



جامعة الإسكندرية  
ALEXANDRIA  
UNIVERSITY  
كلية الدراسات الاقتصادية والعلوم السياسية  
Faculty of Economic Studies & Political Science  
معرفة واتسام

المجلة العلمية  
لكلية الدراسات الاقتصادية والعلوم السياسية

<https://esalexu.journals.ekb.eg>

دورية علمية محكمة

المجلد العاشر (العدد التاسع عشر، يناير 2025)

# The Impact of Public Debt on Economic Growth and Human Development: A Cross-Country Analysis of G7 and ASEAN Countries<sup>(1)</sup>

د. أماني الزهراني

مدرس الاقتصاد

Eastern Illinois University  
USA

[aaalzahrani@eiu.edu](mailto:aaalzahrani@eiu.edu)

د. محمد محمد محمود

مدرس بقسم الاقتصاد

كلية السياسية والاقتصاد – جامعة السويس

[mo\\_ma7@yahoo.com](mailto:mo_ma7@yahoo.com)

أ.د. أحمد صبري أبو زيد

أستاذ الاقتصاد

Eastern Illinois University  
USA

[asabouzaid@eiu.edu](mailto:asabouzaid@eiu.edu)

د. أحمد جمال خطاب

مدرس بقسم الاقتصاد

كلية التجارة – جامعة قناة السويس

[dr.gemv@gmail.com](mailto:dr.gemv@gmail.com)

(1) تم تقديم البحث في 2024/5/31، وتم قبوله للنشر في 2024/8/14.

## Abstract

Government debt continues to be a critical economic policy issue, which largely affects both developed and developing countries, due to elevated levels of debt. From a general viewpoint, government debt is a crucial feature of a country's financial system and a major indicator that contributes to the formation of a country's reputation in the international market.

This paper investigates the impact of government debt on certain macroeconomic and wellbeing indicators in a group of industrialized and developing countries. That is, the study seeks to examine how government debt influences GDP per capita, domestic and foreign investment, and HDI in both G7 and ASEAN nations during the period from 1995 to 2015.

While the results indicate that there is a positive relationship between government debt and macroeconomic indicators in G7 countries, the government debt of ASEAN countries has a negative impact on macroeconomic and wellbeing indicators. Some presumed causes of the different impact of the debt on G7 vs ASEAN economies is "allocation effect", "threshold effect", and "institutional quality effect."

**Keywords:** *GDP per capita, human development and investment, FDI, national debt, G7, ASEAN.*

## تأثير الدين العام على النمو الاقتصادي والتنمية البشرية: تحليل عبر

### البلدان لمجموعة الدول السبع ورابطة دول جنوب شرق آسيا

#### الملخص

يمثل الدين الحكومي قضية بالغة الأهمية في مجال السياسة الاقتصادية، لكل من الدول المتقدمة والنامية على حد سواء، وذلك بسبب ارتفاع مستويات الدين العام وما يتبعه من خدمة الدين، وعلى المستوى الدولي يعد الدين الحكومي لدولة ما صفة أساسية ومؤشراً هاماً ورئيسياً في تحديد الوضع الائتماني والسمعة الدولية لتلك الدولة.

وتقوم هذه الورقة على البحث في تأثير الدين الحكومي على عدد من مؤشرات الاقتصاد

الكلي والرفاهية الاقتصادية في مجموعة من البلدان الصناعية مقابل الدول النامية.

وتسعى الدراسة على وجه الخصوص إلى دراسة كيفية تأثير الدين العام على متوسط الناتج المحلي الإجمالي الحقيقي للفرد، الاستثمار المحلي والأجنبي، ومؤشر التنمية البشرية في كل من دول مجموعة السبع الكبرى (G7)، ورابطة دول جنوب شرق آسيا (الآسيان). وبينما تشير نتائج الدراسة إلى التأثير الإيجابي للدين العام على مؤشرات الاقتصاد الكلي في دول مجموعة السبع الكبرى، فإن الدين الحكومي لدول الآسيان له عواقب سلبية على تلك المؤشرات. كما تشير تلك النتائج أن الأسباب المفترضة للتأثير المتفاوت والمختلف للدين العام بين دول رابطة السبع الكبرى مقابل دول رابطة جنوب شرق آسيا يعود بالأساس لعدد من الأسباب لعل من أهمها "أثر تخصيص الموارد"، و"تأثير عتبة التضخم"، و " دور الجودة المؤسسية".

**الكلمات المفتاحية:** الناتج المحلي الإجمالي للفرد، التنمية البشرية والاستثمار، الاستثمار الأجنبي المباشر، الدين الوطني، مجموعة السبع الكبرى، رابطة دول جنوب شرق آسيا (الآسيان).

## 1. Introduction

One of the major prerequisites for economic growth and prosperity is robust, sustainable, and disciplined fiscal policy. This allows countries to acquire access to capital, get investment resources for both the public and private sectors, increase business and consumer confidence, and promote overall financial health and safety. It follows that governments that fail to act in the above manner is likely to not to enjoy these benefits. For instance, if the long-term fiscal drawbacks, such as high government debt and debt service, remain unsolved, the elevated cost of interest crowds out future investors, causing various businesses to drop out, which lowers consumer confidence, and the overall economy becomes prone to economic crisis.

Debt is frequently perceived as having two sides when considering the observations of past and present research, central bankers' testimonials, and statements made by government leaders. Debt promotes economic growth and welfare when it is acquired moderately and used wisely. Yet, excessive borrowing, overreliance and imprudence can have disastrous results. High levels of public debt can not only lead to financial collapse but also make it difficult for governments to provide the people with the services they require. On the other hand, finance is a crucial component that promotes economic expansion. In other words, borrowing enables people to spend even in the

absence of present income and enables firms to invest even when revenues figures do not allow it.

It is often believed that government debt is one of the key macroeconomic indicators which determines and defines a country's image in the international markets (Riberiro et al., 2012). The image of a country on the global scale is a critical factor for trade, investment, as well as many other important international interactions. It is, therefore, prudent to ascertain whether government debt is beneficial or retrogressive on macroeconomic indicators such as economic growth, poverty, investments, and education.

Government debt has historically been accumulating for both developed and developing countries since the early 1900s, and it is continuously increasing now (Checherita-Westphal et al., 2010). In comparison to the previous century, the average level of government debt increased by about 66% over the course of the 20th century (Tanzi & Schuknecht, 1997). The debt to GDP ratio has been averaging about 110 percent for developed countries and %65 for developing countries. Over the past 70 years, numerous other nations, including the G7 and ASEAN, have also accumulated enormous debt levels.

The goal of this paper is to analyze the impact of government debt on Macroeconomic indicators in G7 and ASEAN countries. The remainder of this paper is organized as follows: section 2 shows literature review. section 3 covers the theoretical part. section 4 covers Methodology. section 5 presents the relationship between the variables. section 6 presents the results along with a discussion and explanation. section 7 concludes.

