IMPACTS OF GOVERNMENT DEBT ON OUTPUT GROWTH, PRIVATE CONSUMPTION AND PRODUCTIVITY IN ASEAN-4 COUNTRIES

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By

HODA HAJIAN

Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements for the Degree of Doctor of Philosophy

February 2019

DEDICATION

This thesis is dedicated to

My Dear Parents

Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

IMPACTS OF GOVERNMENT DEBT ON OUTPUT GROWTH, PRIVATE CONSUMPTION AND PRODUCTIVITY IN ASEAN-4 COUNTRIES

By

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February 2019

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The macroeconomic effects of government debt are a long debated and recurring economic issue. Recently, as world government debt has reached unprecedented levels, the issue has been of particular focus among economists and policy makers. Although mainstream economics holds a negative view on the effects of high and increasing government debt, and the existing empirical panel studies tend to agree with that conclusion, the effect of moderate debt levels on emerging economies is rather ambiguous. Moreover, recent studies emphasize that the effect of government debt is country specific, yet extant empirical evidence is almost always based on large panel samples. This study attempts to empirically investigate the relationship between government debt and macroeconomic factors in four emerging ASEAN countries over the past three decades (1985-2014), namely Indonesia, Malaysia, the Philippines and Thailand (ASEAN-4).

The first objective is to investigate the relationship between government debt and output growth. In order to do that, a reduced form model of endogenous growth using a VAR framework is employed. Utilising Generalized Impulse-Response (GIR) analysis, this study traced the responses of output growth index, growth factors such as private investment and human capital stock, and government debt itself to a shock to government debt. Conforming to causality result, the response of economic growth in Indonesia and Malaysia were insignificant, whereas in the Philippines and Thailand some evidence of positive and significant impact was found. For the second objective, the effect of government debt on private consumption in the long-run is analysed. Given the mostly insignificant results of the first objective, the question may arise of whether this is due to Ricardian implications, which state that debt does not have any effect on economic growth. The consumption model in the second objective tests Ricardian versus neoclassical hypotheses of consumer behaviour. The results strongly reject Ricardian (or tax-discounting) behaviour, and are in line with neoclassical

theory. Finally, as the third objective the long term effect of government debt on total factor productivity (TFP) growth is investigated. On one hand, TFP is an increasingly important growth factor for ASEAN-4 economies. On the other hand, studies show that debt could affect TFP growth, which could have an impact on the ASEAN-4 countries. The results show that government debt has a positive effect on TFP growth, which is statistically significant in Indonesia and Malaysia but insignificant in Thailand. However, debt adversely affects TFP growth in the Philippines. In summary, the result of all three objectives are compatible with endogenous neoclassical growth models, which consider the positive economic effects of government debt if it is spent efficiently on productive projects. The policy implications based on the findings can be summarized as follows: in Indonesia and Malaysia, stronger positive results are plausible if improvement in current fiscal policy is continued within the same range of government debt. In the Philippines, given the economic conditions, the desirable policy is one which helps to reduce government debt. In Thailand, government debt can stimulate economic growth in the medium term while the government is able to reduce its debt at the same time.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

KESAN HUTANG KERAJAAN, TERHADAP PERTUMBUHAN LUAR, PENGGUNAAN PERSENDIRIAN (SWASTA) DAN PRODUKTIVITI FAKTOR TOTAL DI NEGARA-NEGARA ASEAN-4

Oleh

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Kesan makroekonomi disebabkan oleh hutang kerajaan adalah isu yang telah lama diperdebatkan dan seringkali berulang. Isu ini diketengahkan baru-baru ini oleh ahli ekonomi dan pembuat dasar berikutan hutang kerajaan dunia telah mencapai tahap yang tertinggi. Walaupun ekonomi arus perdana berpandangan negatif terhadap kesan kepada hutang kerajaan yang tinggi dan semakin meningkat, dan kajian panel data yang sedia ada cenderung mengakui kesimpulan itu, kesan kepada hutang tahap sederhana dalam ekonomi adalah masih samar-samar. Selain itu, kajian terbaru menekankan bahawa kesan hutang kerajaan adalah berdasarkan negara; namun, ada bukti yang hampir didasarkan pada sampel panel besar. Kajian ini cuba mengkaji fakta hubungan antara hutang kerajaan dan faktor makroekonomi di empat negara ASEAN, iaitu Indonesia, Malaysia, Filipina dan Thailand (ASEAN-4) selama tiga dekad yang lalu (1985-2014).

Objektif pertama adalah untuk menyelidiki hubungan antara hutang kerajaan dan pertumbuhan output (hasil). Untuk mencapai objektif tersebut, satu model pertumbuhan endogen dalam bentuk yang lebih kecil, menggunakan rangka kerja VAR digunakan. Dengan menggunakan analisis General Impulse-Response (GIR), kajian ini mengesan respon indeks pertumbuhan output, faktor pertumbuhan seperti pelaburan swasta dan stok modal insan, dan hutang kerajaan sendiri kepada kejutan (shock) terhadap hutang kerajaan. Sejajar dengan hasil daripada sebab-akibat (causality), respon pertumbuhan ekonomi di Indonesia dan Malaysia didapati tidak signifikan, manakala di Filipina dan Thailand beberapa bukti menunjukkan kesan positif dan signifikan. Pada objektif kedua, kesan hutang kerajaan terhadap perbelanjaan personal dalam jangka panjang telah dianalisa. Jika diberi keputusan yang paling tidak penting dalam objektif pertama, soalan mungkin timbul adakah ini disebabkan oleh implikasi Ricardian, hutang itu tidak mempunyai kesan ke atas

pertumbuhan ekonomi. Model penggunaan dalam ujian objektif kedua Ricardian berbanding hipotesis neoklasik mengenai tingkah laku pengguna. Hasilnya sangat menolak Ricardian atau tingkah laku "tax-discounting' dan bersesuain dengan teori neoklasik. Akhir sekali, pada objektif ketiga, kesan jangka panjang hutang kerajaan terhadap pertumbuhan "total factor productivity" (TFP) telah diselidik. TFP merupakan faktor pertumbuhan yang semakin penting bagi ekonomi ASEAN-4, tetapi kajian menunjukkan bahawa hutang boleh menjejaskan pertumbuhan TFP yang mungkin berlaku di negara-negara ASEAN-4. Keputusan menunjukkan bahawa hutang kerajaan mempunyai kesan positif terhadap pertumbuhan TFP, yang secara statistiknya signifikan di Indonesia dan Malaysia tetapi tidak penting di Thailand. Walau bagaimanapun, hutang itu menjejaskan pertumbuhan TFP di Filipina. Kesimpulannya, ketiga-tiga objektif tersebut bersesuaian dengan model pertumbuhan neoklasik endogen, yang menganggap kesan ekonomi positif untuk hutang kerajaan jika ia dibelanjakan dengan cekap dan dalam projek yang produktif. Kesan-kesan polisi berdasarkan penemuan dapat diringkaskan seperti berikut: Di Indonesia dan Malaysia kesan yang lebih baik adalah munasabah jika polisi fiscal dipertambahbaikkan dan diterusakan dalam lingkungan hutang yang sama. Di Filipina, berdasarkan keadaan ekonomi, dasar itu mengurangkan hutang kerajaan. Di Thailand, hutang kerajaan dapat merangsang pertumbuhan ekonomi dalam jangka sederhana dan kerajaan juga mampu mengurangkan hutangnya pada masa yang sama.

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This thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey Fuller test of unit root
AFC	Asian financial crisis of 1997-1998
ARDL	Autoregressive distributed lag
ASEAN-4	Indonesia, Malaysia, The Philippines, Thailand
BB	Budget Balance
c	Private or household consumption per capita
D	Total gross government outstanding debt stock
G	Government current expenditure
GFC	Global financial crisis 2007-2008
GIR	Generalized impulse response
HK	Human capital stock indexed by average years of schooling of population over 25 years
IR	Impulse response
k	Real private capital stock per capita
l	Logarithm of
n	Population growth rate
Open	Trade openness
Pinv	Private investment indexed by gross private fixed capital formation
r	Real lending/ interest rate
S.D.	Standard deviation
Tax	Government tax revenue
TFP	Total factor productivity
TR	Government transfers
VAR	Vector Auto regression

VECM	Vector error correction model
vex	Volatility of real exchange rate to USD
W	Private wealth indexed by stock market price index
y	Real GDP per capita
yd	Disposable income per capita

CHAPTER 1

INTRODUCTION

1.1 An Overview

Since the 20th century, the effect of government debt has become an important economic issue for policymakers and economists. Before the 20th century, the accumulation of government debt was slow and occurred mainly in relation to wars. The first governments that incurred debt in its modern form of meaning were Genoa and Venice, whose city governments borrowed from newly developed banks. In the early 19th century, the government of the United States of America built up a substantial amount of debt while investing to improve public works. For similar reasons, the French government borrowed money after 1878 (Checherita-Westphal and Rother, 2012). Since then, fiscal deficit policy, while controversial, has been used by developed and developing countries' governments to pursue potential economic growth (especially in developing countries) and to stabilize economies facing recessions, economic shocks and crises. Since the 1980s, government debt[1] has been increasing (Figure 1.1). The rising trend of government debt in advanced economies started with the collapse of the Bretton Woods system in 1970, and increased further due to oil price shocks in the 1970s and, more recently, as a result of the 2007-2008 financial crisis. In low-income countries, the trend took a sharp rise in the 1980s. In this decade, the debts of third world countries amounted to such a large number that many economists considered it to be the biggest problem facing the world (Geiger, 1990). In addition, emerging economies also experienced higher debt levels on average during the last thirty years compared with previous decades (refer to Figure 1.1). It can be concluded from Figure 1.1 that emerging countries maintained lower debt levels compared to low-income countries for most of the period between 1930 and 2010.

