3.45E+09  | -5.18E+09 | 8.00E+09 |
| Government Expenditures   | 37  | 1.93E+10  | 1.23E+10  | 6.17E+09  | 4.49E+10 |
| Population                | 37  | 2.22E+07  | 5377546   | 1.38E+07  | 3.12E+07 |
| Inflation                 | 37  | 76.12083  | 21.74256  | 41.3796   | 115.2    |
| Real Interest Rate        | 37  | 4.538738  | 3.764119  | -5.28943  | 10.63331 |

Country: Nepal

| Variable      | Obs | Mean     | Std. Dev. | Min      | Max      |
|---------------|-----|----------|-----------|----------|----------|
| GDP           | 37  | 451.0376 | 121.841   | 283.0523 | 686.0836 |
| External Debt | 37  | 2.42E+09 | 1.28E+09  | 2.05E+08 | 4.16E+09 |

|                           |    |           |          |           |          |
|---------------------------|----|-----------|----------|-----------|----------|
| Long-run External Debt    | 37 | 2.19E+09  | 1.23E+09 | 1.56E+08  | 3.65E+09 |
| Short-run External Debt   | 37 | 1.57E+08  | 5.75E+08 | 5500000   | 3.53E+09 |
| Debt services             | 37 | 1.03E+08  | 6.68E+07 | 7799000   | 2.33E+08 |
| Account Balances          | 37 | 3117442   | 6.32E+08 | -2.16E+09 | 2.45E+09 |
| Country Reserves          | 37 | 1.76E+09  | 2.22E+09 | 1.05E+08  | 8.88E+09 |
| Foreign Direct Investment | 37 | -1.59E+07 | 2.86E+07 | -9.40E+07 | 6647984  |
| Government Expenditures   | 37 | 7.56E+08  | 6.78E+08 | 1.30E+08  | 2.34E+09 |
| Population                | 37 | 2.23E+07  | 4446501  | 1.49E+07  | 2.90E+07 |
| Inflation                 | 37 | 57.06797  | 43.31265 | 8.706789  | 165.8533 |
| Real Interest Rate        | 37 | 0.730474  | 5.518049 | -15.6     | 9.9852   |

Country: Pakistan

| Variable                  | Obs | Mean      | Std. Dev. | Min       | Max       |
|---------------------------|-----|-----------|-----------|-----------|-----------|
| GDP                       | 37  | 853.34    | 173.3992  | 556.3106  | 1181.598  |
| External Debt             | 37  | 3.40E+10  | 1.85E+10  | 9.93E+09  | 7.30E+10  |
| Long-run External Debt    | 37  | 2.89E+10  | 1.57E+10  | 8.52E+09  | 6.82E+10  |
| Short-run External Debt   | 37  | 2.42E+09  | 1.39E+09  | 7.20E+08  | 5.54E+09  |
| Debt services             | 37  | 2.78E+09  | 1.42E+09  | 8.69E+08  | 8.03E+09  |
| Account Balances          | 37  | -2.15E+09 | 3.23E+09  | -1.57E+10 | 3.85E+09  |
| Country Reserves          | 37  | 6.69E+09  | 6.50E+09  | 1.05E+09  | 2.20E+10  |
| Foreign Direct Investment | 37  | -1.02E+09 | 1.36E+09  | -5.49E+09 | -2.95E+07 |
| Government Expenditures   | 37  | 1.06E+10  | 8.31E+09  | 2.38E+09  | 3.36E+10  |
| Population                | 37  | 1.33E+08  | 3.42E+07  | 7.81E+07  | 1.93E+08  |
| Inflation                 | 37  | 5.13E+01  | 4.33E+01  | 9.11E+00  | 1.51E+02  |
| Real Interest Rate        |     |           |           |           |           |

Country: Philippines

| Variable      | Obs | Mean     | Std. Dev. | Min      | Max      |
|---------------|-----|----------|-----------|----------|----------|
| GDP           | 37  | 1771.567 | 362.8406  | 1380.682 | 2753.35  |
| External Debt | 37  | 4.76E+10 | 1.80E+10  | 1.74E+10 | 7.77E+10 |

|                           |    |           |          |           |          |
|---------------------------|----|-----------|----------|-----------|----------|
| Long-run External Debt    | 37 | 3.77E+10  | 1.62E+10 | 8.82E+09  | 6.15E+10 |
| Short-run External Debt   | 37 | 8.80E+09  | 7.33E+09 | 3.80E+09  | 4.61E+10 |
| Debt services             | 37 | 6.17E+09  | 3.06E+09 | 2.18E+09  | 1.32E+10 |
| Account Balances          | 37 | 1.03E+09  | 4.40E+09 | -4.35E+09 | 1.14E+10 |
| Country Reserves          | 37 | 2.39E+10  | 2.85E+10 | 8.44E+08  | 8.38E+10 |
| Foreign Direct Investment | 37 | -4.49E+08 | 1.13E+09 | -4.23E+09 | 2.45E+09 |
| Government Expenditures   | 37 | 1.48E+10  | 5.13E+09 | 9.03E+09  | 2.89E+10 |
| Population                | 37 | 7.49E+07  | 1.71E+07 | 4.74E+07  | 1.03E+08 |
| Inflation                 | 37 | 58.50824  | 35.71688 | 7.462851  | 119.5021 |
| Real Interest Rate        | 37 | 4.809844  | 4.846521 | -16.3959  | 14.16267 |