## 2. Literature Review

A good number of panel studies have supported the premise that there is a non-linear correlation between GDP and the government debt. This relationship has been characterized by an inverse U-shaped relationship whereby the country experiences a positive economic growth impact due to government debt until the debt to GDP ratio exceeds a threshold level and a negative impact is experienced. Even though, there are several discrepancies about the purported relationship despite the consensus among a majority of researchers. For instance, there is no clarity about the specific threshold where the government debt to GDP ratio starts to exhibit negative influences on the country's economic growth, and the extent of the negative impact on economic growth.

There is not yet total agreement among all researchers regarding the non-linear relationship between government debt and economic growth rates. Some of the researchers seem to object to the outright conclusion. Schclarek (2004) reports that some panel studies failed to find a significant relationship between a government debts and economic growth in both developed and developing countries. However, a relationship was discovered between external debt and economic growth for developing countries, which was characterized as a negative linear relationship.

Even though the majority of studies are in agreement about the existing relationship between government debt and economic growth, there are still concerns about the channels through which the different researchers used in the establishment of the relationship. Calderon and Fuentes conducted a panel study for over 40 years across 22 Latin American countries. This study suggested that some specific structural aspects, the development of financial markets, the quality of institutions, and the levels of GDP per capita might improve or worsen the resultant effect that government debt will have on the country's economic growth rate.

Checherita (2012) investigated several specific channels through which government debt influenced the growth rates in the European countries and found public investments, private savings, and total factor productivity to be the most significant channels. However, Schclarek (2004) objected to the proposition that total factor productivity had significance in either developed or developing countries and instead argued that capital accumulation was the sole significant channel.

According to Spilioti (2015), government debt has an impact of lowering the level of Gross Domestic Product and thus economic growth. In the same vein, an examination of the impacts of the economic decline in the Euro area between 2007 and 2011 is a testimony that "the gross government debt and deficit ratios have been increased rapidly causing a negative effect in the long-term fiscal sustainability" (Spilioti, 2015). However, this has raised the question of whether the reverse relationship between government debt and GDP is only valid for certain economies as well as a given level of government debt. In the opinion of Adam and Bevan (2015), at a threshold of 1.5% of the GDP, fiscal deficit affects the level of economic growth in developing countries.

The impact of government debt also spreads to HDI (Human Development Index). Usually, the HDI is used to measure the economic development and welfare of a country, and it examines the income levels, life expectancy, and education. For that reason, it gives an overall economic development index. Government debt affects HDI and FDI (Foreign Direct Investment) because it influences all aspects of investment. In particular, it reduces public investment. As government debt increases, the government spends more of its budgets on interest costs, and such a move crowds out public investment by affecting local and foreign investors. In the US, for example, the CBO estimated in 2017 that the interest costs of government debt are likely to reach \$5.2 trillion. In other words, the interest charges will triple the current program used by the government to run the national economic needs.

In conclusion, both theoretical and empirical literature have covered the impact of public debt on several macroeconomic indicators in both developed and developing countries. This research aims to add to the existing literature by conducting a comparative analysis study between two groups of countries: developed as represented by G7 countries vs. developing as represented by ASEAN countries to figure out how public debt can have different impact on economic growth and human development indicators based on the level of income and progress of the economy.

### **3. Theoretical Background**

#### **3.1. Does Government Debt Matter?**

The bankruptcy of the Lehman Brothers in 2007, which has led to the global financial crisis, has also been accompanied by a government debt crisis since several countries had growing fiscal imbalances. The phenomenon started in Greece, spreading out to peripheral countries in Europe such as Italy, Ireland, Portugal, and Spain. Although the policymakers and economists based their argument on the main macroeconomics question, the real source of the inherent problem in policy and economic discussions has not been defined to date. Even with numerous attempts by governments to curb the problem, poor economic performance has persisted and costs have increased for societies (Afonso & Alves 2015).

Buchanan (1996) refers to the discussions around government debt as murky battleground while pointing out some critical points faced by

The Impact of Public Debt on Economic Growth and Human Development:  
A Cross-Country Analysis of G7 and ASEAN Countries

أ.د. أحمد صبري أبو زيد - د. أماني الزهراني - د. أحمد جمال خطاب - د. محمد محمد محمود

politicians and social scientists. The effect of government liability accumulation on the financial markets, the impact of debt on real economic performance, and fiscal sustainability have been high contentious issues owing to the massive government debt build-up. Poor economic performance is a reflection of low productivity and growth, which lowers the capacity of a country to repay its debt thus aggravating the fiscal sustainability problem.

According to the National Debt Clocks.Org (n.d), the government debt of Germany and Italy, as a percentage of their GDP, is 65.4% and 137.31%, respectively. Japan remains one of the countries with the highest government debts in the world, as it owes 250.4% of its GDP as of 2016 (Trading Economics , n.d. ). In March 2017, the general gross debt of the UK was 86.7% of the GDP, which was 26.7% points higher than the 60% reference value set out by the Protocol on the Excessive Deficit Procedure (Office for National Statistics , n.d.). By the end of 2017, the US national debt was \$23.26 trillion, which was about 103% of the GDP (USgovernmentspending.com, n.d.) Figures 1 and 2 show the highest government debt in G7 countries during this period of study.

Just like the G7 nations, the ASEAN countries have national debts. According to Malaysian Digest (2017), Malaysian government debt was 50.9% of the GDP (RM685 billion) in June 2017 (Malaysian Digest , 2017). Singapore's government debt increased from 496028 SGD Million (Q32017) to 502021.90 SGD Million (Q42017). Thailand is one of the countries with a national debt lower than 50% of the GDP. By the end of 2016, it had a national debt of Bt5.92 trillion (or 41.76% of the GDP (The Nation , 2018). In 2017, Corr (2017) quoted the Philippine Secretary of Management and Budget, Diokno Benjamin, stating the government planned to spend \$167 billion US on infrastructure. If that planned went through, the country's national debt would increase by more than 50% from \$123 billion to \$290 billion.

Corr (2017) predicted that the high rates that Philippines most likely lender, China, could impose on the new debts are likely to increase it beyond \$1 trillion in the next decade. According to Corr's analysis, a 10% interest rate on the new debt could see Philippine's national debt reach \$452 billion, in which case the national debt to GDP ratio will be 197%. At the end of 2017, the government debt of Indonesia reached \$294 billion. Although the value was higher in the 2016 standings, Indonesia recorded one of the world's

lowest government debt to GDP ratios, with a 29.2% (Indonesia Investment , 2018).

Another dimension of analyzing the effects of government debts on the GDP of the country considers the use to which the accrued government debt is put. A study conducted by Aschauer (2000) in the United States between 1970 and 1990 concluded that whenever government debt is used to finance development programs (as a productive capital), it leads to an economic growth. However, this growth is also limited to a certain level of threshold. From the foregoing, and as justified by the analysis done on the United States as a sample of a developed nation, it can be concluded that the direct association between the level of government debt and economic development is attributable to the use to which the accrued debt is put into. From this analysis, it is clear that developed countries use the accrued government debt as productive capital, unlike the developing countries. As such, public debts in the developed countries result in GDP growth, unlike in the less developed world.