[1] Obtaining data on government debt for long time series is challenging (Abbas et. al, 2010) and requires using multiple sources. Government debt can refer to gross central or general government of a country. That definition varies based on the data collection units. This research employs the recent government debt database constructed by Abbas et al. (2010), which defines government debt as the gross general government debt. However, for the periods that information on general government debt is not available, they used central government debt data as an alternative, while mentioning that the distinction between general and central government debt was difficult to ascertain for earlier periods. General government debt includes debt securities, loans, currency and deposits, insurance, pensions and standardised guarantee schemes; and other accounts payable (IMF, World Economic Outlook (WEO)). Central government debt has a narrower definition and includes currency and money deposits, securities other than shares, and loans. It is the gross amount of government liabilities reduced by the amount of equity and financial derivatives held by the government (World Bank 2015 definition). Government debt consists of domestic and foreign liabilities. Because debt is a stock rather than a flow, it is measured as of a given date, usually the last day of the fiscal year.

Figure 1.2 better presents this perception that low debt is associated with higher growth and high debt is associated with lower growth. The debt level of slow-growing

countries is higher than that of advanced and emerging countries for most of the lengthy period between 1880 and 2010, coming in mostly above 50% of GDP; fast-growing counties, by contrast, had the lowest debt level, keeping the debt ratio below 50% of GDP since 1920.

Figure 1.1 : Debt (%GDP) for three country groups, 1880-2010

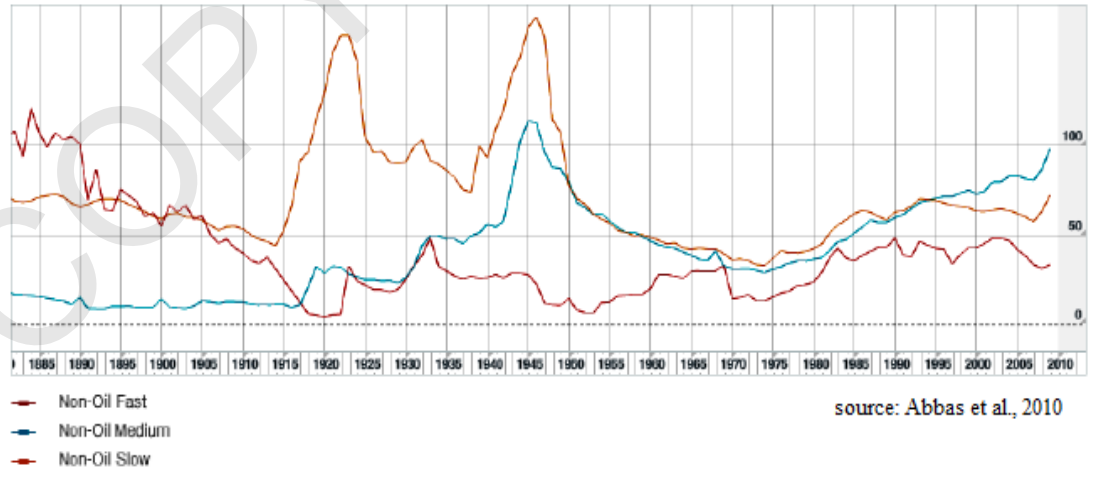

Figure 1.2 : Debt (%GDP) trend for three groups of fast, medium and slow growing countries

The global public debt clock published on The Economist website[2] provides a comparison between countries' public debts in each year since 2005. Figure 1.3 shows countries' government indebtedness in 2015. Some advanced economies, such as Australia, the UK, the US, Canada, France and Germany, are coloured dark red to indicate large debts. The same is true of some developing countries, including Brazil, China, India, Mexico and Turkey. Since 2007, world total debt has increased by $57 trillion, or by 17% of GDP[3], and in 2016 reached an alarmingly high level of $200 trillion, or three times the size of the global GDP of $70 trillion[4]. For the same period, world government debt has grown by $25 trillion to $58 trillion, which exceeds 100% of GDP in ten countries including Japan, Singapore, and a number of European countries.

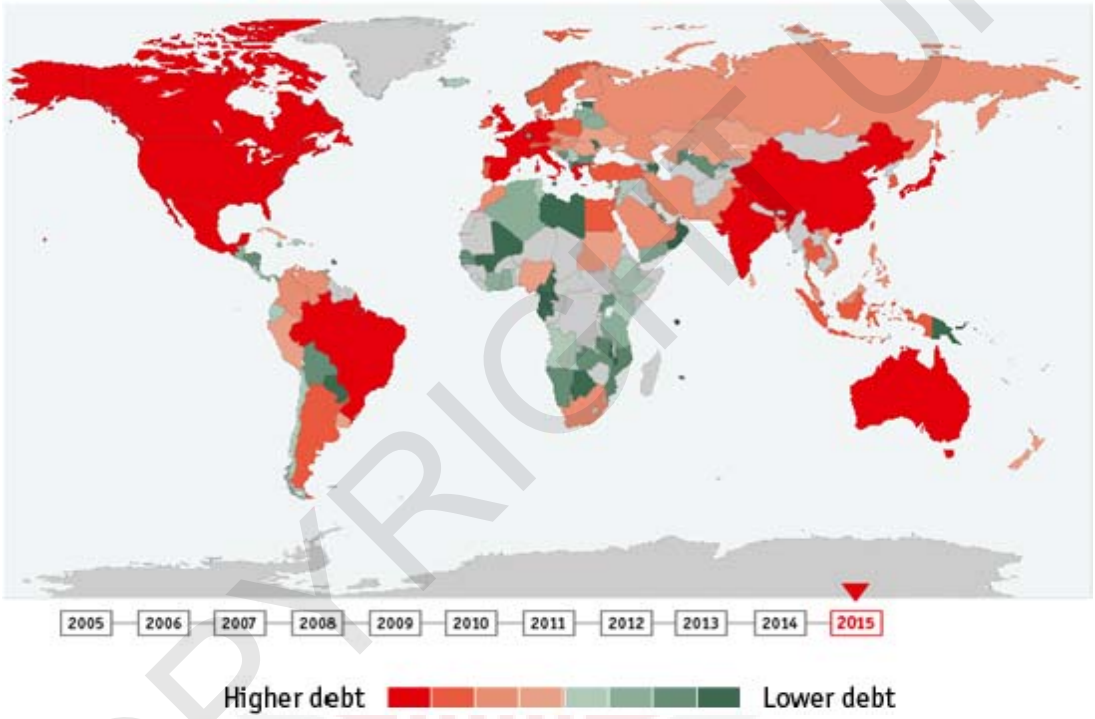

Figure 1.3 : Global government indebtedness in 2015
(Source : http://www.economist.com/content/global_debt_clock**)**

In the large and fast growing economies of ASEAN, namely Indonesia, Malaysia and Thailand, the color is shown as the second highest shade of red, while the Philippines is shown as the third highest shade of red. In 2005, two years before the global financial crisis, the total combined amount of public debt for ASEAN-4 countries was

[2] http://www.economist.com
[3] ttp://www.independent.co.uk/voices/why-we-should-all-be-worried-about-the-global-economy-a7007296.html
[4] http://www.thaivisa.com/forum/topic/830545-debt-ridden-thailand-being-sucked-into-whirlpool-of-deflation/

almost $331 billion. That figure climbed to $1 trillion in 2016, which shows a 200% increase[5].

The rise in government debt has intensified the debate among notable economists about the macroeconomic effects of government debt. The main questions were: What would be the effect of rising government debt on economic growth? What are the plausible channels through which debt affects growth? Is deficit financed fiscal expansion effective in stabilizing economic fluctuations? These questions have been among the most important issues of macroeconomic debate to date, and economic theoretical literature has provided various responses.