Country: Thailand

| Variable                  | Obs | Mean      | Std. Dev. | Min       | Max      |
|---------------------------|-----|-----------|-----------|-----------|----------|
| GDP                       | 37  | 496.57    | 1398.484  | 1.40E+03  | 5.90E+03 |
| External Debt             | 37  | 6.64E+10  | 4.18E+10  | 8.30E+09  | 1.37E+11 |
| Long-run External Debt    | 37  | 4.24E+10  | 2.39E+10  | 5.65E+09  | 7.78E+10 |
| Short-run External Debt   | 37  | 2.31E+10  | 1.92E+10  | 2.30E+09  | 6.19E+10 |
| Debt services             | 37  | 1.13E+10  | 8.85E+09  | 1.62E+09  | 4.94E+10 |
| Account Balances          | 37  | 2.95E+09  | 1.20E+10  | -1.47E+10 | 4.40E+10 |
| Country Reserves          | 37  | 5.82E+10  | 6.17E+10  | 2.56E+09  | 1.81E+11 |
| Foreign Direct Investment | 37  | -2.32E+09 | 3.11E+09  | -7.88E+09 | 4.70E+09 |
| Government Expenditures   | 37  | 3.21E+10  | 1.70E+10  | 1.10E+10  | 6.56E+10 |
| Population                | 37  | 6.05E+07  | 6547659   | 4.74E+07  | 6.89E+07 |
| Inflation                 | 37  | 71.48907  | 25.42213  | 32.38879  | 111.3464 |
| Real Interest Rate        |     | 6.411545  | 3.429864  | 0.666248  | 15.12481 |

Country: Turkey

| Variable      | Obs | Mean     | Std. Dev. | Min      | Max      |
|---------------|-----|----------|-----------|----------|----------|
| GDP           | 37  | 8424.161 | 2603.052  | 4986.526 | 14071.17 |
| External Debt | 37  | 1.40E+11 | 1.21E+11  | 1.91E+10 | 4.01E+11 |

|                           |    |           |          |           |           |
|---------------------------|----|-----------|----------|-----------|-----------|
| Long-run External Debt    | 37 | 1.01E+11  | 8.62E+10 | 1.56E+10  | 2.94E+11  |
| Short-run External Debt   | 37 | 3.39E+10  | 3.68E+10 | 1.77E+09  | 1.30E+11  |
| Debt services             | 37 | 2.38E+10  | 2.07E+10 | 1.61E+09  | 6.29E+10  |
| Account Balances          | 37 | -1.44E+10 | 2.05E+10 | -7.44E+10 | 3.76E+09  |
| Country Reserves          | 37 | 4.08E+10  | 3.96E+10 | 6.62E+09  | 1.31E+11  |
| Foreign Direct Investment | 37 | -4.19E+09 | 5.93E+09 | -1.99E+10 | -1.80E+07 |
| Government Expenditures   | 37 | 6.91E+10  | 4.33E+10 | 5.00E+09  | 1.55E+11  |
| Population                | 37 | 6.14E+07  | 1.03E+07 | 4.40E+07  | 7.95E+07  |
| Inflation                 | 37 | 40.98703  | 51.1627  | 0.001564  | 157.4248  |
| Real Interest Rate        | 37 | 42.63019  | 24.19444 | 8         | 87.7908   |

Country: Vietnam

| Variable                  | Obs | Mean      | Std. Dev. | Min       | Max       |
|---------------------------|-----|-----------|-----------|-----------|-----------|
| GDP                       | 37  | 847.6116  | 421.3451  | 389.4215  | 1770.258  |
| External Debt             | 37  | 2.50E+10  | 2.41E+10  | 2.02E+07  | 9.82E+10  |
| Long-run External Debt    | 37  | 2.12E+10  | 1.98E+10  | 2.02E+07  | 8.31E+10  |
| Short-run External Debt   | 37  | 3.58E+09  | 4.39E+09  | 0         | 1.51E+10  |
| Debt services             | 37  | 1.46E+09  | 2.11E+09  | 215909    | 8.36E+09  |
| Account Balances          | 37  | -2.02E+08 | 3.65E+09  | -1.08E+10 | 9.43E+09  |
| Country Reserves          | 37  | 8.06E+09  | 1.10E+10  | 1.00E+07  | 3.65E+10  |
| Foreign Direct Investment | 37  | -3.70E+09 | 3.51E+09  | -1.45E+10 | -1.62E+08 |
| Government Expenditures   | 37  | 4.85E+09  | 3.51E+09  | 1.55E+09  | 1.56E+10  |
| Population                | 37  | 7.43E+07  | 1.19E+07  | 5.37E+07  | 9.27E+07  |
| Inflation                 | 37  | 87.94938  | 100.1325  | 5.7347    | 411.0403  |
| Real Interest Rate        | 37  | 21.52783  | 25.5028   | -5.61634  | 80.7517   |