In short, the negative correlation between GDP and government debts in the less developed countries is attributable to high government debt to GDP ratio and the uses to which they put the debts. On the other hand, the developed countries realize a positive relationship between government debt and growth of the economy because the funds are used as productive capital. For instance, lead to the creation of employment or the provision of basic public services like healthcare, which in turn contribute to economic growth. Figures 1 and 2 indicate government debt in G7. In addition, figure 3 shows the government debt in ASEAN countries.

### **3.2. Good governance is a key to economic recovery.**

The studies have also shown that there has been a positive relationship existing between good governance of a country and GDP per capita which is the measure of a country's total output where the gross domestic product is divided by the total number of residents in the country. This is seen during comparison showing performance in these countries (Jones and Wren, 2016). As noted by Kaufman and Kraay (2002), the relationship between these two variables has also been considered to be rigorous as well as complicated by several authors (Kaufman and Kraay, 2002). A significant positive casual effect is noted to exist between good governance and high per capita income



The Impact of Public Debt on Economic Growth and Human Development:  
A Cross-Country Analysis of G7 and ASEAN Countries

أ.د. أحمد صبري أبو زيد - د. أماني الزهراني - د. أحمد جمال خطاب - د. محمد محمد محمود

in that direction. However, when acting from per capita income to leadership, the bad casual effect is weaker.

The question about the effects of average governance and the size of a government on GDP per capita has been longstanding. This debate has had input both from proponents and opponents of government debt and has been propagated by the ambiguity in the economic theory (Awaworyi, Ugur & Yew, 2015). On the one hand, the size of governments due to the crowding-out effects on the existing private investments can lead to poor economic growth. Additionally, government size also means an increase in taxes and increased inefficiencies, which reduces the level of growth. On the other hand, governance plays an important role in ensuring the provision of public goods and services, maintaining economic confidence, and ensuring there is rule of law (Awaworyi, Ugur & Yew, 2015).

On this same note, Terasawa and Gates (1998) concluded that the bureaucracy of the Japanese government has contributed to the constant economic growth of the country. Notably, governance led Japan out of the crisis that the country faced after WWII. Conversely, UNDP (2015) as cited by Azam and Emirullah (2014), alleges that corruption remains one of the major impediments to economic growth in most of the developing countries. Based on statistics from most of the Asian-Pacific nations (that include the ASEAN countries), Azam and Emirullah (2014) found out that “39. 71, and 71 percent of respondents thought that the level of corruption had increased in Malaysia, Indonesia and India, respectively.” Similarly, Philippines, Indonesia, and Thailand were found to be amongst the most corrupt countries from a study by Lim (2003) as cited by Azam and Emirullah (2014).

Moreover, governments pass policies that influence businesses either directly or indirectly. Policies such as the minimum wage, subsidies for investments create a conducive environment for investments by ensuring political stability, government expenditure, business regulations, and interest rates critically influence the choices of investment destinations (Williams, 2002). Also, governance play a critical role in ensuring the provision of goods and services and ensuring there is rule of law as aforementioned (Awaworyi, Ugur & Yew, 2015). For instance, in France, the government is committed to supporting investments, whether foreign or local. Moreover, the country’s membership to the European Union further facilitates the movements of people across the borders of the country further facilitating investments

(Fanto, 1995). In the United States, it has been shown that the institutional governance has been very vital in boosting the level of investments in the country as noted by Fanto (1995). However, vices such as corruption, political instability, and high taxation negatively affect businesses.

Corruption has been indicated as a hindrance to investments in the countries. As Azam and Emirullah (2014) asserted, Indonesia, Thailand, and the Philippines have been considered to be the most corrupt, hence hindering investments. Similarly, a study on the influence of political instability and GDP in Malaysia also found that it would take a long time for investments to move back to its equilibrium position following the political instability in the country (Nazeer and Masih, 2017). Further, as documented by Euromonitor International (2018), the political coup in 2006 in Thailand has had adverse effects in all of the ASEAN countries. For instance, this greatly affected consumer spending, tourism, and the confidence of the investors across the region (Euromonitor International, 2018). Therefore, whereas governance positively contributes to investments in the countries, poor governance partly discourages investors from countries.

### **3.3 Government expenditure and macroeconomic indicators**

For decades, the issue of the relationship between government expenditure and economic growth has been a sustained interest. One dominant perspective in this view is Wagner's law, which ties the economic growth of a country to the level of government expenditure (Azam and Emirullah, 2014). On the other hand, supporters of the Keynesian model assert that economic growth, which results from increased government expenditure, is premised on how these expenditures affect the decisions made by the private sector and their long-run equilibrium (Azam and Emirullah, 2014, p. 126). As such, if the government expenditure is such that it encourages private sector investment, then it will lead to an increase in GDP per capita.

A deduction of research conducted by Mohammadi and Ram (2015) on the relation between these two variables in Korea, Japan, Philippines, Malaysia, Thailand, and Singapore using the Wagner's model posited "there is no discernable pattern of relation between mean growth rates of the two variables across the six countries." However, the research further reveals that apart from Japan (a G7 country), it cannot be concluded for that an increase in government expenditure leads to a corresponding increase in the GDP per

capita in the other ASEAN countries (Mohammadi and Ram, 2015). For instance, from the presented statistics, while there is a consistent growth in the GDP in all the countries, government expenditure has remained stagnant in all the other countries except Japan (Mohammadi and Ram, 2015).

More precisely, while the GDP per capita of Philippines grew over the period between 1960 and 2008, the share of the government expenditure remained constant as noted by Mohammadi and Ram (2015). Therefore, it can be stated that an increase in government expenditure leads to an increase in GDP per capita in G7 countries. As such, government expenditure will only substantially contribute to an improvement in the HDI if the expenditure is channeled to boosting all or any of these factors (health, education, and economic growth). As aforementioned, education expenditure by the government in both the ASEAN and G7 countries positively contribute to the efficiencies and effectiveness of the sectors (Mallick, Das, and Pradhan, 2016). Notwithstanding, the level of change varies greatly amongst the countries due to other factors such as corruption and poor governance in the ASEAN states (Prasetyo and Zuhdi, 2013).

On the other hand, government expenditure in the G7 countries leads to an improvement in the GDP of those countries as opposed to the ASEAN countries (Mohammadi and Ram, 2015). For instance, while government expenditure in Japan led to a growth in the GDP of the country as shown in from research carried out by Mohammadi and Ram (2015). Similar research could not find the relationship between government expenditure and economic development in the Philippines. Based on this data therefore, and assuming all the other factors affecting HDI are constant, it is notable that an increase in government expenditure in G7 countries led to an improvement in the human development index of the countries while an increase in government expenditure amongst the ASEAN states did not necessarily lead to an improvement in the HDI in the countries. This can be attributed to among other factors the use of the funds, transparency, and population pressures that stretch government resources.