In terms of government debt-output growth effect, the dominant neoclassical analysis anticipates negative effects on the economy through several crowding-out mechanisms, such as countries with higher government debt tending to have slower growth and ending up with less wealth and welfare (e.g. Modigliani, 1961). The figures shown in Figure 1.1 and 1.2 are in line with the neoclassical theory that higher debt is associated with lower growth. Despite this dominant negative view of debt among economists and the public, there is a case to be made for government borrowing, especially in developing countries. Developing countries often face challenges when it comes to investing for development purposes, initially due to limited financial resources. Governments need to initiate investment in infrastructure, education and health to foster private sector activity. Failure to do so will result in economies remaining far behind their economic development potentials. Theories suggest that in these cases, in which even the externality of government investment could be higher than advanced economies, using debt leverage could yield higher future income. An empowered private sector might generate higher income which could, in part, in total or even more than, offset the gross debt burden (Modigliani, 1961; Futagami et al., 1993; Greiner and Semmler, 2000; and Aizenman et al., 2007).

Two of the major channels identified in theoretical and empirical studies into how government debt affects economic growth are the private capital accumulation (or investment) channel, and the total factor productivity channel. Several neoclassical theories tried to prove a negative effect of debt on growth by showing that government debt crowds out private investment. Increase in government debt can impede private investment directly or through appreciation of interest rates, thus resulting in lower capital stock, lower marginal labour productivity, and lower amount of goods and services produced, resulting in less economic growth in the longer term (Modigliani, 1961; Diamond, 1965). However, the reverse effect is also possible, when debt can crowd-in private investment. When government debt is accumulated by spending on development and productive expenditure that can be complementary to private investment, the latter scenario might occur (Aschauer, 2000, and Barro, 1991).

[5] Source of data presented and used for the calculation is from http://www.economist.com/content/global_debt_clock website.

Many governments use debt-financed fiscal expansion, or the so-called "countercyclical fiscal policy" as advocated by Keynes, to manage and to smooth economic fluctuations. When a government is running a budget deficit (if not monetized), its debt increases. However, the effect of such fiscal expansion depends on whether the economy works on Keynesian or Neoclassical principles, and whether consumers are Ricardian or non-Ricardian. If consumers are Ricardian, debt-financed fiscal expansion has no effect on increasing demand and consumption rather it reduce consumption because reduction in government saving would be compensated by consumers saving more in anticipation of future higher taxes. The increase in government debt-financed fiscal expansions to counter the recent economic downturn implies support from policy makers for the positive short-run and perhaps long-run effects of running more debts. In contrast, weak economic performance comes despite unprecedented efforts by governments and central banks to promote growth. For example, the US government's stimulus package of $814 billion, introduced in an attempt to stabilize the economy after the 2007-2008 crisis, has not produced the desired outcomes (Tang et al., 2013). Moreover, in Europe, support for a reduction in government stimulus packages is increasing. Fiscal consolidations are now considered essential for future economic growth (Alesina and Ardagna, 2010).

On one hand, the unclear effect of debt from theoretical perspective calls for empirical studies. Blinder (1989) states that the effect of fiscal policy on government debt is an empirical matter. On the other hand, the lack of related empirical studies makes this study timely. In empirical literature on fiscal policy, most studies concentrate on investigating the macroeconomic effect of government spending and taxes, most of which concern the US and developed economies. Among those empirical studies that address the effects of debt, many focus on external debt. Therefore, fewer studies are addressing the issue of government debt, and the majority of them address the effect of government debt in the US or advanced economies. However, the role of government and the effect of fiscal policy due to economic structures, among other things, may differ between developed and developing economies (Bose et al., 2007). The few existing studies into the relationship between government debt and economic growth are concerned with panel studies, yet the result is far from conclusive even in a sample of developing countries. For instance, Schclarek (2004) found a negative linear relationship, while Reinhart and Rogof (2010a, 2010b), Ceccheti et al. (2011) and Baum, et al. (2013) found the adverse effect appears only in cases of high debt above 90%, 85% and 95% of GDP in a different panel of sample countries. Surprisingly, Cordella et al. (2005) found a negative relationship only for a medium debt level. More contrasting results were obtained by studies that employed panel vector autoregression (VAR) models. Some of them found that debt does not affect growth (e.g. Lof and Manila, 2014; Paniza and Presbitero, 2014; Jayarama and Lau, 2009), while others found a positive effect of government debt on growth (e.g. Swamy, 2015).

The emerging economies of ASEAN have been the focus of development studies and policy makers. The questions of interest for the current thesis are: Does government debt contribute to the economic growth of the largest ASEAN economies, or is it a hindrance? How does government debt affect other macro determinants of growth,

such as private investment, human capital and total factor productivity? How does private consumption respond to an increase in government debt? These questions are of continual importance to policy makers in the fields of macroeconomics and public policy. The issue in the case of the largest ASEAN economies is that there is much conflicting evidence, which has not yet been directly addressed in an empirical study. It is worth mentioning that fiscal policy in ASEAN countries is well-known to be growth enhancing while generally evaluated as sustainable (Bohn, 1998). Nonetheless, among the few related examples of empirical evidence of debt in these countries, various outcomes have been obtained. Some studies indicate a crowding-out effect of government debt. Woo and Kumar (2010) and Schclarek (2004) found an adverse effect of debt on growth for a panel sample of emerging and developing countries including ASEAN-4 countries. Bende-Nabende and Slater (2003) also found an adverse effect of external debt on private investment for ASEAN-4 countries between 1971 and 1999. Some positive effects of government debt on total factor productivity were found for Malaysia by Asmaddy and Mohammad (2015). Finally, Tang et al. (2013) found that debt-financed expansionary fiscal policies aimed at reversing economic slowdown in ASEAN-4 countries had shown an insignificant result. Given these factors, this study aims to examine the effect of government debt on four ASEAN-4 countries individually over the recent period of 1985-2014. The results of this analysis will shed more light on fiscal policy management in selected countries, and will be useful for policy makers in these countries as well as governments of other developing countries. Discussion of government debt could involve some very complex analysis that goes beyond the scope of the present research,[6] such as defining government debt, alternative measurements for government debt and debt sustainability. The current research focuses on dominant measurements used in related literature to trace the major aggregate macroeconomic effects of government debt policies in selected ASEAN countries. The structure of this chapter is as follows: Section 1.2 presents the conceptual framework. Section 1.3 elaborates on the scope of the research. Section 1.4 illustrates the economic background of ASEAN-4 countries. Section 1.5 displays the problem statement and section 1.6 the research objectives, followed by the contribution of the thesis in section 1.7. This chapter ends with section 1.8, which presents the organization of the chapters in this thesis.

1.2 Conceptual Framework

Figure 1.4 below shows the conceptual framework of this research, which links government debt to economic growth through its major transmission channels. According to mainstream economics, government debt has an adverse effect on output growth (Mankiw, 1999). An increase in government borrowing can directly or indirectly crowd-out private investment. Higher debt can put upward pressure on interest rates, and crowd-out private investment (Diamond, 1965; Woodford, 1996). In Modigliani's analysis (1961), government debt results in a lower stock of capital in the future, leading to lower (labour) productivity which causes lower production of goods and services. In contrast, some positive outcomes are anticipated, such as debt

[6]- Auerback, 2009.

financed government investment crowding-in private investment, leading to higher output growth in the private sector.