## **4. Methodology**

### **4.1. Panel techniques**

In the paper, panel data techniques are utilized in the determination of the impact of government debt on economic and wellbeing indicators in the

G7 and ASEAN countries. The panel data estimation is effective in highlighting individual heterogeneity in the event that the cross-sections have some aspects of differentiating features. Therefore, there is a lower propensity to bias when compared with approaches like time series, which do not account for heterogeneity since some differentiating features may vary across time. This is the first advantage of using panel data techniques. Other advantages will include the higher estimation efficiency, less collinearity, and more accuracy in measuring the effects of individual samples due to the availability of larger data set when compared with cross-section and time-series approaches.

A random effect or fixed effect models can be used in the panel model to analyze for the unobserved effects. The random effect model is the appropriate model to examine the unobserved effects when accepting that omitted variables exist and assuming no correlation between the unobserved variables and the explanatory variables. However, in the event that there is a correlation between the explanatory and the omitted variables, it is prudent to employ a fixed effect model to provide for any omitted variable bias. Consequently, a Hausman test was run to determine the appropriate approach for handling the unobserved effects. Ideally, the test is designed to examine whether random effect is the best choice by accepting the null hypothesis, or rejecting which suggests that the fixed effects estimation is more appropriate. In this case, the Hausman test rejected the null hypothesis hence the fixed effects estimation is chosen. This study will have four major specifications for the dependent variables.

**GDP Per Capita =  $f$  (Government debt, interaction terms, X)**

**HDI =  $f$  (Government debt, interaction terms, X) ... (1)**

GDP per capita, human development index, foreign direct investment and investment represent Government debt and several of the interaction terms while (X) is a set of control variables such as trade, inflation ...etc.

Therefore, we can estimate the model as follows:

$$Y_{it} = \alpha_{it} + \beta_1(\text{Gov'debt})_{it} + \beta_2(\text{HdI})_{it} + \beta_3(\text{Fdi})_{it} + \beta_4(\text{Inv})_{it} + \beta_5(\text{debt} * \text{int})_{it} + \beta_6(X)_{it} + \varepsilon_{it} \dots (2)$$

Where, these are macroeconomic indicators that determine  $Y_{it}$  = (GDP per capita, FDI, INV) and well-being which is HDI, X is a set of other control variables,  $\varepsilon_{it}$  is the error terms.

The Impact of Public Debt on Economic Growth and Human Development:  
A Cross-Country Analysis of G7 and ASEAN Countries

أ.د. أحمد صبري أبو زيد - د. أماني الزهراني - د. أحمد جمال خطاب - د. محمد محمد محمود

The sample covers the data from 1995 to 2015. I utilize two groups, G7 countries that include France, Germany, Italy, Japan, Canada, the United Kingdom, and the United States. We have chosen only five countries of (ASEAN Association of Southeast Asian Nations) such as Malaysia, Singapore, Thailand, the Philippines, and Indonesia which have the complete data. The goal of this research is to study the impact of government debt on macroeconomic indicators. In addition, government borrowing can be beneficial or harmful to the economy. The database has been collected from various sources: Word Bank's World Development Indicator (WDI), OECD Economic Outlook database and United Nations Development Reports.

### 4.3. Descriptive Statistics

**Table 1 Descriptive Statistics for G7 Countries**

Variable	Obs.	Mean	Std. Dev.	Min	Max
GDP per Capita	140	1.165103	1.889293	-5.911	5.59
HDI	147	.8769864	.0269083	.799	.926
FDI	147	.8908269	2.086402	-7.683088	9.659468
Trade	147	49.57106	18.00783	16.67948	85.87476
Inflation	140	1.629506	1.130129	-1.352837	5.244371
Population Growth	147	.4948095	.4414191	-1.853715	1.20396
Health Expenditure	147	44.71433	187.913	6.490289	13.28121
Education Expenditure	147	11.40786	2.097105	8.00616	16.57224
Interest rate	147	3.057836	2.084754	-.8746982	10.45667
Government spending	147	18.97238	2.476501	13.99592	24.01168
Government debt	147	91.67118	35.80586	15.10873	197.9529
GCF	147	21.24523	2.885217	14.42836	30.86515



The observation is 147 for seven countries from 1995 to 2015. The first row shows the average of GDP per capita for G7 countries which is 1.16\$ with standard deviation is 1.89. In addition, Germany had the highest value of GDP per capita in 2011, which is 5.59\$. In 2009, Italy had the lowest value, which is -5.911\$. The second row shows the mean for total human development rate is nearly .88 in all G7 countries. In addition, Germany in 2015 had the highest value of HDI. In 1995, the lowest value was .79 in Italy. The third row illustrates the average foreign direct investment is about .89. In addition, Germany had the lowest value, which is -7.7 in 2000. The highest value of FDI is .92 in France in 2002. The standard deviation was 2.08. The next row indicates that, on average, the trade openness is 49%. In addition, the highest was 85% in Germany in 2012. The lowest was in Japan in 1995. The standard deviation was 18%. The fifth row shows the mean of inflation rate, which is 1.62% in G7 countries. The lowest value was negative -1.3% in Japan in 2009 with standard deviation 1.13%. The highest value 5.2% in Italy in 1995. The mean of population growth rate was about .49. Besides, the lowest was negative -1.85% in Germany in 2011 while the highest value was 1.2 % in United States in 1997. The standard deviation was .44%. The next row shows the mean of health expenditure rate was 44.7 % with standard deviation 187% in G7 countries. Moreover, the lowest was 6.4 % in Japan in 1996 and Japan had the highest value 13.2% in 2015. The following row represents the mean of education expenditure rate about 1.40%. The standard deviation was 2.08%. The lowest was in Italy in 2014 while the highest was in United States in 2003. The total average of private credit was 83.1% with standard deviation about 85.2%. United Kingdom had the highest value, which was 1034% in 1998 while the lowest value was 60.1% in Italy in 2001. The next row illustrates the mean of the interest rate in these seven countries, which is, 3.0 with standard deviation 2.0. The highest was in Italy in 1995 and the lowest was in Japan in 2015. The following indicates the mean of government spending was approximately 19% with standard deviation 2.4%. France had the highest percentage, which is 24 in 2014; however, the lowest percentage was 14 in United States in 1998. Noticing that the highest value of government debt 197 % was in Japan in 2015 and the lowest value was in 2001 in United States. The total government debt average for G7 countries was about 91.7% with a standard deviation 35.8%. The last row shows the mean value of gross capital formation is 21.2 as a percentage

of GDP. Moreover, the highest value was in Japan in 1996 while the lowest value was in United Kingdom in 2009. The standard deviation was nearly 2.9.

On the other hand, for five of ASEAN counties from 1995 to 2015, the first row shows the average of GDP per capita for G7 countries which is 10.9\$ with standard deviation is 2.42, In addition, Thailand had the highest value of GDP per capita in 2015, which is 16.9\$. In 1998, Indonesia had the lowest value, which is 5.3\$. The second row shows the mean for total human development rate is nearly .71 for these countries. In addition, Singapore in 2015 had the highest value of HDI, which was .92. In 1995, the lowest value was .56 in Indonesia. The third row illustrates the average of foreign direct investment was about negative value 1.92. In addition, Singapore had the lowest value, which is -17.5 in 2004. The highest value of FDI 16.43 was in Singapore in 2008. The standard deviation was 4.8. The next row indicates that, on average, the trade openness is 4.5%. In addition, the highest was 58% in Indonesia in 1998. The lowest was in Thailand in 2015. The standard deviation was 6.2%.

**Table 2 Descriptive Statistics for ASEAN Countries**

Variable	Obs.	Mean	Std. Dev.	Min	Max
GDP per Capita	100	10.90953	2.424654	5.347391	16.9871
HDI	105	.7108667	.0903919	.564	.925
FDI	105	-1.923032	4.804289	-17.51878	16.36765
Trade	105	4.54009	6.251932	-.8950214	58.38709
Inflation	100	1.666816	.8810473	-1.474533	5.321517
Population Growth	105	2.967607	3.748094	-14.34678	13.21649
Health Expenditure	105	8.667638	53.59405	1.925298	552.5685
Education Expenditure	105	17.59638	4.067177	6.14646	28.3886
Interest rate	105	4.304092	4.443788	-24.60017	12.32241
Government spending	105	5.241845	14.53425	-48.2194	47.73128
Government debt	105	51.23592	26.30392	3.673497	110.0376
GCF	105	27.85126	19.44633	-48.2194	54.28838



The fifth row shows the mean of inflation rate, which is 1.6 % in ASEAN countries. The lowest value was negative -1.4% in Singapore in 2003 with standard deviation .88%. The highest value 5.3% in Singapore in 2008. The mean of population growth rate was about 2.9. Besides, the lowest was negative -14.3% in Indonesia in 1998 while the highest value was 13.2% in Singapore in 2010. The standard deviation was .37percentage. The next row shows the mean of health expenditure rate was 8.66 % with standard deviation 53.5%. Moreover, the lowest was 1.92 % in Indonesia in 1997 and Indonesia had the highest value 552% in 2015. The following row represent the mean of education expenditure rate about 17.5%. The standard deviation was 4.0%. The lowest was 16.4% in Indonesia in 1995 while the highest was 28.3% in Thailand in 2000. The total average of private credit was 82.7% with standard deviation about 43.7%. Thailand had the highest value, which was 166% in 1997 while the lowest value was 18.6% in Indonesia in 2000. The next row illustrates the mean of the interest rate in these seven countries, which is, 4.3 with standard deviation 4.4. The highest was in Indonesia in 2001 and the lowest was in Indonesia in 1998. The following indicates the mean of government spending was 5.2% with standard deviation 14.5%. Singapore had the highest percentage, which is 47.7 in 2004; however, the lowest percentage was -48.2 in Thailand in 1998. Noticing that the highest value of government debt 110 % was in Singapore in 2012 and the lowest value was 3.6% in 1996 in Thailand. The total government debt average for G7 countries was about 51.2% with standard deviation 26.3%. The last row shows the mean value of gross capital formation is 27.8 as a percentage of GDP. Moreover, the highest value was 54.2 in Singapore in 2010 while the lowest value was -48.2 in Thailand in 1998. The standard deviation was nearly 19.4.

## 5. Empirical Results and Discussions

### 5.1. Analyzing the GDP per capita

This section provides the estimates of four different specifications of equation (1) based on the dependent variable. Each specification indicates the impact of government debt on GDP, HDI, FDI, and GCF respectively. Table (1) indicates the result of the first specification where the GDP is the dependent variable. In order to find the impact of government debt on GDP in the G7 countries, we ran four regressions, using various control variables

and interaction terms. The results suggest that government debt boosts economic growth. It seems that G7 countries efficiently and effectively use the money they collected from debt to promote economic growth, through spending on infrastructure, education, health care, etc.... In other words, G7 countries have productive capacity therefore we can basically earn an enough income to pay the interest on the debt as a % of GDP. The results is consistent with that of Aschauer (2000). His study, conducted in the United States between 1970 and 1990, concludes that whenever a debt is used to finance development programs, as a productive capital, it leads to an economic growth. However, this growth is also limited to a certain level of threshold or on how the debt is allocated. That is, the direct association between the level of government debt and economic development is mainly attributable to the use the accrued debt, where it is clear that developed countries use the accrued debt as productive capital, unlike the developing countries. Moreover, the three other specifications where HDI, FDI, GCF are dependent variables reveals that government debt in the G7 countries significantly enhances these variables.

In opinion of Aizenman, Kletzer, and Pinto (2007), “public investment in either the stock of physical infrastructure or human capital can increase the productivity of both capital and labor”

On a similar note, Eisner (1984), as cited by Smyth and Hsing (1995) stated that from a stimulus perspective, deficits and debts, if measured correctly, will stimulate consumption, employment, investment, and ultimately economic growth. Premised on these, therefore, it is apparent that the G7 countries used the accrued debt as an investment rather than consumption, hence stimulating GDP. Note that an increase in population in developed countries may lead to a strain of the available resources which may deteriorate the factors of production and lower the GDP growth.

The control variables used in our first specification such as, government expenditure, investment, education expenditure, and trade, have a positive effect on the level of GDP per capita, while population growth has an adverse impact on GDP. FDI, health expenditure, governance and inflation seem to be insignificant variables in our model. The study also utilizes several interaction terms in order to check out some channels through which debt can impact growth. Surprisingly, most of the debt interaction terms with government spending, and governance, are insignificant. Only the education

The Impact of Public Debt on Economic Growth and Human Development: A  
Cross-Country Analysis of G7 and ASEAN Countries

أ.د. أحمد صبري أبو زيد - د. أماني الزهراني - د. أحمد جمال خطاب - د. محمد محمد محمود

interaction term comes out significant indicating that the higher the education, the more the impact of debt on GDP per capita.

Statistically speaking, the effect of debt on GDP is significant at 99% confidence level where a 1% rise in debt causes a rise of about 0.08% increase in GDP. Similarly, at 99% confidence level, a 1% change in GGC leads to about 0.94% increase in GDP. On the other hand, a 1% change in population leads to about 13.84% drop in the GDP at 98% confidence level.