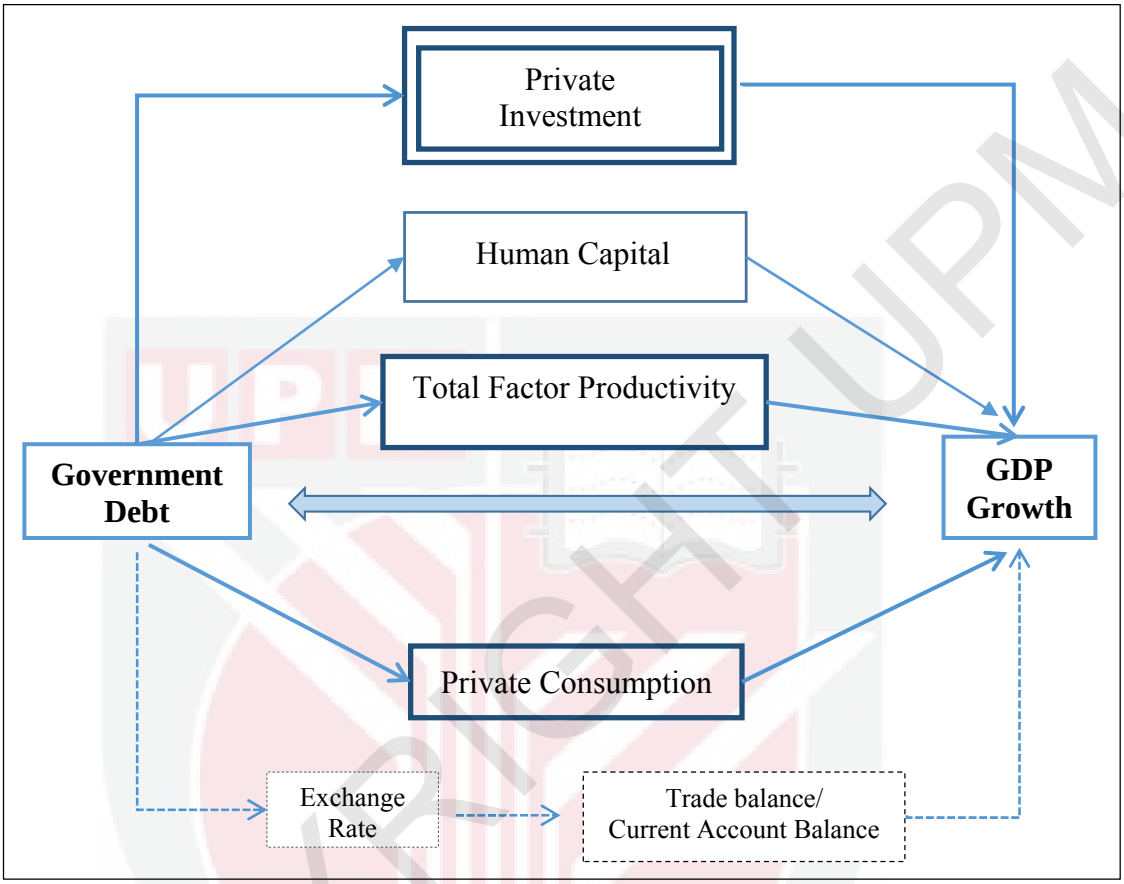

Figure 1.4 : Conceptual framework, how government debt is related to output growth

In turn, higher output leads to higher consumption in the long term. According to Keynesian theory, consumption is likely to increase in the short term as well if the fiscal multiplier of government spending is high enough to increase demand and private consumption. The next channel links government debt to GDP growth through human capital and also total factor productivity (including labour productivity). The seminal papers by Barro (1991) and Aschauer (2000) explain that government development expenditures that are usually financed by government debt in developing countries, such as education, health and infrustructure, have a positive impact on growth. Besides the plausible crowding-in effect on private investment, development expenditures increase human capital stock by leading to higher levels of education, skills and health, thus increasing labour productivity. Therefore, there is an increase in output growth through higher human capital as well as higher total factor productivity. This is particularly true in developing countries in which the externalities of development expenditures are higher. By contrast, high debt imposes a heavy burden on a government's budget, meaning that debt service obligations prevent

governments from undertaking development expenditure (Pattilo et al., 2004). Government debt can impact growth in a similar way, provided that it is used for development purposes. Such theories propose that debt could have a positive impact on growth, either partly- or even over-offsetting the negative debt burden (Modigliani, 1961; Greiner, 2000; Aizenman et al., 2007).

The thick two-way arrow shows a bidirectional relationship between debt and GDP growth. Debt to growth correlation implies the notion that a direct relationship could be sought. All other possible channels that are not explicitly depicted in Figure 1.4 can be captured through this direct channel. Some of these channels include higher uncertainty (Codogno, Favero, & Missale, 2003; Cochrane, 2011), higher bank risk following the financial liberalization era (De Vita, 2018) and higher taxation (Baharumshah et al., 2017). The reverse effect, namely, from GDP growth to government debt, is plausible because low growth can actually lead to more government borrowing (e.g. Checherita-Westphal and Rother, 2012). Moreover, low growth rates hamper debt-payment capacity in terms of principal and interest. Therefore, the debt burden lasts longer with devastating effects.

During economic recession or periods of lasting unemployment, governments may target an increase in household consumption to stimulate economic activity and thus raise growth. In this case, as advised by Keynesian theory, countercyclical fiscal policy is effective to raise output; thus, economic fluctuations are stabilised. Government intervention in terms of expansionary fiscal policy requires borrowing from domestic or foreign savings, leading to an increase in government debt. Keynesians hold the view that this fiscal imbalance is transitory. In addition, due to an excess in private saving, pressure will not be imposed on interest rates and private investment will not be crowded-out. Nevertheless, it will increase consumer demand, output and further investment through the government spending multiplier effect. Finally, in theory government borrowing can affect the economy through trade deficit and current account deficit. This effect, primarily discussed by Mundell-Fleming (1963), is known as twin deficit. Twin deficit means budget deficit causing trade deficit. The Mundell-Fleming model argues that under a flexible exchange rate regime, budget deficit policy is ineffective because it leaks out through lower export and higher import causing trade deficit. This relationship is not the focus of the present thesis. However, it was studied in relation to ASEAN-4 countries during the period of 1980-2006 by Baharumshah and Lau (2009) who found that twin deficit existed in Indonesia, the Philippines and Thailand.

1.3 Scope of the Research

This research analyses four original ASEAN countries (Indonesia, Malaysia, the Philippines and Thailand) in order to investigate the effects of government debt on their aggregate macroeconomy. Due to the focus on developing (middle income per capita) and emerging economies with intermediate average debt levels, Singapore is excluded from the sample. To highlight the importance of these economic regions, two facts can be mentioned. Firstly, ASEAN's combined GDP amounted to 2.424

trillion dollars in 2014, which would have made it the seventh largest economy in the world. Secondly, the combined population of 600 million people is more than the European Union or North America. ASEAN-4 produce nearly 80% of the total GDP of ASEAN economies, and their combined population constituted 72.5% of the total population of ASEAN countries in 2014. The above statistics highlight the importance of ASEAN-4 economies.

The ASEAN-4 countries have particular common characteristics that draw researchers to study them collectively. In respect of this research, the ASEAN-4's governments are known to be conservative regarding fiscal policy and government borrowing. They have committed to a self-imposed debt ceiling of between 50 to 60% of GDP[7], and to borrowing only to finance development expenditure. They have similarities in terms of level of economic development and economic structure. Governments of ASEAN-4 have to continually make fiscal policy decisions that require government borrowing, such as financing development expenditures or implementing stimulus packages. Historically, government debt level in these countries was maintained at the so-called intermediate level. Economists expect that debt has a similar effect in similar economies. Debt effect also depends on government debt regimes. These factors determined the rationale for selecting these four emerging economies for this study. Moving forward, if these countries wish to realise their potentials it is important that their governments gain more insight into the policies that affect their economic growth and growth factors such as capital accumulation, the increasingly important total factor productivity (TFP) and private consumption. When evaluating different aspects of fiscal policy, government debt is an important matter for every government. For those countries that are committed to achieving high economic status, it is even more critical; fiscal policy can either contribute to or hinder economic performance, particularly over a long period. Eberhardt and Presbitero (2013) concluded that debt-growth nexus is fairly heterogeneous among countries, which means it would be different in each country. One important reason for this is the specific economic fundamentals of each country. Therefore, this study aims to focus on single country evidence.

1.4 Background of the Study

This section is dedicated to a brief review of the economic background of the ASEAN-4 in areas related to this research.

[7] - In Indonesia, general government debt should not exceed 60 % of GDP. This rule, and other fiscal rules, is set out in the State Finance Law and Government Regulation 23/2003. In Malaysia, the Government Funding Act 1983 restrain federal government domestic debt at 55 percent of GDP, which is complemented by other fiscal rules, such as an external debt limit of RM 35 billion (Bova et. al, 2015). In Thailand, government debt should not exceed 50% of GDP (Bank of Thailand, annual economic report, 2004). Finally, although the Philippines's government has not set a debt ceiling for its debt, the average government debt in the 1985-2014 period is 46% of GDP (author).

1.4.1 Defining Government Debt and Related Concepts

The definition of government debt used in this thesis follows that of the World Bank (2015-2018): it relates to the entire stock of direct government fixed-term contractual liabilities to others outstanding at a particular date, both domestic and external, such as currency and money deposits, securities other than shares, and loans. It is the gross amount of government liabilities reduced by the amount of equity and financial derivatives held by the government (World Bank, 2015-18). The same source defines total external debt as "debt owed to non-residents repayable in currency, goods, or services. Total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt"[8]. The World Bank definition and data has been employed by the majority of related empirical studies. Government debt stock also reflects the current and future debt burden for a given country. It is used in the form of percentage of GDP.