**Table 1 GDP per Capita G7 Countries**

Independent Variables	1	2	3	4
Debt	.0279***	.0814***	.0671**	.0741**
	.0097	.0307	.0094	.0285
GOVT	.3928*	.9448***	.3764*	.3661
	.207	.1725	.2104	.2234
GCF	.4634***	.2426*	.4996***	.4972***
	.109	.0983	.1155	.1174
Inflation	-0.0854	.1854	-0.1026	-.1067
	0.1646	.1555	0.1656	.1789
Population	-1.237**	-1.384**	-0.1226**	-1.275***
	.5233	.5465	0.5236	.543
HDI	.4466***		0.4608	.4581***
	.5233		0.1142	.1258
FDI	.0022	.0005	0.0103	.0113
	.0616	.0661	0.0622	.0635
Trade	.1181***	.0052	.1946***	.1289***
	.0333	.0244	0.2937	.0355
Education expenditure		.0042**		
		.0024		
Health expenditure		.0003		
		.0007		
Debt * education expenditure		.0561**		

				.2459
	Government spending * Debt			.1946
				.2937
	Debt * governance			
				.0149
				.0202
Constant	30.27***	4.53	26.71***	26.52***
	-6.521	4.918	7.522	7.871
R square	0.4	0.37	0.41	0.42
Observation	133	133	133	133

**Note:** \*\*\* indicates the significance level at 1% significant level. \*\* indicates the significance level at 5% significant level. \* indicates the significance level at 1% significant level.

Contrary to G7 countries, results from the four different specifications in table (2) indicate a negative and significant relationship between government debt and GDP per capita in ASEAN countries. The adverse impact of debt is not usually a surprise in developing economies, which mostly misuse and/or misallocate the funds. It is highly argued that the positive vs. negative impact of debt greatly depends on what has caused the growth in debt. The question basically is whether the debt incurred is allocated to develop the countries' productive capacity and infrastructure, which aids economic growth, or whether the debt has been used to support consumption, such as transfer payments.

In addition, the repayment of the debt and the debt service could be another obstacle which causes debt to hinder economic performance. Government usually increases taxes to pay back the debt and cover the interest payments on outstanding debt. Others, they turn to an increase in money growth as a tool for debt repayment, raising the inflation and uncertainty in the economy, which lowers domestic and foreign investment. The monetarist has always believed that deficit financing is inflationary because it leads to excessive money creation. Jubilee (2000) reports that during the 60's, the U.S. had to print more money in order to finance the deficit.

Moreover, empirical evidence and economic theory have mentioned the "crowding out effect" as a major cause in which government debt could adversely impact economic growth. For instance, an increase in government

debt can lead to a rise in interest rates, causing capital investment to decline, which translates into weaker productivity and ultimately weaker economic growth. Results in table (6) give a good support to the crowding out effect claim. All specifications show a negative relationship between debt and domestic investment indicating that an increase in government debt may cause a decline in domestic investment in ASEAN countries.

On the other hand, Pattilo et al (2002), Kuman and Woo (2010), Rogoff and Reinhart (2011) Checherita and Rother (2010), Cechetti et al (2011), and Egert (2015) attest to the fact of the asymmetric impact of debt on growth notably in developing economies. That is, there exists a threshold above which government debt will have a negative impact on growth. This correlation becomes stronger as the public debt approaches the GDP of the country. Specifically, while Reinhart and Rogoff (2011) and Checherita and Rother (2010) suggested that debt is most likely to be economically harmful after reaching a threshold of 90 per cent of GDP and in some cases to 100 per cent as reported in Checherita and Rother (2010), Egert (2015) states that this threshold is between 20 to 40 per cent of the GDP, based on the country's income level., however, warns that the precise threshold of 20-50 per cent of GDP should be interpreted cautiously. Cudik et al. (2015) agree on the negative impact of debt on growth, but argue that debt thresholds for advanced economies ranged from 60 per cent to 80 per cent and for developing countries is between 30 per cent and 40 per cent.

The results indicate that, except for Thailand, the debt has exceeded the threshold reported in the literature in ASEAN countries. For instance, the debt as a percentage to GDP has averaged about 46 per cent for Malaysia, 57 per cent for Philippines, 37 per cent for Indonesia, and 94 per cent for Singapore. The results basically support the threshold effect, whether for developing countries such as Malaysia and Philippines, or for more advanced such as Singapore.

Lastly, Quality of institutions also plays a key role in determining the effect of debt on growth. It is widely accepted that corrupted regimes push their countries into more debt that hampers economic growth. Institutional quality also includes government effectiveness and how ineffective government can mismanage the debt and waste the funds on inefficient and infeasible projects. The negative sign of the debt-governance interaction term in table (2) supports the above claim. It indicates that a higher level of

governance in terms of less corruption and higher government effectiveness reduces the negative impact of debt on growth.

The paper also utilizes two other interactions terms with debt to check their impact on the role of debt in ASEAN countries. Government spending and education expenditure interaction terms show that an increase in either of them will lead to an improvement in the impact of debt on growth. The results give a strong support to the misallocation or mismanagement of funds.

In ASEAN countries, trade is the only control variable that has adverse impact on GDP per capita. It seems that ASEAN Countries import consumer goods more than productive goods. In the model, HDI, population growth, inflation, government spending, education expenditure and health expenditure, interest rates are found to be insignificant variables.

**Table 2 GDP per Capita ASEAN Countries**

Independent Variables	1	2	3	4
Debt	-.0312***	-.1087***	-.0286***	-.0561*
	.0097	.0275	.0092	.0127
GOVT	.0066	.0201	.0769***	.0013
	.0128	.0123	.0266	.0124
GCF	.0756***	.0752***	.0975***	
	.0132	.0124	.0147	
Inflation	.2044	.2902	.1091	-.0712
	.2338	.2217	.2482	.2341
Population	.0365	.0329	.0425	.0427
	.0516	.0489	.0496	.0497
HDI	.2008		.2269	.1176
	.2961		.2929	.4630
FDI	.0619**	.080***	.0446	.0675*
	.0377	.0365	.0361	.0364
Trade	-.1134***	-.0938***	-.1101***	.1016***
	.0132	.0279	.0281	.0278
Education expenditure		.0052		

The Impact of Public Debt on Economic Growth and Human Development: A Cross-Country Analysis of G7 and ASEAN Countries

أ.د. أحمد صبري أبو زيد - د. أماني الزهراني - د. أحمد جمال خطاب - د. محمد محمد محمود

			.0068	
Health expenditure			-1.154	
			.2071	
Debt * education expenditure			-.0077***	
			.0009	
Government spending * Debt			-.0011***	
			.0003	
Debt * governance				-.0486**
				.0219
Constant	1.173	12.89***	.8726	4.703***
	1.900	.8933	1.951	2.228
R square	0.56	0.63	0.60	0.62
Observation	105	105	105	105

**Note:** \*\*\* indicates the significance level at 1% significant level. \*\* indicates the significance level at 5% significant level. \* indicates the significance level at 10% significant level.

#### 5.4. Analyzing the (HDI) Estimation

Table (7) and (8) report the results of various specifications where the HDI is the dependent variable. It reports the impact of government debt on HDI in the G7 countries.