To have an idea of the size of government debt in relation to external debt in ASEAN-4 countries, Table 1.1 presents the ratio of government debt to total external debt. It can be seen that government debt is sizeable in relation to total external debt in all countries; moreover, it shows an increasing trend since 1990. Table 1.1 also shows that, except in the Philippines, the proportion of external financing of governments is declining over time. In the early stages of economic development, there is usually more reliance on external savings due to limited domestic financial resources. In contrast, some advanced economies sell most of their bonds to their citizens. Italy and Japan, for example, sell large portions of their bonds to domestic investors (Nelson, 2013). ASEAN-4 countries embarked on a process of debt restructuring with a view to a greater reliance on domestic sources (Roy et al., 2012). One accelerating factor was the risk associated with external debt. When the debt is in foreign currency, a drop in the value of local currency or exchange rate depreciation drives up the burden of foreign liabilities, as each unit of foreign currency becomes far more expensive. At the same time, there was an increasing development of domestic bond markets. More advanced financial and domestic bond markets enabled the governments of Malaysia and Thailand to finance more than 90% of government debt from domestic resources. This study focuses on the effects of government debt, rather than external debt - which also encompasses private debt - or any private debt, meaning the area of this research comes under the category of fiscal policy. Theories of external debt (e.g. Krugman, 1988) are relevant to studies of government debt, as in many countries external debt constitutes a large part of government debt, but focusing on government debt involves other aspects (refer to section 2.1.1). Studying government debt is important because of the role of government fiscal policy, which is to support the private sector and enhance the welfare of the nation.

[8] Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt.

Table 1.1 : Comparing the size of government debt with other kind of debt for ASEAN-4 countries

Years	1970	1980	1985	1990	2000	2010	2014
Indonesia							
Government Debt/Total External Debt	-	76.65	72.84	70.86	109.38	110.44	85.4
Government External Debt/Total External Debt	79.11	71.73	72	68.66	48.48	52.14	44.03
Government External Debt/Total Government Debt	93.58	100	96.84	44.32	47.21	48.18	
Malaysia							
Government Debt/Total External Debt	331.16	168.56	136.1	222.13	78.95	97.53	77.75
Government External Debt/Total External Debt	77.71	60.62	71.57	75.62	45.59	45.55	33
Government External Debt/Total Government Debt	23.46	35.46	52.58	34.04	57.74	46.7	42.44
Philippines							
Government Debt/Total External Debt	48.47	46.29	61.24	91.57	81.46	142.73	231.17
Government External Debt/Total External Debt	28.45	36.53	51.47	78.61	57.72	73.59	63.8
Government External Debt/Total Government Debt	58.71	78.91	84.04	85.84	70.85	51.56	27.61
Thailand							
Government Debt/Total External Debt	142.11	114.04	104.46	83.1	72.29	125.58	131.15
Government External Debt/Total External Debt	32.38	47.52	56.06	44.35	36.9	19.41	25.12
Government External Debt/Total Government Debt	22.79	41.67	51.21	53.36	50.7	15.85	14.15

(Source : The data is obtained from World Bank 2015 and IMF 2010 "New Debt Database". The ratios are calculated by the author)

Before proceeding to look at the background to government debt in section 1.4.2, some concepts of fiscal rules are described for reference purposes (although it is not the direct objective of this research to evaluate them). A fiscal rule means a statutory or constitutional restriction on fiscal policy that sets a specific limit on fiscal indicators like the budgetary balance, debt, spending or taxation (Budina, et al., 2012). Debt rules, or the so-called debt ceiling, set an explicit limit for public debt in terms of percentage of GDP. This type of rule is the most effective in terms of ensuring convergence to a debt target. There is no simple rule in determining whether, in practice, a government's debt is sustainable or not (Ma and Domingo, 2005). The optimum level of debt varies from country to country depending on several variables such as revenue effort; effective tax rates; structure and the effect of government expenditures; the debt structure; growth of the economy; and degree of uncertainty. To satisfy the debt ceiling rule, there should be constraints on budget balance. This is called the budget balance rule. It is usually the variable primarily influencing debt

ratio and is largely under the control of policymakers. ASEAN-4's governments have a good record of following such fiscal rules.

1.4.2 Government Debt Trend in ASEAN-4

The recent trend of government debt in ASEAN-4 since 2007 shows an increase, except in Indonesia (Table 1.2). Moreover, budget deficit has been persistent for all the sample countries since 1997-1998. The level of government debt in 1970 and 2014 can be compared in Table 1.2. Both are normal, crisis-free years. Government debt for Indonesia, Malaysia, the Philippines and Thailand has increased by 5%, 24.3%, 31.1% and 33.9 % (of GDP), respectively, over the course of 45 years.

Table 1.2 : Historical figures of government debt (%GDP), 1970-2015, ASEAN-4

Government Debt (as percent of GDP)				
Year	Indonesia	Malaysia	Philippines	Thailand
1970	20.6	38.9	15.9	20.1
1985	30.6	86.8	53.1	49.3
Average 1970-2014	42.13	53.70	46.13	33.85
Average.1970-79	NA*	42.13	17.14	22.33
Average.1980-89	34.40	79.22	51.60	40.30
Average.1990-99	45.84	50.19	60.21	21.33
Average.2000-09	53.46	43.00	55.86	46.27
2008	29.2	41.2	44.2	37.5
2009	32.8	52.8	44.3	44.3
2010	29	53.5	43.5	41.9
2011	28	54.3	42	42.6
2012	27	55.5	41.9	43.4
2013	26	53.3	51.5	45.85
2014	25	54	49.2	47.16
2015 $_{\text{Economist}}$	25.6	63.2	47	54
$\Delta D_{(2014, 1970)}$ **	5	24.3	31.1	33.9

* Data is not available

** $\Delta D_{(2014, 1970)}$ indicates the difference of debt level in 2014, from the level in 1970.

(Data source : IMF Abbas et al. 2014 and World Bank 2015)

Debt spikes in the mid-1980s and late-1990s led to concerns about the negative consequences of running large deficits. Authorities began to turn their attention to debt reduction; generally, some success has been achieved in this regard. As the table above shows, debt level has become lower than the peak levels in the 1980s. However, compared to debt level in 1970, current government debt is higher and seems to be increasing, except in Indonesia. Debt in all countries has remained at an intermediate level throughout the period of 1985-2014. This is shown in Figure 1.5, where debt lower than 30% of GDP is considered low level, and debt above 90% is considered high level.

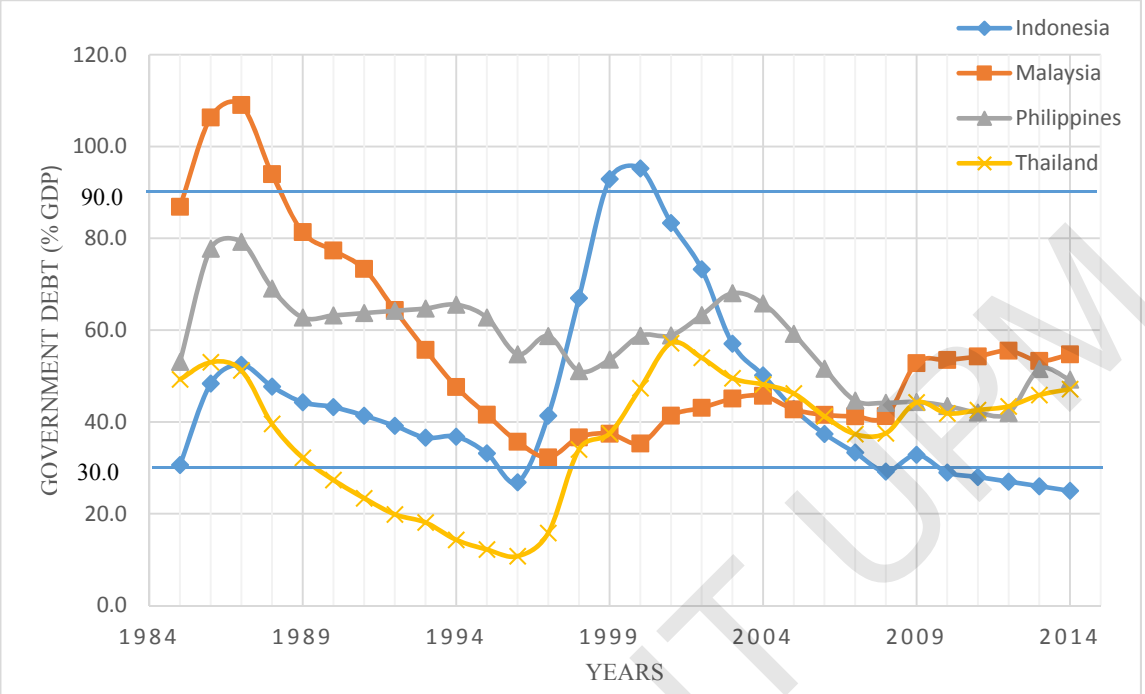

Figure 1.5 : Historical government debt trend

1.4.3 Debt-Growth Nexus in ASEAN-4

According to mainstream economics, high government debt lowers output growth (Elmendorf and Mankiw, 1999) mainly through lower private capital stock (Modigliani, 1963). This theoretical view that private investment indexed by private capital formation is an important channel through which debt affects growth has been supported by Woo and Kumar (2010), Schclarek (2004) and Pattillo et al. (2004). Figure 1.6 and 1.7 present the scatter plot of output growth against government debt stock and total/private/government capital formation or investment against government debt stock, respectively, including a linear regression line fitted in each sample country plot. The slope of the regression line in Figure 1.6 is negative for all the sample countries, although by different degrees. The negative slope means that increasing government debt stock by one unit is associated with a reduction in growth of output in ASEAN-4 countries.

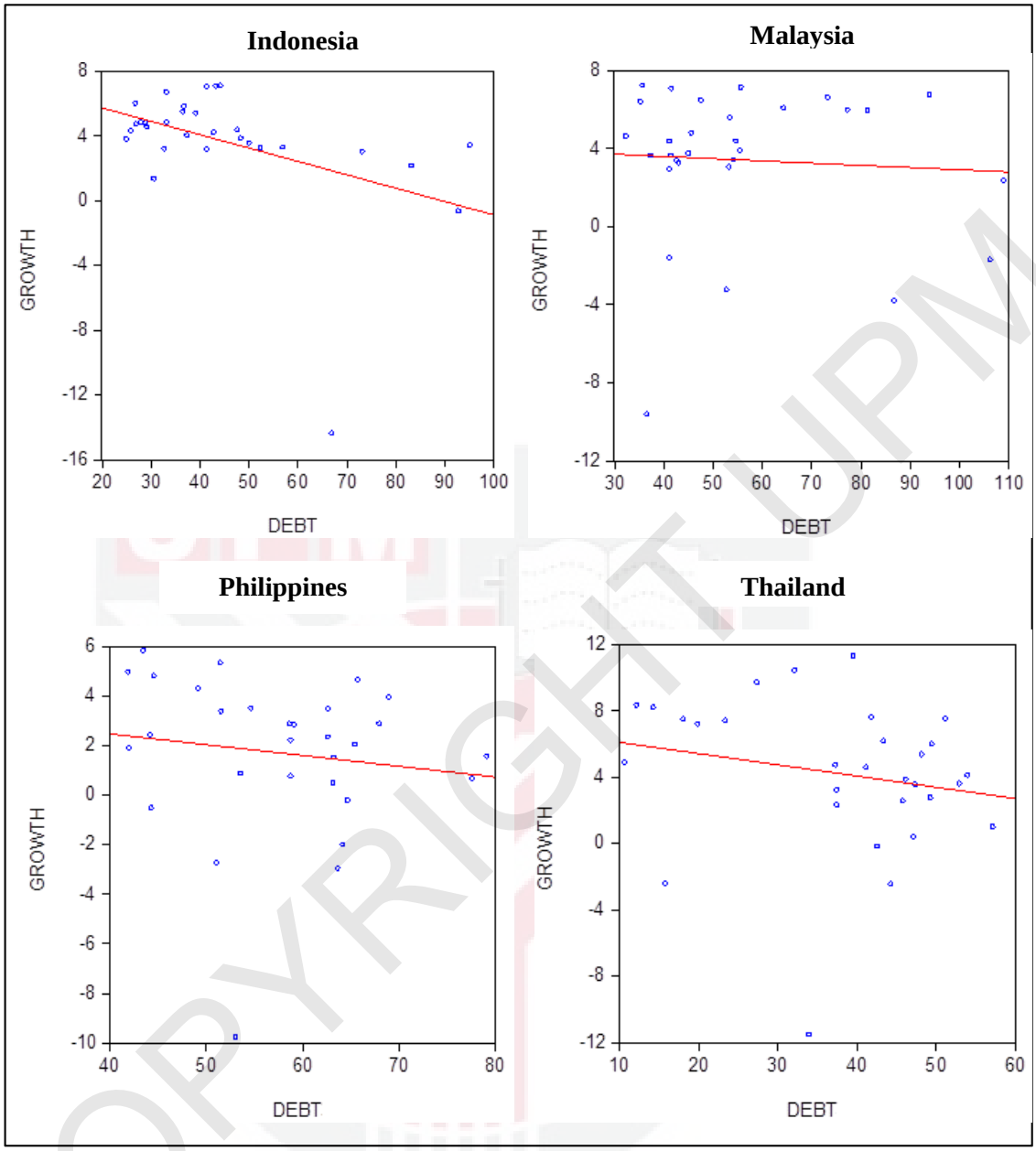

Figure 1.6 : Government debt-GDP Growth scatter plots including linear regression line; 1985-2014, ASEAN-4 countries

Figure 1.7 shows the investment-debt scatter plots for ASEAN-4 countries. Total investment is indexed by gross total fixed capital formation as a percentage to GDP (TFCF) which includes government and private domestic investment and foreign investment. Private investment is indexed by private domestic fixed capital formation (PDFCF) and government investment by government fixed capital formation (GFCF). In this figure, the slopes of the fitted lines in the scatter plots of total and private investment for all countries are negative. The negative coefficient is larger in Indonesia and Thailand, whereas in Malaysia and the Philippines the negative slope is quite small. The negative coefficients reflect that increasing debt stock by one unit is associated with a reduction in the private and total capital formation. Although the

focus of this thesis is on the relationship between debt and private investment, for further information Figure 1.7 also shows government investment. In Indonesia and Malaysia, government investment has a positive correlation with government debt, indicating that debt finances were channelled to increase physical government investment. In the Philippines, increase in debt is negatively correlated with government investment, indicating that debt burden actually restricts the availability of resources to be allocated to fixed investment, and/or it has been spent on other components of fiscal expenditure. Lastly, in Thailand the correlation between debt and government investment is nearly non-existent as the slope of the line is almost zero.

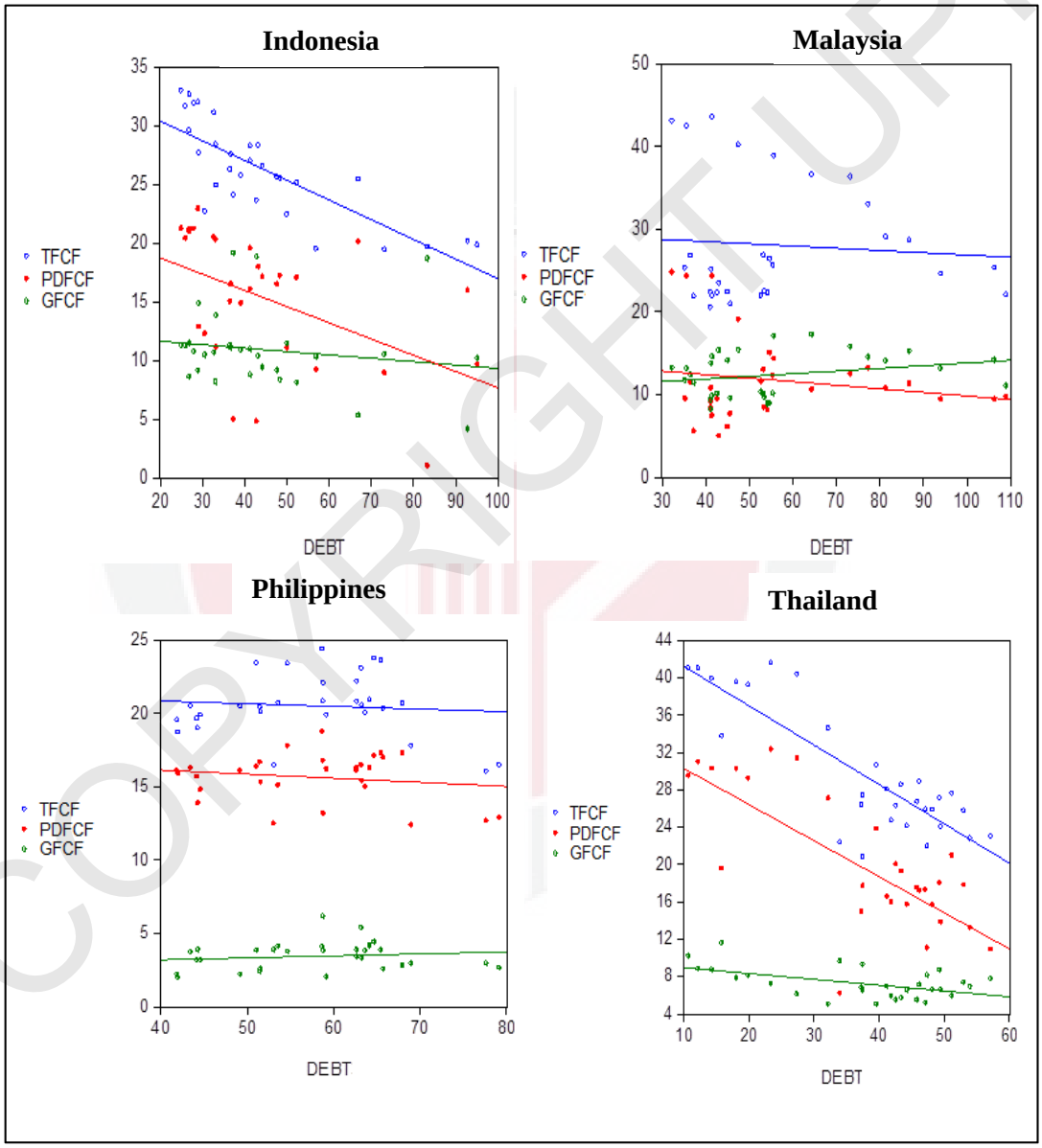

Figure 1.7 : Government debt- Total (TFCF)/Private (PDFCF)/Government (GFCF) fixed capital formation, 1985-2014, ASEAN-4 countries

Governments of ASEAN-4 have been concerned about promoting economic growth and private investment. Although ASEAN-4 (except the Philippines) have experienced great capital formation during the last four decades, they still need to increase the rate of private investment in order to achieve their potential growth and economic targets. Nonetheless, in the years following AFC investment, the rate remained low until recent years. The objective of policy makers is to use fiscal policy tools, in this case government debt, to achieve their economic growth and private investment targets. Therefore, it is necessary to evaluate the effect of government debt on these variables, especially when there is concern about negative consequences on economic growth and private investment as signalled in Figure 1.6 and Figure 1.7. However, final conclusions should be drawn based on more rigorous econometrics techniques.