The HDI is used to measure the economic development and welfare of a country. According to the United Nations Development Programmer (UNDP), HDI is a composite index that encompasses three major factors; mean years of schooling, life expectancy, and gross national income per capita (UNDP, 2016). In addition to these factors, HDI also involves other measures such as “inequality adjusted HDI discounts the HDI according to the extent of inequality, gender Development Index compares female and male HDI values, gender Inequality Index highlights women’s empowerment, and the Multidimensional Poverty Index measures non-income dimensions of poverty” (UNDP, 2016). From these assertions, therefore, it can be concluded that government debt amongst the G7 countries is efficiently allocated to the sectors related to education, health care and other development projects that can promote the living standards of the people. Government spending could be an important variable influence on HDI. Figure 7 indicates HDI ranking in G7 countries.

Several channels are identified through which debt can have a bigger impact on growth. The model for G7 notes that an increase in either government expenditure, education expenditure or an improvement in governance level leads to better impact of debt on HDI. This is, in fact, a support of the impact of efficient allocation of the debt funds to sectors which can promote health, education, and higher income levels such as transfer levels.

Several other factors contribute positively to HDI, such as government spending, trade, investment, and GDP per capita.

On the other hand, inflation negatively influences human development index in G7 countries. Our analysis for inflation in G7 countries indicates that a higher level of inflation is harmful for HDI, as it lowers purchasing power of money and raise the prices of basic services.

On the other hand, table (8) shows a negative impact of government debt on HDI in ASEAN countries. This is attributable to the use in which the funds are put into. For instance, Bilbao-Ubillos (2011) stated that HDI can be used as a significant tool for measuring the level of economic growth and development, both between the different countries or different periods for the same country. However, this assertion has been criticized by many economists such as Ravallion, Kelly, Deneulin, Neumayer, and Sagar as recorded by Bilbao-Ubillos (2011). Notwithstanding, based on Bilbao-Ubillos's argument, it is apparent that debt in developing countries do not lead to economic growth, and ultimately does not lead to any improvement in HDI factors such as health care and education. Recalling Aschauer's (2000) argument, debt in less developed countries is mostly used for consumption expenditures. Hence, it does not lead to capital formation that may spur economic growth.

However, GCF and GDP per capita are two of our dependent variables expose that reducing government debt in the ASEAN countries significantly enhances these variables. For instance, gross capital formation similar to an increase in physical capital of nation with investment in economic infrastructures like building schools, hospital... etc in agreement with Bebczuk (2000), increasing in investment can be reason to stimulate the economy. On the other side, FDI appears not to have any significant impact on HDI in this model. One last note is the interaction term impact of



The Impact of Public Debt on Economic Growth and Human Development: A Cross-Country Analysis of G7 and ASEAN Countries

أ.د. أحمد صبري أبو زيد - د. أماني الزهراني - د. أحمد جمال خطاب - د. محمد محمد محمود

government spending on HDI. Again, the misallocation of funds seems to be a major reason of the negative impact of debt.

Based on the result, other control variables such as government spending, inflation, population growth, education expenditure, health expenditure and interest rates have insignificant impact on human development index in ASEAN countries while private credit has a positive sign that indicate to increasing in income through an employment and investment in education and health. Note that there are several channels through which HDI can be promoted such as quality governance, government expenditure, and most importantly higher public education expenditure. These channels ensure that the public debt is well spent and allocated to the most efficient use.

**Table 7 HDI in G7 Countries**

Independent Variables	1	2	3	4
Debt	.0001	.0001***	.0006**	.0006***
	.0001	.0001	.0003	.0001
GOVT	.0091***	.0010	.0114***	.0091***
	.0013	.0009	.0018	.0021
GCF	.0056***	.0006	.0060***	.0056***
	.0006	.0007	.0007	.0006
Inflation	-.0062***	-.0049***	-.0063***	-.0048**
	.0010	.0017	.0010	.0011
Population	-.0011	-.0087	-.0010	-.0030
	.0038	.0057	.0038	.0038
GDPPC	.0023***	.0041***	.0023**	.0021***
	.0005	.0010	.0005	.0005
FDI	.0001	.0001	.0002	.0001
	.0004	.0008	.0004	.0004
Trade	.0022***	.0007***	.0022***	.0020***
	.0001	.0001	.0001	.0001
Education expenditure		.0017		
		.0013		
Health expenditure		.0115		
		.0203		

Debt * education expenditure	.0102***		
	.0017		
Government spending * Debt		.0001***	
		.0001	
Debt * governance	.0003***		
			.0001
Constant	.474***	.7304***	.4203***
	.0300	.0342	.0393
R Square	0.50	0.44	0.56
Observation	133	133	133

**Note:** \*\*\* indicates the significance level at 1% significant level. \*\* indicates the significance level at 5% significant level.\* indicates the significance level at 10% significant level.

**Table 8 HDI in ASEAN Countries**

Independent Variables	1	2	3	4
Debt	-.0015***	.0001***	.0012***	.0020***
	.0002	.0001	.0002	.0002
GOVT	-.0002	.0001	.0028***	.0001
	.0003	.0003	.0006	.0003
GCF	.0023***	.0012***	.0030***	.0019***
	.0003	.0004	.0003	.0003
Inflation	.0029	-.0027	.0135***	.0059
	.0066	.0061	.0065	.0058
Population	-.0012	.0008	.0014	.0001
	.0014	.0013	.0013	.0012
GDPPC	.0161***	.0080***	.0167***	.0074***
	.0023	.0028	.0021	.0025
FDI	.0022**	-.0004	.0014	.0011

The Impact of Public Debt on Economic Growth and Human Development: A Cross-Country Analysis of G7 and ASEAN Countries

أ.د. أحمد صبري أبو زيد - د. أماني الزهراني - د. أحمد جمال خطاب - د. محمد محمد محمود

	.0010	.0010	.0009	.0009
Trade	-.0006	-.0003	-.0006	.0004
Education expenditure	.0008	.0008	.0008	.0007
Health expenditure		.0025		
		.0032		
Debt * education expenditure		.0002***		
		.0001		
Government spending * Debt			-.0001***	
			.0001	
Debt * governance	.0012***			
				.0005
Constant	.4000***	.5541***	.4080***	.4496***
R Square	.0352	.0661	.0325	.0319
Observation	0.75	0.80	0.79	0.82
	105	105	105	105

**Note:** \*\*\* indicates the significance level at 1% significant level. \*\* indicates the significance level at 5% significant level. \* indicates the significance level at 10% significant level.

## 6. Conclusion

This study investigates the impact of government debt in G7 and ASEAN countries on various economic and wellbeing indicators namely growth, and human development, using large panel data during the period from 1995 to 2015. In addition, the study utilized various interaction terms, such as education, government spending, and institutional quality to define the impact of government debt on growth.