1.4.4 Debt-Household Consumption Nexus in ASEAN-4

In the short term, the relationship between debt and consumption could be negative, positive or null. If the Keynesian accelerator effect of expansionary fiscal policy dominates, it is positive; however, the negative impact could rise if the increased debt level is interpreted as a higher general economic risk or creates concern about higher future tax rises. In a Ricardian framework, an increase in disposable income due to debt-financed expansionary fiscal policy will lead to an equal rise in household savings rather than an increase in demand, in anticipation of future tax rises. Therefore, consumption reduces. Using the line of reasoning favoured by neoclassical theorists of debt growth over the long term predicting negative effects, it can be inferred that debt and consumption also have a negative relationship. When debt results in lower capital stock, fewer goods and services will be produced; consequently, consumption and welfare will fall in the long run (Modigliani, 1963). The opposite effect will be at work if the government debt-financed expenditures result in an economic prosper. Figure 1.8 shows the scatter plots of consumption growth against debt level, including a linear fitted line, for ASEAN-4 countries during 1985-2014. The slope of the fitted line in Malaysia and the Philippines is slightly negative; in Indonesia it is close to zero and in Thailand positive. The negative slope in Malaysia and the Philippines raises concerns over the negative consequences of debt and fiscal policies, while in Thailand the Keynesian multiplier effect seems to be at work. Finally, a rise in debt seems to be ineffective on household consumption in Indonesia.

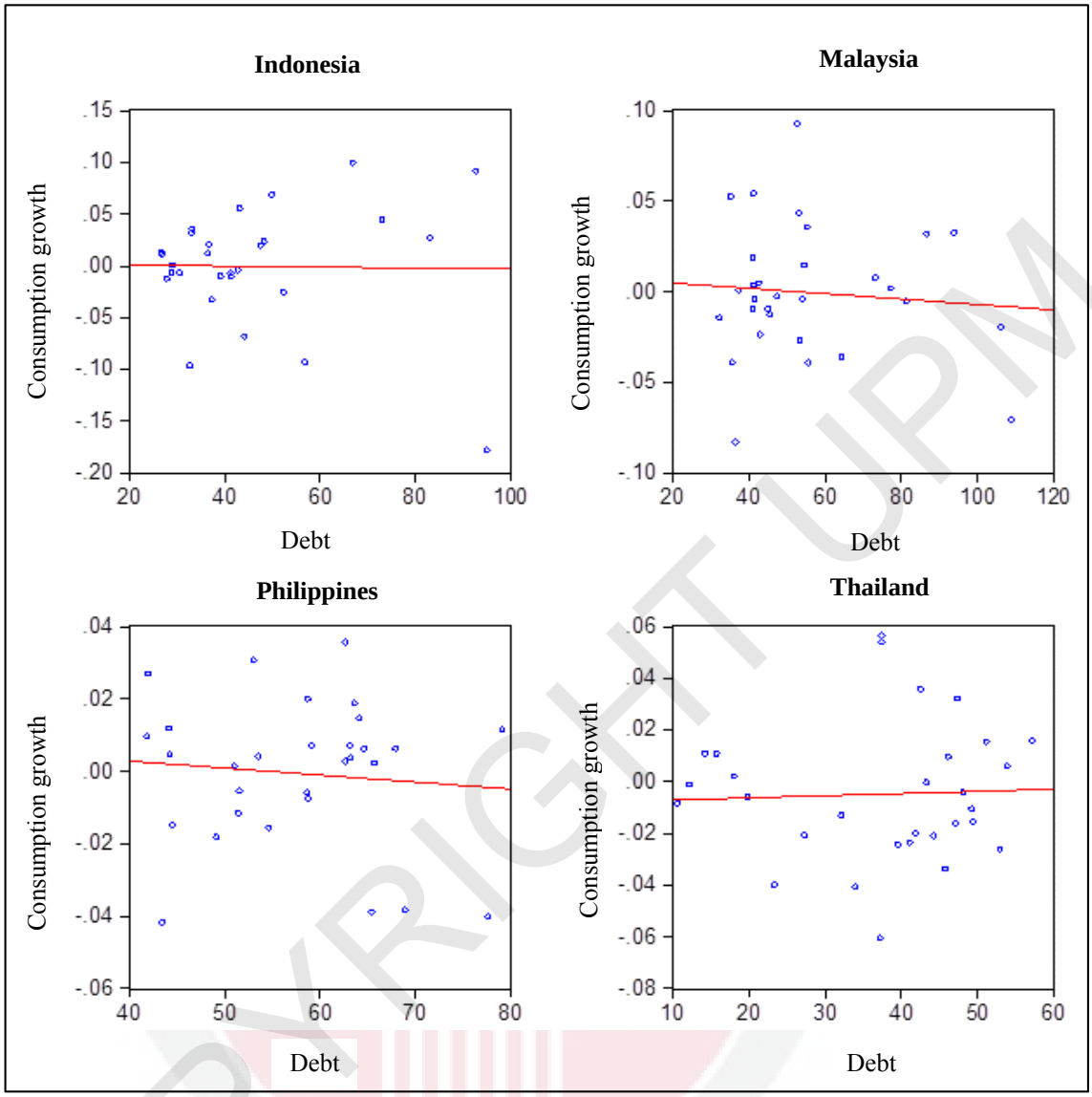

Figure 1.8 : Private consumption growth-government debt scatter plots including linear regression line, 1985-2014, ASEAN-4 countries

1.4.5 Debt-Total Factor Productivity Nexus in ASEAN-4

Studies such as Cunningham (1993) explain that debt burden can be included in the production function as it can reduce investment and growth through lower productivity of labour and capital. Cunningham argues that when a nation has a high debt burden, defined as future long term obligation of debt servicing and principal payment, the need to service it will influence how labour and capital will be used in the production process. For example, if the gains of the productivity increase go to foreign creditors, the result will be a decline in incentives to raise productivity. Moreover, the high debt burden and the uncertainty caused by it can affect quantity and quality of investment, both in the private and government sector, which in turn affects a nation's productivity in an adverse manner. Figure 1.9 below depicts the scatter plots of total factor

productivity growth versus government debt ratio to GDP for the ASEAN-4 countries using data for the period 1985 to 2014. The slope of the fitted line in this data sample indicates a clear negative relationship, except in Thailand where the correlation is rather weak. The results from the preliminary observation of data raise concerns regarding government debt negatively affecting the total factor productivity of ASEAN-4.

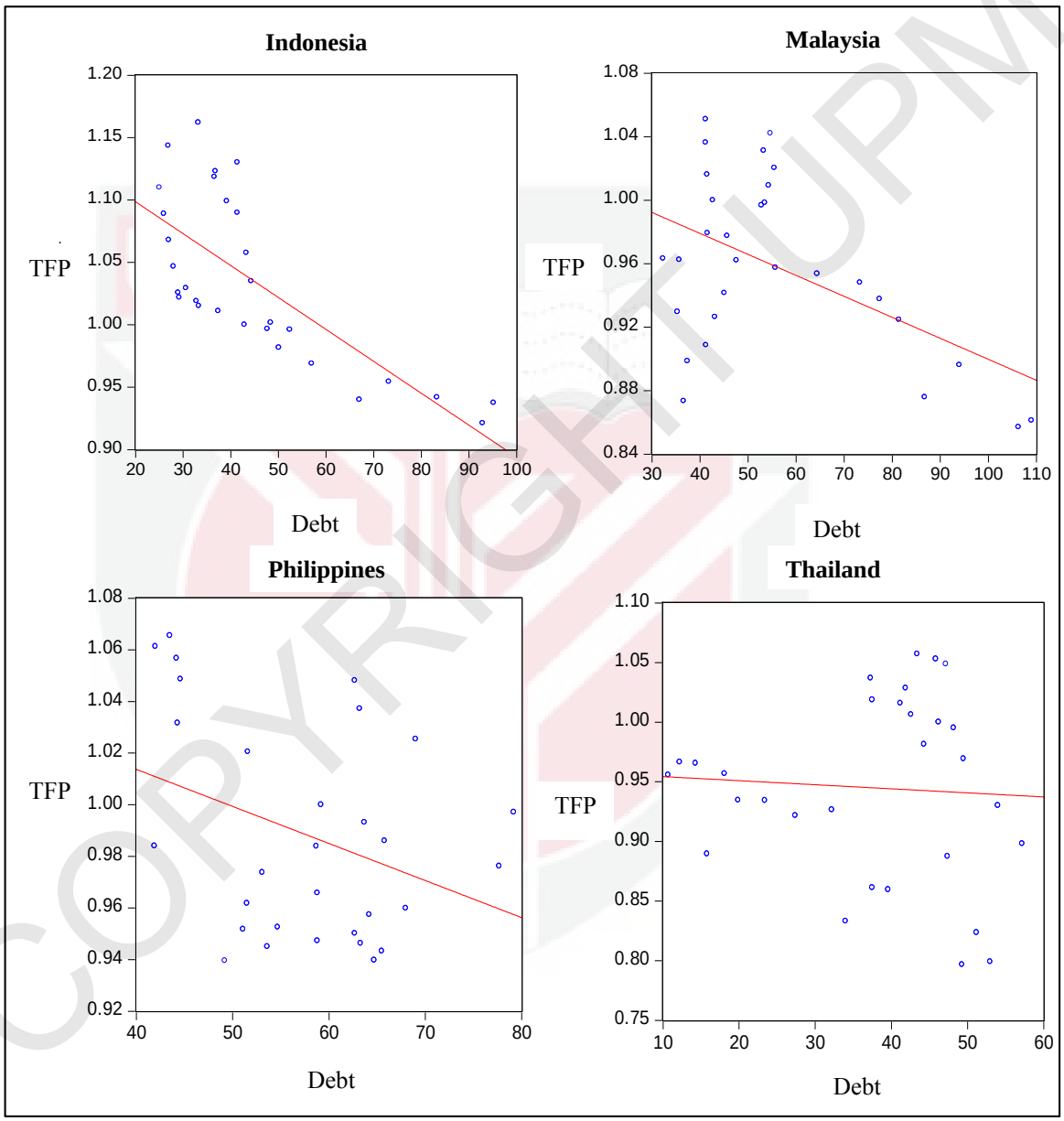

Figure 1.9 : Total factor productivity-government debt scatter plots including linear regression line, 1985-2014, ASEAN-4 countries

1.5 Problem Statement

The issue of government debt in ASEAN-4 countries is not new, dating back to the early 1980s when government debt rose to a record high level, especially in the Philippines and Malaysia. In the aftermath of AFC, debt rose dramatically, particularly in Indonesia and Thailand. Stimulus packages in the aftermath of AFC caused persistent budget deficits and increasing debt levels in these countries. Recently, in the aftermath of GFC in 2007-2008, along with the general increase in global debt levels, debt trends in Malaysia, the Philippines and Thailand showed a higher rising trend than before. The combined amount of government debt in ASEAN-4 countries shows a growth rate of 200% between 2005 and 2014.

One reason for government debt accumulation in developing countries (as is the case in ASEAN-4 countries) is the funding of government development expenditure. In these cases, an important fiscal issue is the use of debt leverage capacity by the government sector to initiate the most needed development investment projects, which have a high spill-over effect but could not be initiated by the private sector. If governments fail to make such investments, while not fully utilising their debt leverage capacity, economic development and economic transition to a higher steady state are considerably delayed. Therefore, the government sector has a crucial role to play. In theory, there are several mechanisms by which debt could negatively or positively affect economic growth. However, ascertaining the net effect is an empirical question. Moreover, whether such debt accumulation can be growth enhancing or inhibiting depends on the economic fundamentals and general economic management of each country. In ASEAN-4 it is puzzling to find a negative debt-GDP growth correlation (Figure 1.4) because in these countries government debt is channelled to development expenditures, and much focus is placed on productivity enhancement. Furthermore, such fiscal policy is implemented counter-cyclically together with complementary monetary policy to maintain low interest rates and to avoid crowding-out of the private sector. It is worth mentioning that in the long term these governments have committed to stabilising debt levels or to maintaining them below the debt-ceiling. Given that some economists consider negative effects only at high levels and that a number of empirical studies found negative debt effects only at excessive levels (e.g. more than 90% of GDP level), the negative correlation in these countries cannot be readily accepted.

From another perspective, debt can rise when governments run expansionary fiscal policy in the face of economic fluctuations and economic crises. Many governments, including ASEAN-4 countries, turn to countercyclical fiscal policy as advocated by Keynesians to stimulate and stabilize the economy. ASEAN-4 countries have experienced persistent budget deficit since 1997. This implies the use of debt-financed expansionary fiscal policy as suggested by Keynesians. Fiscal policy in ASEAN-4 countries is known to be growth-enhancing and contributes to economic development (Hill, 1994), and these conservative governments abide by fiscal rules such as budget deficit ceilings. This may generate positive expectations regarding debt-consumption and debt-growth relationships in ASEAN-4 countries. Nonetheless, the effectiveness of this policy is not confirmed. The preliminary correlation shown in economic

background analysis signals a negative relationship between debt-consumption and debt-GDP growth. Moreover, the recent study by Tang et al., (2013) showed that multiplier effect is insignificant; thus, fiscal policy is ineffective. TFP is a critical growth factor, especially for ASEAN-4 countries. Also, in economic theory and empirical findings, it is shown to be strongly influenced by fiscal policy and government debt. Detailed elaboration on the types of effect can be found in sections 2.1.1 and 2.3.1[9]. Given that most debt in ASEAN-4 countries is channelled to development expenditures, while debt stock is kept at an intermediate level on average, positive effect from debt to total factor productivity is expected. However, Figure 1.9 demonstrates some negative correlation.

This research is essential because ASEAN-4 countries still face long-term fiscal sustainability challenges that could put pressure on government budgets in regard to debt financing. These current and potential future challenges mainly include: subsidies; development expenditures; tax revenue and collection; social protection spending; contingent liabilities; and a potential end to interest rate repression. Reaching and maintaining high economic growth, increasing private investment rate (especially in Indonesia, Malaysia and the Philippines), moving towards productivity driven economies, and stimulating private consumption in time of recession are all strategies employed by the governments of these countries. Therefore, fiscal authorities need to gain further insight into the consequences of their financing policies on the most important macroeconomic policy targets such as private investment, human capital, private consumption, TFP and GDP growth. Given the above reasons, disputatious theories, lack of and unclear empirical evidence and the importance of the issue for policy makers in ASEAN-4 and other developing economies that follow ASEAN-4's growth model, it is timely that this research should empirically investigate the effect of government debt on economic growth, growth channels and private consumption. This paper aids in the assessment of the impact of government debt policy.

[9] Examples include: government debt is likely to influence the economy through, for example, future availability of natural resources, stock of man-made means of production, capital available for future generations, and technological knowledge (Modigliani, 1961). Another type of effect is that high debt service burden changes the allocation of resources in the government budget (Paniza and Presbitero, 2013).

1.6 Objectives

The general objective of this research is to investigate the relationship between government debt and real aggregate macroeconomic factors for the four largest - in terms of total GDP - ASEAN economies, Indonesia, Malaysia, the Philippines and Thailand (ASEAN-4), during the period of 1985-2014. More specifically, the objectives of this research are:

1. To examine the relationship between government debt and economic growth.
2. To analyze the effect of government debt on private consumption.
3. To investigate the relationship between government debt and total factor productivity growth.

1.7 Significance of the Study

This study is among the few attempts to investigate the effect of government debt on economic growth and its channels of transmission, especially in the case of individual countries. Therefore, it contributes to the scarce time-series empirical literature on government debt-growth nexus in the context of emerging economies with intermediate debt levels. To address the first objective, this study applies a new framework to uncover the effect of government debt on economic growth focusing on two growth factors, namely private investment and human capital in ASEAN-4 countries. The second objective examines the possible effect of government debt on private consumption. Finally, objective three contributes to the time-series fiscal policy empirical literature by estimating the effect of government debt on the total factor productivity of ASEAN-4 countries.

1.8 Organization of the Chapters

The rest of the thesis is organized as follows: Chapter two provides a review of theoretical and empirical literature according to the three objectives of this research. Chapter three elaborates on the theoretical framework; empirical model specification and estimation technique; and data that has been employed for each objective. Chapter four presents the estimation results and related discussions. Finally, chapter five summarizes this research and its results as well as providing some policy recommendations.

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