While the results indicate that government debt contributes positively to the GDP growth, and HDI in the G7 countries, it has an adverse effect on

ASEAN countries economies. The impact of public debt on economic growth and human development may differ between the two groups due to several factors. One key factor is the difference in governance indicators, which are generally higher in G7 countries compared to ASEAN countries. This suggests that G7 countries are better equipped to ensure a good allocation of the debt money towards productive investments that can foster economic growth and improve human development outcomes. Moreover, G7 countries tend to have higher public spending on education, which can contribute to better human capital formation and thus, boost economic growth and improve human development indicators. Overall, these factors could explain why the positive impact of public debt on economic growth and human development is better in G7 countries compared to ASEAN countries.

The results of this study, along with previous empirical evidence, suggest that the impact of debt on various economic indicators basically depends on several factors such as the “threshold”, “allocation”, “governance”, and “crowding in” vs. “crowding out” effects.

Future research would need to broaden the temporal and geographical scope to review long-term and dynamic policy effects of government debt on macroeconomic indicators and wellbeing. In this regard, research of other developing regions beyond ASEAN countries and the G7 industrialized nations would be important in arriving at a more comprehensive insight into debt-economic indicators nexus. Further, including control variables capturing, political stability, government effectiveness, or economic policy is likely to capture more complex relationships between government debt and economic outcomes. In a similar manner, possible ways to further explore the channels through which debt exerts an impact on GDP per capita, investment patterns, and human development indices may involve investigating the role of the debt composition, for instance, the ratio of domestic to foreign debt, and sector-specific investments. Finally, applying different econometric technique may further add to the robustness and reliability of the findings and provide valuable policy implications that will become very instrumental in debt management and economic development strategies across diverse economic contexts.

## References

1. Adam, C., & Bevan, D. (2005). Fiscal deficits and growth in developing countries. *Journal of Public Economics*, 89(4), 2005th ser., 571-597.
2. Awaworyi, S., Ugur, M., & Yew, S. L. (2015). Does government size affect per-capita income growth? A Hierarchical meta-regression analysis.
3. Azam, M., & Emirullah, C. (2014). The role of governance in economic development: evidence from some selected countries in Asia and the Pacific. *International Journal of Social Economics*, 41(12), 1265-1278.
4. Buchanan, J. M. (1966), «The icons of public debt». *The Journal of Finance*, 21(3): 544-546.
5. Checherita, C. & Rother, P. (2012). The Impacts of High Government Debt on Economic Growth and its Channels: An empirical investigation for the euro area. *European Economic Review*, 56(7).
6. Corr, A. (2017, May 13). *New Philippine Debt of \$167 Billion Could Balloon To \$452 Billion: China Will Benefit*. Retrieved from Forbes: <https://www.forbes.com>
7. Malaysian Digest. (2017, Oct 31). How Much Government Debt Does Malaysia Really Owe? Retrieved from Malaysian Digest: <http://malaysiandigest.com>
8. Mohammadi, H., & Ram, R. (2015). Economic development and government spending: An exploration of Wagner's hypothesis during fifty years of growth in East Asia. *Economies*, 3(4), 150-160.
9. Ribeiro, H.N., Vaicekaskas, T., & Lakstutiene, A. (2012). The Effect of Public Debt and Other Determinates on the Economic Growth of Selected European Countries. *Economics And Management*, 17(3),914-921.doi:10.5755/j01
10. Schclarek Curutchet, A. (2005). *Debt and Economic Growth in Developing and Industrial Countries*. (Working Papers, Department of Economics, Lund University; No. 34). Department of Economics, Lund University.
11. Spilioti, S. (2015). The relationship between the government debt and GDP growth: evidence of the Euro area countries. *Investment Management and Financial Innovations*, 12(1), 174-178.
12. Tanzi, V., & Schuknecht, L. (1997). Reconsidering the Fiscal Role of Government: The International Perspective. *The American Economic Review*, 87(2), 164-168.
13. Terasawa, K. L., & Gates, W. R. (1998). Relationships between government size and economic growth: Japan's government reforms and evidence from OECD. *International Public Management Journal*, 1(2), 195-223.

## Appendix

**Table 9 Correlation Coefficient Matrix between variables in ASEAN Countries**

	POP	GDPPC	GGC	GCF	Trade	inflat-n	FDI	Gov'debt	HDI	privc	interest	Healthex	Eductex
POP	1												
GDPPC	0.0206	1											
GGC	0.4069	-0.0956	1										
GCF	0.2149	-0.3469	0.2905	1									
TRADE	-0.0907	-0.4218	0.0205	-0.1326	1								
Inflation	-0.1658	-0.2893	0.1261	0.4896	-0.0387	1							
FDI	-0.1484	-0.0012	0.0157	-0.1688	0.1862	0.1129	1						
Gov'debt	-0.0278	0.1981	0.0320	0.5093	-0.1887	0.4048	-0.2918	1					
HDI	0.0645	0.1986	0.0561	0.2159	-0.3939	0.2650	-0.3403	0.3965	1				
PRIVC	-0.0841	0.4097	-0.1989	0.0757	-0.4007	-0.0214	-0.2064	0.0337	0.5105	1			
Intrest	0.2145	0.0660	-0.1304	-0.0986	0.0985	-0.0284	-0.0130	-0.0443	-0.0392	0.0731	1		
Healthex	0.0180	-0.0399	0.0299	0.0321	0.0245	-0.0556	0.0131	-0.0766	-0.0184	-0.0940	0.0885	1	
Eductex	0.0281	0.4120	-0.1033	0.1136	-0.4691	-0.0123	-0.2305	0.0085	0.4904	0.2762	0.1070	0.0754	1

**Table 10 Correlation Coefficient Matrix between variables in G7 Countries**

	POP	GDPPC	GGC	GCF	Trade	inflat-n	FDI	Gov'debt	HDI	Educate	health	interest	privac
POP	1												
GDPPC	-0.0853	1											
GGC	-0.0180	-0.2421	1										
GCF	-0.0580	0.1107	-0.1011	1									
TRADE	-0.0273	0.0617	0.5165	-0.3914	1								
Inflation	0.2676	0.1468	-0.1036	0.2852	0.2040	1							
FDI	-0.1262	0.0729	0.0630	0.0095	0.0204	-0.0896	1						
Gov'debt	-0.2467	-0.2154	0.3356	0.1102	0.0276	-0.2842	-0.0580	1					
HDI	0.2436	-0.1380	-0.0246	0.1458	0.2025	-0.0520	-0.0980	0.0299	1				
Educate	-0.1053	0.0731	-0.4632	0.1032	-0.0090	-0.0039	-0.1263	-0.4709	-0.0688	1			
Health	0.0249	0.3049	0.1153	0.0204	-0.2211	0.2548	0.0400	-0.4043	-0.5539	-0.0531	1		
Intrest	-0.0660	0.2011	-0.3632	0.0062	0.0852	-0.1899	0.1456	0.2517	0.2010	0.1913	-0.2383	1	
Privac	0.5260	-0.0327	-0.1085	0.0738	0.2454	-0.2816	0.1665	-0.1053	0.3864	0.0358	-0.0170	.1699	1

Figure (3) government debt in ASEAN countries

